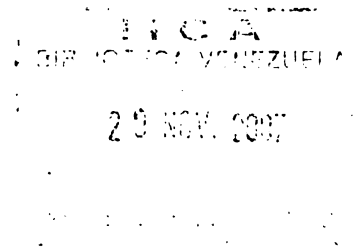


POLICIES FOR AGROINDUSTRIAL DEVELOPMENT IN LATIN AMERICA AND THE CARIBBEAN



BANK OF BRAZIL
CANADIAN INTERNATIONAL DEVELOPMENT AGENCY (CIDA)
CENTRAL BANK OF BRAZIL
INTERNATIONAL DEVELOPMENT RESEARCH CENTER (IDRC)
NATIONAL BANK FOR ECONOMIC AND SOCIAL DEVELOPMENT (BNDES)

PROGRAM IV: MARKETING AND AGROINDUSTRY

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FROM TECHNICAL EVENTS SERIES**

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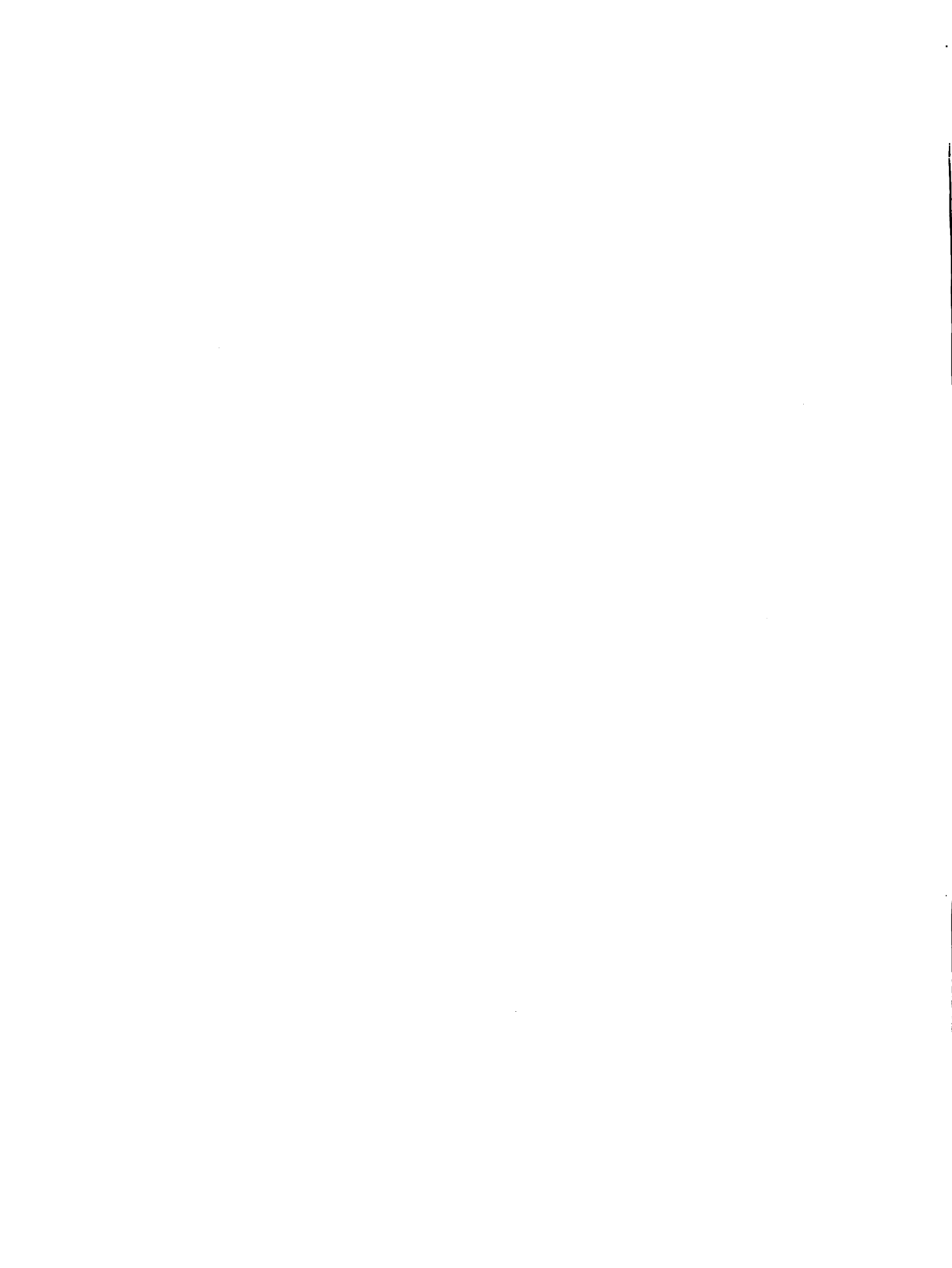
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September, 1990
San Jose, Costa Rica

"The views expressed in signed articles are those of the authors and do not necessarily reflect those of the Inter-American Institute for Cooperation on Agriculture."

Our colleague, Dr. Brian Perkins, Coordinator of the IICA/CIDA Project, and an active participant in this Seminar, passed away in Bogota, Colombia, on August 19, 1989.

The Inter-American Institute for Cooperation on Agriculture dedicates this book to the memory of its collaborator and dear friend.



I N D E X

	Page
FOREWORD	7
GENERAL OBJECTIVES OF THE SEMINAR	9
OPENING SESSION	11
REPORT OF THE RAPPORTEUR OF THE SEMINAR CONCLUSIONS AND RECOMMENDATIONS	13
I. THE MACROECONOMIC ENVIRONMENT FOR AGROINDUSTRIAL DEVELOPMENT IN THE COUNTRIES OF LATIN AMERICA AND THE CARIBBEAN	71
Trends in the International Economy and Markets: Implications for Agroindustrial Development (Edward Schuh)	79
Macroeconomic Policies and Agroindustrial Development (Carlos Pomareda/Jorge Torres Zorrilla)	91
Food Security, Small-Scale Farming and Agroindustry (Alexander Schejtman)	111
II. ACCESS TO AND PENETRATION OF DOMESTIC AND INTERNATIONAL MARKETS BY AGROINDUSTRIAL PRODUCTS	119
Penetration of Industrial Country Markets by Processed Agricultural Products From Developing Countries (Ronald Duncan)	125
Protectionism in the OECD Countries and The Development of Preferential Systems of Access (Alejandro Jara)	135
The Benefit of Harmonized Health and Sanitary Regulations in the World of International Trade (Lester Crawford)	147
Developing Agroindustrial Capabilities to Exploit Domestic and International Market Opportunities (Harold M. Riley)	153
III. THE ROLE OF TECHNOLOGY AND NEW TECHNOLOGIES IN AGROINDUSTRIAL DEVELOPMENT	171
The Role of Technology and New Technologies in Agroindustrial Development (Guy Poulter/Lynne Burbage/Ian Thomas)	175
The Role of Technology and New Technologies in Agroindustrial Development: A Latin American View (Walter Jaffe)	185

IV. AGROINDUSTRIAL DEVELOPMENT IN LATIN AMERICA AND THE CARIBBEAN: CURRENT STATE AND OUTLOOK FOR THE FUTURE	207
Agroindustrial Development in the Strategy for Agricultural Reactivation: Perspectives and Requirements (Eduardo Jacobs)	213
Agroindustry as a Source of Rural Development: Its Potential in Latin America and the Caribbean (Carlos A. Benito)	245
V. THE FINANCING OF AGROINDUSTRIAL DEVELOPMENT	265
The Financing of Agroindustrial Development: An Overview of the National Bank System (Jaime Espinoza)	267
VI. THE ROLE OF THE PRIVATE SECTOR AND ITS ORGANIZATIONS IN AGROINDUSTRIAL DEVELOPMENT	269
The Role of the Private Sector in Agroindustrial Development (Eduardo Fresco León)	271

APPENDICES

APPENDIX I SEMINAR PROGRAM	287
APPENDIX II CLOSING SESSION	291
APPENDIX III LIST OF PARTICIPANTS	293

ERRATA

<p>Due to an error in location, the document "The Financing of Agroindustrial Development: An Overview of the National Bank System" by Jaime Espinoza is to be found on pages 21-70.</p>
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FOREWORD

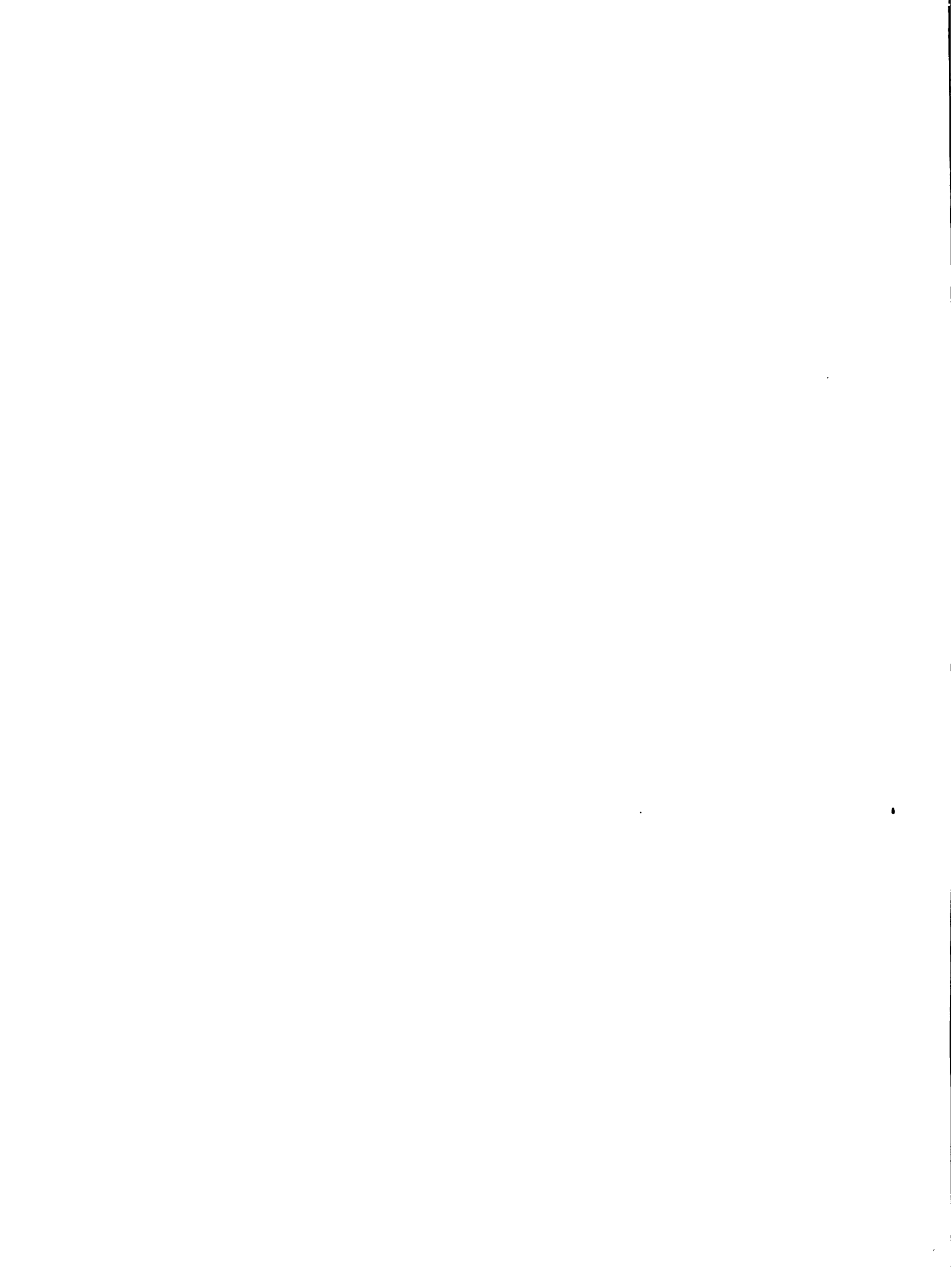
It is an honor for the Inter-American Institute for Cooperation on Agriculture (IICA) to publish this collection of articles on agroindustrial development in Latin America and the Caribbean. These papers were presented at the High-level Policy Seminar on Agroindustrial Development, held in Brasilia, Brazil from April 4-7, 1989, and organized by IICA, with sponsorship from the Canadian International Development Agency (CIDA), the Bank of Brazil, the National Bank for Economic and Social Development (BNDES) and the Central Bank of Brazil.

The different sessions of the seminar, and, consequently, the papers which served as the basis of discussion during same, centered on six major topics. Topic I "The Macroeconomic Environment for Agroindustrial Development in the countries of Latin America and the Caribbean" included works by Edward Schuh, Carlos Pomareda (co-authored by Jorge Torres Zorrilla) and Alexander Schejtman. Under Topic II "Access to and Penetration of Domestic and International Markets by Agroindustrial Products," the works of Ronald Duncan, Alejandro Jara, Lester Crawford and Harold Riley were presented. The works of Guy Poulter et.al. and Walter Jaffé were used as the basis for discussion of the third topic "The Role of Technology and the New Technologies in Agroindustrial Development." Topic IV "Agroindustrial Development in Latin America and the Caribbean: Current State and Outlook for the Future" includes papers by Eduardo Jacobs and Carlos Benito. Lastly, Topics V and VI on the financing of the agroindustrial sector and the role of the private sector and its organizations were presented by Jaime Espinosa and Eduardo Fresco, respectively. This volume begins with a report from the Rapporteur of the Seminar, Cassio Luiselli, on the main ideas and topics discussed, and the meeting's principal conclusions and recommendations.

The articles included in this collection serve two purposes. First, they contribute to the ideas and proposals for action in this field which became part of the Plan of Joint Action for Agricultural Reactivation in Latin America and the Caribbean (PLANLAC), the coordination of which was entrusted to IICA by the Ninth Inter-American Conference of Ministers of Agriculture (Ottawa, Canada 1987). Secondly, it has permitted the compilation of original articles in a field in which technical literature is very scarce and widely dispersed.

As part of this foreword, the Inter-American Institute for Cooperation on Agriculture again wishes to express its thanks to the co-sponsors of this event and the speakers and other participants, who have made a major contribution to clarifying the topics and policies linked to this important aspect of economic and social development in the region.

Rodolfo Quirós Guardia
Director of IICA's Marketing
and Agroindustry Program



GENERAL OBJECTIVES OF THE SEMINAR

The objectives of the seminar were:

- a. to analyze the conditions which have led to the current state of development of agroindustry in Latin America and the Caribbean, and to evaluate how these conditions can contribute, and are contributing, to agricultural modernization, economic stabilization and structural change;
- b. to assess the opportunities and challenges for the development of competitive agroindustrial systems, which have arisen as the result of prevailing conditions and policies in the international and domestic economies;
- c. to analyze the options available as to trade policies and others related to the abovementioned objectives, and to evaluate the role the State, the private sector and financial institutions can play in the design and implementation of such policies; and
- d. to draw up specific guidelines and recommendations concerning international cooperation, with a view to strengthening the region's capacity to reactivate its agriculture and accelerate the rate of growth and recovery of its economy, through agroindustrial development.

Appendix I presents the complete agenda of the seminar, Appendix II is a summary of the closing session, and Appendix III contains the list of participants.



OPENING SESSION

Welcoming Speeches by Representatives of the Sponsoring Organizations

In addition to the participants in the seminar, the opening session was also attended by Mr. Enio Marques Pereira, the Assistant Secretary General of the Ministry of Agriculture of Brazil; Mr. Carlos Alberto Bastos Reis, the Secretary of Agriculture and Production of the Government of the Federal District; Mr. Paulo Pavanini, Director of Operations at the Bank of Brazil; Mr. Julio Manuel Andrade Monteiro de Barros, Representative of the National Bank for Economic and Social Development; Mr. Jose Stelman Travassos Porto, Head of the Rural Credit and Industry Department of the Central Bank of Brazil; Mr. John Peter Bell, Canadian Ambassador to Brazil; and Dr. Martin E. Piñeiro, Director General of the Inter-American Institute for Cooperation on Agriculture (IICA).

The session was opened by the Director General of IICA, who extended a warm welcome to the participants. After discussing the history of the processing of agricultural commodities, he added:

"The concept of agroindustrial development, which is the focus of this seminar, should be updated because the conditions surrounding this activity are changing. The outlook favors greater liberalization of international and subregional trade, as well as the incorporation of new, state-of-the-art technologies into the processing of foodstuffs and agricultural raw materials. This change increases the potential of agroindustry and opens up new opportunities for export diversification and for the development of new products for the domestic market.

"Economic development can be spurred by agricultural development. The old controversy pitting agriculture against industry must be forgotten and replaced by an understanding of the complementarity of joint growth. The old concept of agriculture as a primary sector should be replaced with that of an integrated and mechanized agroindustrial complex.

"This will not be easy, especially in light of the current economic crisis, which, more than ever before, demands that we make maximum use of the resources available. With this situation in mind, we must create conditions and design mechanisms that will lead to positive ties and interaction between the public and private sectors, and between them and the financial, scientific and technological communities."

Next, Dr. Piñeiro spoke of the responsibility the State and the private sector share in ensuring that financial resources from domestic savings or international cooperation be applied to investment projects that promote change and modernization in the agroindustrial sector. He added:

"If there is effective interaction among the different groups involved in the process at the national level, this opens up possibilities for cooperation among countries. The identification of these opportunities is a topic for discussion during this seminar.

"Within this context, and on behalf of the Inter-American Institute for Cooperation on Agriculture, I wish to thank the Bank of Brazil, the National Bank for Economic and Social Development and the Central Bank of Brazil for their support and collaboration in making this event possible. We are confident that the results of the seminar will be of use to these institutions, which, through their work and foresight, have placed Brazil at the forefront of agroindustrial development in Latin America and the Caribbean."

The Director General of IICA mentioned the fact that the Ninth Inter-American Conference of Ministers of Agriculture, held in Ottawa, Canada in 1987, charged the Institute, in collaboration with other national and international organizations, with elaborating a Plan of Joint Action for Agricultural Reactivation in Latin America and the Caribbean.

He added that the Plan, which will be submitted for consideration to the ministers of agriculture in October 1989, provides a conceptual and programming framework for the seminar. Thus, he said, IICA "hopes that the recommendations and conclusions of the seminar will become part of the proposals the Plan will contain with regard to the development and modernization of the agroindustrial complex.

"We are especially pleased to note that the government of Canada, which provided support to the abovementioned Inter-American Conference, has again done so by co-sponsoring this high-level seminar, through the Canadian International Development Agency and our joint project to strengthen IICA's programs under the Medium Term Plan.

"In conclusion, I wish to reiterate my appreciation to the host country of this seminar, for the hospitality and support we received during its organization. I thank the participants for joining us, and wish you great success in your deliberations."

The Assistant Secretary General of the Ministry of Agriculture of Brazil, Mr. Enio Marques Pereira, expressed the hope that the seminar would prove to be a positive contribution to the development of the countries of Latin America and the Caribbean.

He said that by helping explain how prices are formed, how marketing channels are organized, and other aspects of the agroindustrial process operate, scientific approaches make an important contribution to the progress of nations.

In conclusion, Mr. Marques Pereria thanked the Canadian International Development Agency, IICA, and the national agencies which collaborated in making the seminar a reality.

REPORT OF THE RAPPORTEUR OF THE SEMINAR *

The High-Level Policy Seminar on Agroindustrial Development in Latin America and the Caribbean was rich in content and conducted in an atmosphere of true pluralism: opposing points of view were heard, yet the dialogue was creative.

If a comparison is made of the discussions held and the objectives set forth in the first session by the Director General of IICA, and the Director of IICA's Program IV, Rodolfo Quirós Guardia, it can be seen that the proposed objectives were reached. The express objectives were to review the historical role, present contribution and, above all, the future of agroindustry, within the context of agricultural reactivation in the region. Arising during this task were options and challenges which the participants in the seminar were able to propose and analyze with clarity. This can be seen in the documents presented and discussed, the comments made regarding same and, the ultimate acceptance of its conclusions and recommendations, for designing policies and cooperation strategies.

Throughout the seminar an effort was made to distinguish between the role of the State and that of the private sector in agroindustrial development, and to determine how international markets should be penetrated and which funding sources should be used to finance agroindustrial activity. Rather than to reach a consensus on these delicate conceptual questions, the goal was to provide further insights into the subject and to seek recommendations for cooperation that would be useful not only to IICA, but also to all the participants in the meeting, who represented sectors committed to the development of agroindustry in Latin America and the Caribbean. The theoretical elements discussed and the practical conclusions drawn will contribute in the future to improving decision making and to formulating policies in the region. All of this takes on singular importance if considered within the framework of the mandate IICA received in Ottawa in 1987 from the ministers of agriculture of the hemisphere. In the inaugural address of this seminar, Dr. Piñeiro made reference to this mandate, which has led IICA to work to understand, reinterpret and rethink the role of agriculture in regional reactivation.

The following is a brief review of the major points of the papers presented and the enlightening discussions which ensued. It is not an attempt to summarize the thoughts of the speakers or those participating in the discussions. Rather, it provides a panoramic view of the major topics addressed, which will make it possible later to interpret the true sense of the recommendations issued.

* Dr. Cassio Luiselli, Assistant Deputy Director General for Operations.

The Macroeconomic Environment for Agroindustrial Development

In his paper **Trends in the International Economy and Markets: Implications for Agroindustrial Development**, Edward Schuh clarified how macroeconomic variables - the exchange rate, primarily - play a key role in articulating or disarticulating certain sectoral policies. In the paper, and the following discussion, an analysis was made of the evolution of the supply of and demand for agricultural and agroindustrial products from the region. At the beginning, there was a consensus that demand would increase considerably, and that overall supply might not grow at the same rate. Next, Professor Schuh spoke on the interrelationships between markets, and stated that the financial market had shown much greater growth than the goods and services markets. It was also made clear that an opening exists for agroindustrial products.

Following in logical order, the discussion then centered on the paper presented by Carlos Pomareda and Jorge Torres Zorrilla on the **impact of national and sectoral structural adjustment programs on agroindustrial development**. Reference was made to the adjustments being made in our economies during this difficult decade, and emphasis was placed on the need for an integrating approach to correct the distortions imposed upon agriculture, which must respond intelligently to the dilemma of prices. Special importance was given to the need to exercise influence over demand and consumption, a difficult task, but one of great importance in countries with highly distorted diets and very unusual patterns of demand, in terms of the adoption of factors and of real needs.

The paper by Alexander Schejtman (**Food Security, Small-Scale Farming and Agroindustry**) brought a note of stark reality to the discussions: there are 150 million poor people in Latin America who have been particularly hard hit by the crisis, which means that specific policies are needed to cover these great needs. This issue was polemical, as could be observed in the discussion following Schejtman's presentation. Different opinions were expressed, as were different solutions, but all speakers recognized the problem as severe. Also discussed was the fact that in addition to a lack of equity and basic justice, there are also questions of market size and an artificial strangulation of our economies, which only aggravate the situation. It came out in the discussions that the problems of the small-farm sector continue to be very real, and the way the sector has dealt with the crisis was highlighted. Emphasis was placed on the fact that small farmers, who have been tested again and again, are wise managers who know how to make maximum use of available resources, minimize risks, and, above all, keep their family units alive in economically difficult surroundings.

Access to and Penetration of Domestic and International Markets by Agroindustrial Products

The second major topic of the seminar focused discussions on programming and strategies related to international markets, within the context of the restrictions mentioned by Professor Schuh. In his address, **Penetration of Industrial Country Markets by Processed Agricultural Products from Developing Countries**, which focused on the case of Latin America and the Caribbean,

Ronald Duncan analyzed the performance of exports of processed agricultural products, and provided a detailed analysis of the evolution of demand in the industrialized countries, in light of indicators from 1980-1985. He also showed how some markets are closing, and how the Japanese market may eventually open up, although this is a long way off.

Alejandro Jara picked up on this theme when he spoke on protectionism in the OECD countries, and the development of preferential systems of access. In his paper, Jara examined the context in which international trade is carried out, reviewing the transformations the General Agreement on Tariffs and Trade (GATT) and the Generalized System of Preferences have undergone. A detailed analysis was also made of the protectionist strategies of the Organization for Economic Cooperation and Development (OECD), highlighting the problems faced by its member countries when they subsidize their agricultural sector, the protection of which is becoming more and more artificial in the face of the incursions by certain countries, from Latin America for example, which enjoy obvious comparative advantages.

Lester Crawford's paper (presented by Robert Wicks) on the benefit of harmonized health and sanitary regulations in the world of international trade was basically descriptive in nature, and focused on the three recognized international scientific agencies empowered to establish sanitary regulations for the almost one hundred nations belonging to GATT. Because of its technical nature, Crawford's paper only refers briefly to international trade barriers, a subject addressed in the rest of the documents on access to and penetration of international markets.

Harold Riley analyzed the development of agroindustrial capabilities to exploit domestic and international market opportunities, making reference to a conceptual framework for analyzing this topic, to some policy options and to the implementation of programs of action. In this context, he reviewed the major components of a food system, and the agricultural product subsector, focusing on marketing problems. He also spoke about the relationship between national and international strategies. This last point provoked discussion because one of his major points concerned the need to coordinate both strategies. He explained the advantages of taking a systematic approach and of tending to important issues such as infrastructure, credit, information and critical inputs, among others.

The Role of Technology and the New Technologies in Agroindustrial Development

During the third session of the seminar, the focus switched from general and sectoral perspectives and the analysis of possible markets for agroindustry to the subject of technology. Laurence Tubiana provided an economic overview, an interesting analysis of new technologies, which are not the product of intellectual exercises, but rather of concrete experience in specific subsectors (such as sugar and grains), and on the basis of which strategies are built. The presentation was very informative and provided food for thought, especially when questions were posed about production models, changes in consumer patterns, biotechnologies and regulatory mechanisms which are totally inadequate to control and manage the avalanche of new technologies.

Guy Poulter provided a technological viewpoint in a paper written in collaboration with Lynne Burbage and Ian Thomas. During this presentation, which began with some general thoughts on world population growth and the food supply, and more specifically on basic problems related to food security, an analysis was made of new processing technologies which can be applied to the agroindustrial sector in the region. Poulter defended a very important idea: traditional technologies still have a lot to offer.

The third speaker on the subject of technology was Walter Jaffé, who, in presenting a Latin American viewpoint, showed that bioindustry has a place in the hemisphere, even though there are considerable constraints in this field and there should be no further delay in increasing horizontal cooperation. Without such cooperation, even the largest countries in the region, no matter how well coordinated their policies or how clear their proposals may be, will not be able to achieve the necessary levels of agroindustrial development.

Agroindustrial Development in Latin America and the Caribbean: Current State and Outlook for the Future

In his presentation on agroindustrial development in the strategy for agricultural reactivation: perspectives and requirements, Eduardo Jacobs described the current state of agroindustry in the region, a topic closely linked to the subjects discussed so far. He made it very clear that there must be coordination between the public and private sectors, that policies must be made more consistent, and that business management skills are needed not only by entrepreneurs themselves, but also by other groups that may get involved in agroindustry later on.

Carlos Benito, who spoke on agroindustry as a source of rural development: its potential in Latin America and the Caribbean, went beyond the proposals based exclusively on State intervention, to insist on a strategy that takes into consideration concerns of small farmers with their own problems and with their own possibilities. He also expressed the belief that agroindustry can speed up rural development if such industries are located in the rural areas, if there is a successful transfer of flexible production systems, and if appropriate marketing systems are developed. Benito also proposed a number of interesting research topics in this field.

The Financing of Agroindustrial Development

The discussion of the funding of agroindustrial development centered on a presentation by Jaime Espinosa, who described the broad experience gained by the Latin American Association of Development Finance Institutions (ALIDE). From the presentation, it became obvious that there is not now, nor has there ever been, a policy relevant to the growth of agroindustry (as evidenced by figures related to loans granted to that sector). It was also clear from the presentation and the ensuing discussion that there is a certain disenchantment with the traditional practices, almost always inefficient, of conventional development and international banks, and a growing awareness of the need for change in the role they have played up to now. In concluding, Espinosa suggested that development banks should promote innovation, and he described the steps which, in his opinion, they should take.

The Role of the Private Sector and its Organizations in Agroindustrial Development

The paper which addressed the final topic of the seminar was presented by Eduardo Fresco, who spoke of the experience of the Latin American Association of Food-Related Industries and Organizations (ALICA). He placed special emphasis on the need to close existing technology gaps, and explained that only through concerted and well-planned actions will it be possible to reach the objectives established for agroindustry, with the participation of those involved in the process: the State, public and private international organizations, agricultural and industrial entrepreneurs, small farmers, laborers and academic centers. The role of the private and public sectors was highlighted in this discussion and throughout the entire seminar. There were opposing opinions, which allowed the participants to reach their own conclusions based on the abundant information made available during the sessions. What can be deduced from all this - and this is the personal opinion of the rapporteur - is that neither the world nor Latin America should be seen as a place for unrestricted profiteering; that we have never been governed by the idea that profit is the only motive behind accumulation; and that we can no longer accept, after so many failures, that the State must be in charge of everything, satisfy all needs and implement efficient strategies by itself. It was clear from the discussions that there is, of course, a role for the State, in promotional, regulatory and compensatory activities, but that the private sector is playing, and should continue to play a key role in the agroindustrial development of the region.

Lessons learned from the seminar

This has been a brief synthesis of the major topics discussed, on which strategies for management, training, institutional strengthening can be based, and, above all, from which the design of modern policies that truly address the new international context can be derived.

The recommendations and conclusions presented below, offered by the participants, represent not only personal and sectoral opinions and preferences, but also open-ended proposals, especially as concerns possible areas of cooperation.

CONCLUSIONS AND RECOMMENDATIONS

In addition to the implicit and explicit recommendations and conclusions made in the presentations and discussions of the seminar, there were others presented during the final session when the rapporteur offered his synthesis. As stated earlier, many were open offers for possible action aimed at consolidating areas of cooperation and are summarized below.

Regarding access to and penetration of international markets by agroindustrial products from the region, it was suggested that the countries of LAC identify what their long-term interests are in the negotiations of the Uruguay Round of GATT, and, in light of same, assume a united position, with a view to achieving a broad and substantial liberalization of agriculture in the

long run. It was also suggested that the negotiations related to agriculture, and other pertinent negotiations of the same Round, be conducive to the liberalization of trade in agroindustrial products and to reducing distortions (subsidies) in international trade. It was recommended that the relationships or linkages that exist between agroindustry and the systems that protect industrial property be examined to determine whether they help or hinder agroindustrial development. Also pointed up was the need to examine very carefully the role and contribution of services to the producer, and services that support agroindustrial exports, in order to analyze subsequently the consequences in the region of a possible multilateral regulation of services in the Uruguay Round. Another recommendation was that sanitary and phytosanitary restrictions be identified, as well as the quality control standards which affect exports from the region, and that participation in the international regulatory organizations be increased.

In this regard, it was proposed that IICA request the FAO/WHO CODEX Alimentarius Commission to assist the countries of Latin America and the Caribbean in establishing national committees to deal with the ever-increasing number of non-trade barriers.

It was pointed out that the unification of the domestic markets of EEC member countries, to take place in 1992, will demand that the Community standardize even further its norms and technical regulations. At the same time, it must be remembered that Western Europe is heavily involved in the standardization activities of agencies such as CODEX and others, and the EEC may attempt to exert even greater influence over the determination of norms and technical regulations that will respond to the needs and interests of their industries. It is recommendable, therefore, that the countries of Latin America and the Caribbean participate more actively and in a more coordinated fashion, to face this situation together and, in this way, bring greater balance among interests.

Participants were reminded that a great number of national, regional and international organizations offer services to current and potential exporters of agroindustrial products in connection with financial matters, market information, access to technology, insurance, export procedures and linkages for establishing joint ventures. Exporters need this kind of information, but at present no single body exists that coordinates it, a situation which lends itself to duplication of services or gaps in the basic information available. IICA is in an excellent position to offer exporters and development agencies involved in the export market access to the information and services required.

There were also specific recommendations regarding the role agroindustry can play in rural development. Reference was made to the huge number of small farmers living in Latin America and the Caribbean, the total area of the land they work, and the amount of food they produce for national consumption. Also considered was the fact that most of those in the sector live in absolute poverty and suffer from the highest degree of malnutrition, especially children and their mothers. It was stated that it is very important to diversify food production, reduce country-city migration, create jobs, generate value added, reduce post-harvest losses, make better use of resources

and improve the socioeconomic level of this vast sector of the population. It was recommended that greater efforts be made, with a multidisciplinary approach, to upgrade the production capacity of small farmers through the incorporation of specific agroindustries in the weak links of the food and marketing chain. It was also recommended that support and assistance be given to organizations like the Appropriate Technology Network for Agroindustrial Development (RETADAR) and the Rural Agroindustrial Development Program (PRODAR), which carry out activities to maximize the benefits of existing rural agroindustries and those that may exist in the future.

Also in connection with the contribution agroindustry can make to rural development, there was agreement that the placement of medium- and large-scale agroindustries in rural zones offers significant possibilities for employment, and that the transfer of flexible production technologies for agriculture can make small rural enterprises efficient and feasible. Some programs of support were outlined: 1) programs for the transfer of flexible production technology; 2) training programs for small-farmer organizations, focusing on programs for in-home food processing and rural education to train youth in agroindustrial jobs and managerial skills; 3) programs to provide coordination between small agroindustries for the marketing of inputs and products, in the form of cooperatives, joint ventures, etc; 4) dual-purpose migration policies and programs to increase the efficiency of agroindustry and to create employment for small farmers (which include: a) providing employment and decent housing, and protection of economic and civil rights; b) in order to halt migration to the cities, training workers to develop small-scale agroindustries where they live; c) policies and joint actions between countries, to facilitate legal temporary migration); 5) communications programs to orient the actions of grassroots and volunteer groups, in accordance with an agroindustrial development strategy (this would require, in some cases, joint actions among countries).

In recognition of the priority that must be given to the alleviation of poverty in LAC, and considering the possibilities offered by agroindustry for revitalizing the rural areas, and the possible advantages to be found in linking up small rural enterprises with large-scale agriculture, it was recommended that IICA and the other agencies working in this field consider the possibility of developing, together with small-farmer organizations and perhaps with agroindustrial enterprises, projects for small-scale agroindustries. These would be submitted to international banks or external assistance agencies for funding, and used for designing models of this type of project for application in LAC.

With regard to the role of the State in agroindustrial development, in analyzing the alternative of generating stable economic institutions which promote efficiency with equity over the long term, it was suggested that this process would require joint actions at different levels. This includes coordination of the participation of the countries of the region in the GATT negotiations concerning agroindustry; coordination of the position of the countries of LAC in negotiating with the U.S., the EEC and Japan access of agroindustrial products to their markets; agreement on a policy on patents; coordination among countries that permits and protects migration (the viability of an efficient agroindustrial sector depends on the mobility of labor, and

the access of small farmers to employment often depends on their ability to emigrate to work under decent conditions). The development of stable economic institutions and the use of public investment conflict with the funding adjustment or stabilization strategy put forth by the IBRD or the IMF. In this regard, the countries of LAC should coordinate activities to negotiate a stable funding and monetary system with these international lending institutions, one which guarantees consistent rules of the game and the possibility of public investment.

There was consensus that the private sector and its organizations have a key role to play in agroindustrial development. There was also agreement that the State, in collaboration with the private sector, should provide the legal framework and infrastructure needed to promote the establishment and operation of agroindustries. It was also stated that agroindustrial development must be carefully planned, that the subsectors which need stimulation should be identified, and that projects must be designed for that purpose. The recommendation was made that all participating sectors (the State and public agencies, farmers, private entrepreneurs and their associations, the academic community, research centers and service sectors) work together in this planning and design of projects. For their part, public and private international agencies in the region working in the field of agroindustry could establish a system, together with the governments, for coordinating the exchange of experiences among countries and to expedite the transfer of available technology within the region.

**THE FINANCING OF AGROINDUSTRIAL DEVELOPMENT:
AN OVERVIEW OF THE NATIONAL BANK SYSTEM**

Jaime Espinosa*

INTRODUCTION

This document contains comments on the problems and financing of agroindustry, based on experiences gathered by the Latin American Association of Development Finance Institutions (ALIDE), through more than ten national, subregional and regional meetings held in Latin American countries, since 1980.

Various institutional mechanisms involved in promoting and financing agroindustrial development in Latin America are examined, especially the role of development banks in providing financial assistance and other complementary credit services.

This overview provides information on the work being carried out by development banks in support of the agroindustrial sector. Although some overall figures are available, it is difficult to pinpoint the real contribution of development finance institutions since, as explained in the document, no specific information is available on loans granted to the agroindustrial sector. This first attempt to gather information could lead to more thorough research on amounts and financing conditions for agroindustry, by country, subgroup of activities and source of resources.

The document is divided into four chapters. The first chapter deals with the role of the agroindustrial sector in the economy, its links with other sectors and a brief description of the role of development banks in financing the sector. This topic will be discussed in more detail in the second chapter, which is divided into three parts: characteristics of agroindustrial financing, complementary credit services, and some of the ways in which financial cooperation is provided.

The third chapter describes ALIDE's promotion of investment projects and opportunities, highlighting the participation of the agroindustrial sector in the promotion activities carried out by the Latin American Association of Development Finance Institutions. The fourth chapter presents a summary of final considerations on the main topic of the document, the participation of development banks in agroindustrial financing.

* General Advisor, Latin American Association of Development Finance Institutions (ALIDE). The ideas and proposals contained in this document are those of the author and do not necessarily reflect those of said institution or of the Seminar's sponsoring organizations.

The document contains an appendix with information on experiences in agroindustrial financing in selected countries; four tables that present figures on the amount of credit granted by the development banks, by activity; and two appendixes on ALIDE's work in promoting projects and investments.

THE ROLE OF THE AGROINDUSTRIAL SECTOR

The Agroindustrial Sector and its Links with Other Sectors

Agroindustrial production has become increasingly more important in the economies of developing countries. On one hand, there is a growing volume of investments in this sector in many countries, as well as the opportunity to obtain greater value added for agricultural production in rural areas. On the other, there is the need to bring agricultural production processes and the manufacturing industry into line with each other through agroindustrial projects and enterprises. Both point to the advisability of considering this activity as an economic sector with its own characteristics and dimensions, with enormous potential for contributing to the economic development of the countries of the region.

Agroindustry takes on even greater importance by bringing agricultural and industrial development together. Agroindustry as a process that conditions, preserves, processes, packages and markets agricultural raw materials, can contribute to rural development, promoting the generation of productive jobs, helping solve food supply problems, and becoming a catalyst for the economy as a whole by generating or saving foreign exchange through the export and or substitution of food commodities.

Agroindustry maintains various links with agriculture and the manufacturing industry. It establishes direct and indirect relations, as well as vertical or horizontal relations.

Indirect relations between agriculture and agroindustry can be established through purchase contracts with or quotas for farmers, technical assistance, production financing, quality control of and the terms for acceptance of raw materials, among other possibilities. Through these mechanisms, agroindustrial enterprises control the decisive aspects of the work process in agriculture, production conditions and production itself, without becoming involved in the production of the agricultural inputs they process, and without owning the land. An example of this type of indirect relationship is the installation of an evaporated milk processing plant in a dairy zone. This type of interrelation is one of the most common types established since the 1970s and involves an integrated system that includes financing of primary production, technological innovations, and marketing.

In fact, an agroindustrial enterprise can act as a non-bank financing agent, transferring its own resources or those it obtains from the financial system to the farmers. Since agroindustrial enterprises are in close and ongoing contact with the farmers, they can handle the demand for credit in a timely manner; this includes all the necessary inputs and services, the collateral being the harvest. These enterprises, when acting as financial

agencies, regulate the amount and flow of the credit based on results obtained from their supervision of the crops and harvest. It should be noted, however, that the main disadvantage of this type of financing is the financial dependence which is created between the farmer and the entrepreneur. Another disadvantage is that the entrepreneur is usually the one who determines the cost of financing and, in some cases, increases the cost of financing.

On the other hand, agroindustrial enterprises are in a privileged position to promote an increase in productivity and the modernization of the agricultural sector due to the strong effect they have on generating and adopting technological changes, through technical-credit assistance and supervision, adapting primary production to the conditions of volume, quality and prices as agreed upon in the sales contract based on future harvests. Nevertheless, this type of system, during the transfer of technology process could make the control of the enterprise in applying credit and the supervision of agricultural work by technical personnel in agroindustry so strict that the farmer could lose a great part of his entrepreneurial initiative.

Another type of link that exists in the agroindustrial process is the vertical integration of the whole production process of foodstuffs and other agricultural goods, from the field up to the final consumer. This means that the planning and execution of the different stages of the production process are managed by only one production unit. Vertical integration is the catalyst for socioeconomic development, which can include the establishment of a multiple-use social structure that benefits the country; for example, the construction of roads, improvements in water and electricity services, channelling resources toward the area, training programs and education, among others.

Horizontal integration occurs when the agroindustrial process generates the formation of production complexes that, although different, are interrelated, for example, balanced foods, slaughter of cattle, manufacture of processed meats, milk products, flours, oilseeds, and others. In this system, the fact that the basic inputs used in the different production processes come from agriculture is the integrating element of the aforementioned agroindustrial activities.

Promotion of Agroindustrial Development

The important role of the agricultural sector in the national economies, and its impact on economic development, underscore the need to intensify and encourage the planning, coordination, promotion, supervision and evaluation of the agroindustrialization process, as well as of the available institutional infrastructure in order to design a strategy that will respond to the financing and complementary credit needs of agroindustrial development.

Nevertheless, in spite of the importance of the agroindustrial sector, most Latin American countries do not have specific agroindustry policies, which treat agroindustry as an integrated process that begins with

agricultural activities, continues through a essentially industrial process and concludes with marketing systems. All agroindustrial policies should include the following general objectives:

- a. Establish an agroindustrial production base that leads to increased economic growth, particularly in rural areas;
- b. Achieve self-sufficiency in basic consumer goods and a gradual improvement in the diet of the population;
- c. Contribute to improving agricultural production and productivity by fostering the stabilization of the demand for raw materials and by introducing standardized production criteria;
- d. Develop organizational and agroindustrial technology systems compatible with the needs of the area and the availability of resources in the area;
- e. Improve the standard of living in the area, particularly by creating sources of employment in the rural areas, increasing income levels, and training laborers and technical and managerial professionals;
- f. Encourage greater retention of agricultural surpluses, thus creating incentives for capital reinvestment in agriculture; and,
- g. Increase the availability of foreign exchange by increasing and diversifying agroindustrial exports with greater value added and by substituting imports with domestic products.

More specific measures must be applied to the aforementioned general objectives. In fact, in order to establish a satisfactory agroindustrial production base, credit must be available, in sufficient amounts and under reasonable conditions, particularly medium- and long-term financing; technical assistance mechanisms for agroindustrial enterprises established in rural areas must be improved; investments must be made in bulking centers and commercial infrastructure, promoting the creation of marketing enterprises that trade in agroindustrial commodities; and the formation of entrepreneurial associations that bring together farmers, is to be encouraged, offering incentives for direct participation in integrated agroindustrial processes. It should be noted that integrated agroindustrial projects are seen as a way to provide small farmers with the benefits of industrialization and, in turn, provide a more steady flow of raw materials to industrial plants.

In order to improve the standard of living in rural areas, agroindustrial production units must be created in these areas, by offering tax and financial incentives, as well as price incentives for inputs and incentives, to promote the creation of as many jobs as possible. New agroindustrial investment opportunities in rural areas must be identified, giving special preference to those that employ intensive production techniques in the use of relatively abundant local resources. Infrastructure for providing basic services in rural areas must be improved.

In order to increase the generation of foreign exchange by promoting agroindustrial exports and import substitutes, it is necessary to identify and encourage the production of agroindustrial goods that can serve as exports or import substitutes; it is also necessary to improve export promotion mechanisms through information services, advisory services in selecting international markets, credit lines for exports, and advertising, distribution and sales services.

In addition to the aforementioned actions and policy instruments, efforts should be made to ensure that the political will to achieve these objectives exists. The following are some of the criteria that must exist in order to establish priorities: types of ownership and the organization of agroindustrial work; the nature of the production; and promotion of rural development.

In regard to the first criterion, agroindustrial policies should consolidate institutional support so that the farmer can become a part of processing and marketing. In regard to groups of small-scale farmers, efforts should be made to develop collective production organizations aimed at setting up associative entrepreneurial systems.

In regard to the second criterion, the development of agroindustries is essential, due to the nature of its production. The existence of agroindustries will create increased demand for basic consumer goods, for subsequent processing and sale. The importance of agroindustry lies in the final destination of its production and the origin of the raw materials.

Concerning the third criterion, agroindustrial development promotes rural development by locating agroindustrial plants near the areas where the raw materials are produced, thus creating centers of industrial activity, which, thanks to the linkages established by these activities, bring new groups of the rural population into the production process.

Therefore, integration should be stressed as a means for obtaining the aforementioned objectives. National guidelines for agroindustry should be prepared that coordinate policies and plans of the agricultural, industrial and service sectors, and which can establish the rules and regulations of agroindustrial activities. Actions of various public institutions, and private sector efforts related to agroindustrial activities, including development finance institutions, must be designed with this plan in mind.

FINANCING OF THE AGROINDUSTRIAL SECTOR

A Profile of the Credit Granted to Agroindustry

One of the main drawbacks of agroindustrial development financing is the lack of specialized institutions which grant credit exclusively for agroindustrial activities, such as those that exist for the agricultural, industrial and other sectors. This situation, in addition to limiting the possibilities for integrated financing for the sector, makes it more difficult to deal with agroindustrial development as a whole.

When development banks grant such credit, they must determine which sector agroindustry belongs to. Thus, depending on traditional national and institutional definitions of agroindustry and its scope, credit could be classified as agricultural, industrial, foreign trade or, preferably, as agroindustrial.

According to information obtained by ALIDE on loans disbursed by development banks during 1986, broken down by economic sector, of a total of US\$64,356,200,000 granted by the banks, only 1.9% (US\$1,232,100,000) was allocated to agroindustry per se, while 22.6% (US\$14,558,400,000) was allocated to agriculture and rural development, and 17.6% (US\$11,343,000,000) for the manufacturing industry. (Tables 1 and 2)

This information would lead one to think that banks are not interested in financing agroindustry. This is unacceptable if we consider the increasing support that governments have been giving to agroindustrial development and the evident growth of the sector. Obviously, the reason for this is that few countries and institutions keep separate statistics for agroindustry. The amount allocated to agroindustry is included under agriculture and industry.

Development banks act both as "banks" and as development institutions. This dual role is often misunderstood by borrowers, who simply want to receive large amounts of resources at low costs and without many demands or delays.

Nevertheless, as banks, they must carry out their credit operations according to certain rules that make it possible to maintain certain levels of the resources made available to them by the governments or public savings, to wit:

- a. Involvement of beneficiaries in the economic activities financed by the credit; credit geared to specific uses within the enterprise financed.
- b. Adoption of the most appropriate technologies.
- c. Demonstration of economic and financial feasibility of the enterprise and/or activity for which the credit resources will be used.
- d. Evidence that the enterprise being financed is in full compliance with pertinent legal requirements for operation.

- e. Minimum contribution of beneficiary's own resources.
- f. A wide variety of precontractual requirements in order to improve reliability of the enterprise (for example, additional contributions of private resources to the capital of the enterprise, monetization of non-operational assets, etc.).
- g. Faithful adherence to the project as approved by the bank, and proof of the gradual implementation of the project, in technical, economic and financial aspects (counterpart commitment of resources by enterprise).
- h. Hiring of bank-approved consultants to evaluate the existing administrative structure and to formulate and implement financial control mechanisms.
- i. Hiring of bank-approved external auditors.
- j. Consultation with the bank, prior to transferring control of capital to third parties.

For credit, which takes into account the complexity of the agroindustrial production process, to be more efficient, an integrated approach must be used in providing financial assistance. This means that financing agroindustrial projects also includes financing agricultural production, agroindustrial processing and marketing the final product.

In this regard, and in accordance with the very nature of development banks, which is to contribute to development by providing loans to cover the duration of priority investment projects, credit assistance must include financial resources earmarked for the construction of civil works needed for the construction of warehouses for storing raw materials and industrialized products. It is also necessary to consider the possibility of participating in the capital of small agroindustrial enterprises, and financing working capital under conditions which are in line with the enterprise's rate of activity.

It should be noted that, given existing difficulties within the present production structure, credit programs should be available on a preferential basis, at least temporarily, compared to financing of other industrial areas. These preferential conditions should not be limited to interest rates, but should also include special treatment in regard to terms of payment and collateral, particularly for small- and medium-scale farmers. In this regard, development banks must consider preferential and differentiated treatment for associative enterprises, small-farmer enterprises that produce basic foodstuffs and enterprises that are set up where the raw material is produced, and to the reactivation of existing businesses that have been affected by adverse macroeconomic conditions.

In order to establish close collaboration between development banks and commercial banks and ensure sufficient capital for financing agroindustrial projects, credit arrangements are used that bring short-term commercial bank

loans into line with the corresponding long-term development bank loans (for example, co-financing). In this way, the intrinsic demands of short-term credit can be met (i.e. working capital, marketing), as well as long-term needs (i.e. investment in fixed assets). On the other hand, and in order to increase access to credit, financing should be considered which involves a flexible system of collateral, providing credit to small agroindustrial enterprises; the establishment of reserve funds to guarantee the loans, or agroindustrial credit insurance systems.

Because of the limited statistical information available, it has not been possible to quantify the amount of resources provided to the agroindustrial sector by development banks. Nevertheless, Tables 3 and 4 present information, broken down by country, obtained by ALIDE in regard to amounts financed during 1985 and 1986.

Likewise, a profile of agroindustrial credit in eight selected countries (Argentina, Brazil, Colombia, Chile, Costa Rica, Mexico, Panama and Peru) is included in an appendix to this document. This information gives a brief overview of institutional policies of the national banking system linked to the agroindustrial sector.

Complementary Credit Services

In addition to credit assistance, development banks provide a series of support services specially tailored to the needs of small- and medium-sized agroindustrial entrepreneurs. This is a part of the "development institute" concept of development banks, be they public or private.

The following are some of the most common complementary services offered by development banks:

- a. Support in identifying investment opportunities, depending on the recipient of the loan: subsistence farmers or small-scale farmers, medium- or large-scale industrial entrepreneurs, geared essentially to foreign markets.
- b. Advisory services in formulating investment projects, particularly in regard to financial and accounting matters.
- c. Assistance in providing technological information to ensure proper use of available resources.
- d. Coordination with national rural extension services, to advise the farmer on modern agricultural production techniques.
- e. Advisory services for entrepreneurial management, particularly in the rehabilitation of businesses undergoing temporary difficulties, but which are probably feasible in the long term.
- f. Support for training the personnel of the enterprise.

- g. Providing information services on prices and markets in order to give entrepreneurs a clearer picture of supply and demand for inputs and services for agroindustrial production.
- h. Advisory services in regard to the proper use of banking services in the administration of additional income that could arise as a result of entrepreneurial management.
- i. Support for the integration of small- and medium-scale farmers into associative enterprises.
- j. Advisory services in the identification of potential markets for agroindustrial production, and on conditions and aspects of the promotion, sales and distribution of the final product.

In some cases, this development action can be carried out by the bank officials as part of their professional duties; in other cases, depending on the size of the institution, special promotion and entrepreneurial development units can be created; and, finally, development banks can establish cooperation relations or collaboration mechanisms with public or private agencies that provide support for agricultural and/or agroindustrial development.

Specific Actions and Methods of Operation for Financial Cooperation

There are many development bank activities aimed at promoting economic development that are applicable to agroindustrial financing. The ways in which these operations are implemented vary greatly. The feasibility of these operations depends not only on the general economic situation, but also on the level of financial development in the different countries, the legal framework and the experience of each country in using financial techniques.

The following are examples of some of the operating methods that can be used to carry out financial cooperation operations between banks of the same country or two or more countries, concurrent with the financing of the same project. In most cases, these are financial engineering arrangements that are applicable to all types of projects, including agroindustry.

- a. Establishment of co-investment funds. National development banks and their foreign counterparts study project priorities and identify potential investors from the country and abroad in order to set up the enterprise that will implement a particular project, using capital from the fund, the foreign entrepreneur and the national enterprise.
- b. Co-financing arrangements that use different types of financial agreements in which development banks provide their own resources to finance a project, and also seek other sources of credit, through formal agreements with these sources and the borrowers.
- c. Credit union systems. The bank that leads the group of participating financial entities is the one that promotes the project.

- d. Competitive bidding for previously evaluated projects, the feasibility of which is endorsed by the promoting bank.
- e. Temporary use of capital equity or granting financing in convertible obligations for open capital enterprises.
- f. Securing capital resources for projects or joint ventures, through underwriting operations.
- g. Support for the formation of trading companies, export consortiums and brokerage firms for international trade operations.
- h. Use of special financing systems such as leasing and factoring.

Other elements must be considered when development banks participate in multinational projects and joint ventures: the different national legislations, regulations on exchange matters and foreign investments, tax and tariff treatment and statutory provisions. However, given the present situation in the region and the new guidelines being applied in the field of economic integration, it can be expected that the aforementioned restrictions will tend to be less constraining as opportunities arise and concrete actions, such as those mentioned here, increase.

Obviously, development banks that participate in these fields and other similar fields that could be mentioned in regard to international financing techniques, must be solvent, prestigious firms that can compete in international financial markets satisfactorily. They must also have sufficient operating experience in this area. Although, as mentioned previously, not all finance development institutions can or are willing to undertake actions of this nature, their participation can be increased considerably by using various horizontal cooperation formulas. This type of cooperation, in and of itself, involves financial integration, and, implementing this type of cooperation will complement collaboration activities being carried out by development banks of the region.

ALIDE ACTION IN PROMOTING AGROINDUSTRIAL INVESTMENT PROJECTS AND OPPORTUNITIES

As a representative of the development banking industry in Latin America and the Caribbean, ALIDE has been working extensively in promoting investment projects and opportunities, particularly in agroindustry. ALIDE also coordinates financial, technical and entrepreneurial cooperation among development banks, and between these banks and international financing and investment institutions, through the work of its Technical Projects and Investments Committee and other coordination mechanisms and joint actions that ALIDE carries out in the region.

ALIDE's work includes identifying investment projects in the countries of the region, which are of interest to the member institutions of the Association, as well as to other organizations that promote investments in their respective countries. It also encourages a group of international

financing and investment institutions, identified by ALIDE, to participate in these projects, together with financial institutions and entrepreneurs of the countries in the region and outside the region.

Since 1980, the General Secretariat of ALIDE and the Projects and Investments Committee have periodically gathered information on investment projects of different economic sectors, mainly agroindustry, in order to systematize this information and disseminate it to financing groups and entrepreneurs interested in participating in the implementation of this type of project in our countries.

ALIDE holds annual meetings of its general assembly, which bring together representatives from the international and Latin American banking communities, in order to promote investment initiatives. This includes the presentation of the main characteristics of and the climate for investment in projects that are especially selected for this occasion, as well as presentations by representatives from financial institutions and groups of investors who are interested in participating in investment projects in the region. Subsequently, bilateral negotiations will be held among the participants in order to bring together international financing and investment institutions and entities that promote the projects. In 1985, at a meeting in Cartagena, Colombia, the Board of the Cartagena Agreement and the Andean Development Corporation sponsored a session for investors in the Andean Group projects. During this session, 69 projects, from the 5 countries of the Andean subregion, were presented; 33 of these projects were for the agroindustrial sector, for a total investment of US\$136,000,000.

In 1986, at the Mexico meeting, 79 project profiles from 6 Latin American countries were presented, 53 of which were agroindustrial projects for a total investment of US\$296,000,000; 91 projects were presented for the 5 Central American countries, 17 of which were for the agroindustrial sector, with a total investment of US\$75,000,000. At the meeting of the General Assembly of ALIDE, held in Lima in 1987, 121 investment projects were presented, 55 of which were for the agroindustrial sector, with a total investment of US\$141,000,000.

More recently, in May, 1988, an investment and project session was held during the Eighteenth Assembly of ALIDE, in Buenos Aires, Argentina. At this time, 113 investment projects were promoted for 15 Latin American and Caribbean countries. Of these projects, 48 were aimed at agroindustry, with a total investment of US\$207,000,000. Foreign co-participation in these projects included long-term financing, contributions to capital stock (joint ventures), provision of machinery, equipment and technology, access to markets and technical assistance, among others.

In 1986, the project and investment network was established in order to broaden the scope of ALIDE's work in promoting projects. This network serves as a management, coordination and joint action mechanism between the General Secretariat of ALIDE and the institutions that belong to the Association, and helps execute activities to promote projects and investments carried out by development banks. The network has been in operation since then and, to date, is linked up to 21 national projects in 19 Latin American and Caribbean

countries. The General Secretariat of ALIDE acts as regional coordinator, through its promotion service for projects and investments. This network has made it possible to identify, channel and promote the majority of the investment projects received, through ongoing regional coordination between the General Secretariat of ALIDE and the national project linkages in the respective countries, as well as through the national project and investment networks established in these countries. Officials from project promotion and financing divisions of member financial institutions and other public and private organizations involved in promoting investments in their respective countries participate in these networks.

In addition to the establishment of the Network, and the activities that are being developed, both at the regional level and within the respective countries, and as a complement to the same, the General Secretariat of ALIDE has implemented the Financial and Technical Information Service (SIFT) for Projects and Investments, which is available not only to members of the Association, but also to all economic agents interested in promoting and financing investment projects and opportunities that contribute to the economic development of the countries of Latin America and the Caribbean. Through SIFT, ALIDE continually provides the users with specialized and duly systematized information on investment opportunities; international sources of financing and investment; technological information; legal information; and documentary-bibliographical statistical information.

During the first year of operation, SIFT received and responded to 150 inquiries from members of the Association, international banks, investors and entrepreneurs. Of this number, 80 were from institutions and investors from Europe, Asia, Africa and North America interested in co-participating in or financing the import needs of 59 investment projects for Latin America and the Caribbean. Total investment for these projects was between US\$800,000 and US\$10,000,000.

Among these projects, mention should be made of those in the agroindustrial sector such as fruit juices, shrimp production, sugar mills, flours, gelatine, natural colorants (bixina), citrus fruits, palm oil; as well as projects for the manufacturing and tourist industries. All of the inquiries were handled in a timely manner, providing information available on the SIFT data base, or by channeling the inquiries directly to the promoters and entrepreneurs who execute the projects.

Likewise, technological inquiries were received in regard to the production of sorghum-based alcohol, the production of cardamom, edible mushrooms, charcoal, and trout farming, etc. Information was provided on these matters in coordination with the network links of ALIDE's Project and Investment Network and Latin American and international institutions that specialize in providing technological information, and which are in contact with ALIDE through SIFT.

In regard to international sources of founding and investment, ALIDE keeps up-to-date information on the characteristics, experiences, services offered, production sectors of interest, types of projects, etc. of 73 international financing institutions, 46 of which are interested in

co-participating, in various ways, in investment projects in the agroindustrial sector. Appendix 1 presents a list of these 46 international financing institutions.

As of this year, given the importance of promoting projects and investments, particularly in the agroindustrial sector, and in order to profit from the experience accumulated in this field, ALIDE has established a specialized project investment management service which will be available to project promoters and investors, both in the region and outside the region. This service aims to enhance and upgrade promotion actions for ALIDE projects, directing the Association's work toward identifying more specific and individualized investment opportunities in the countries of the region, and providing follow-up and supervision for the proper preparation of these projects, until they have fulfilled all the requirements established by the financing and investment source that is interested in a specific project or group of projects. In this way, ALIDE will provide potential investors with a project or group of projects tailored to their needs and in accordance with their specifications as to areas of interest and types of projects in which they could participate. This will make it easier for them to decide whether to invest in these projects, since they will be guaranteed that the projects are properly designed and formulated and that they will have all the information they need to make the corresponding decision.

This new service, which will be provided by ALIDE as the result of a cooperation agreement to manage investment projects, covers the following areas: (a) identification of investment projects which, due to their characteristics and location, comply with predetermined criteria and which interest and benefit the investment source requesting the project; (b) analysis as to whether the information on the projects proposed is timely and valid; (c) additional information on the investment climate, and the laws and regulations governing foreign investment in the countries and the sectors in which projects will be carried out; (d) arrangements with national entities and institutions to update information on the projects, when deemed necessary; (e) identify, manage and/or contract specialized services, at the expense of the applicant, to update and/or complement the information available on the project, subject to approval by the interested parties as to the general terms, time limit and consultant fees for each case; and (f) identify and channel contacts, and make arrangements with national enterprises that are interested in participating in these projects. In this way, ALIDE will be able to provide infrastructure and technical capability and share the institutional experience in investment projects it has accumulated over the years. This will lead to better understanding among the interested parties, and, ultimately, to the implementation of investment projects that contribute to the economic development of our countries.

Also during this year, ALIDE will promote the signing of technical cooperation and financial agreements between development banks and international financing institutions in order to identify specific areas and sectors for investment projects promoted by development banks, thus promoting more active participation by international financing institutions, entrepreneurs and clients interested in investment opportunities in the countries of the region. With a view to promoting the transfer of know-how

and intraregional technical services, ALIDE is establishing a directory of regional consultants, which will include internationally prestigious institutions and specialists that will provide advisory services for formulating and implementing investment opportunities in the countries of the region.

A meeting on the promotion of investments and entrepreneurial cooperation will be held during the next Regular Meeting of the General Assembly of ALIDE (ALIDE XIX), to be held in Sao Paulo, Brazil on May 30, 1989. This will provide an ideal opportunity to present a select group of investment projects from the countries of the region to the representatives of financial institutions, entrepreneurial groups and international banks participating in this event. In early March, 137 investment projects had already been identified, 75 of which correspond to the agricultural, rural development, agroindustrial and fisheries sectors (See Appendix 2), thus underscoring the importance which the countries of the region give to agroindustrial activities, as well as the interest shown by promoters in carrying out these investment initiatives.

In addition to its other programs, which complement the aforementioned activities, ALIDE will continue to prepare studies and research dealing with various aspects of making investments in Latin America, particularly the study on mechanisms for joint operations to implement investment projects, primarily agroindustries. ALIDE will also continue to provide in-service training to institutions with experience in this area; hold specialized technical meetings; provide technical assistance at the request of the member institutions; and disseminate information and selected documents on development, promotion and financing related to the agroindustrial sector, given agroindustry's important role in the integration process in the countries of the region and the potential of Latin America for gaining access to international markets that have a demand for agroindustrial commodities, due to both the volume and quality of its natural resources

FINAL COMMENTS

The following is a summary of the proposals presented during the development of this document:

1. The important role which agroindustry plays in the development process of the countries of the region is a well-known fact. Agroindustry uses manufacturing processes to adapt or process agricultural raw materials and can, therefore, encourage agricultural growth and increase production by modernizing production processes and introducing suitable technology, thus promoting rural development, generating jobs and increasing national food security.

Moreover, agroindustry can become a driving force for the economy as a whole by generating more foreign exchange as a result of increasing the export supply of agroindustrial goods, as well as by saving foreign exchange through import substitutes, especially for food products.

2. Activities in the agroindustrial sector provide broad coverage and various systems for integration with other economic sectors, by providing direct or indirect linkages with agriculture, or vertical or horizontal integration with the manufacturing industry. Thus, agroindustry is a strategic step in reaching greater levels of economic development.
3. The creation of agroindustrial enterprises in areas near the sources of production of inputs and other agricultural products provides more possibilities for initiating more complex phases of manufacturing production. This economic activity is also extremely important because of its ability to generate jobs, particularly in small- and medium-sized enterprises. Agroindustry also encourages the search for and dissemination of scientific and technological knowledge applicable to the sector. It also provides training for the human resources of these regions. With the increase in investment opportunities in rural areas and the creation of new sources of employment, the agroindustrial process tends to increase income in rural areas, decrease migration to urban areas, discourage the agglomeration of industries and encourage rural development.
4. Within this context, the agroindustrial system is defined as an integrated economic, social and political process. Therefore, the planning, coordination, development, supervision and evaluation of the agroindustrial process must be promoted and intensified. An institutional infrastructure must be developed that can design a strategy compatible with national goals and priorities and which will respond to financing needs and the complementary credit demands of agroindustrial development.
5. The general objectives of agroindustrial policies and the means and instruments used in achieving these objectives must be clearly defined. There must also be a political will to make the agroindustrial development process workable and give it continuity. Agroindustry must be seen as an integrating process, one that begins with agricultural activity, moves on to the processing of agricultural inputs, and ends with the marketing of same.
6. The development of agroindustry calls for a series of financial measures. Medium- and long-term financing is needed for investments related to setting up or expanding agroindustrial plants, while short-term financing is needed to purchase inputs and raw materials needed to maintain an adequate level of agroindustrial economic activity. Storage for inputs and perishable agricultural products used in agroindustrial processing must be available so that the production cycle is not interrupted. This requires a larger working capital than what is normally needed in other industrial sectors.
7. In order to meet these demands, development banks must use innovative criteria to satisfy the needs of the sector. In recent years, progress has been made in this direction, although there is still much to be done. The following guidelines should be kept in mind:

- a. Establish specific credit programs to encourage agroindustry, that take into consideration the unique characteristics of this economic activity;
 - b. Include medium- and long-term financing for both investments in agroindustrial enterprises and the provision of infrastructure such as warehouses, transportation and marketing;
 - c. Establish favorable credit programs, in terms of interest rates, time limits and collateral;
 - d. Encourage co-financing, with the active participation of commercial banks;
 - e. Consider acquiring shares in capital stock in agroindustrial enterprises and establishing collateral reserve funds or agroindustrial credit insurance systems;
 - f. Act with the necessary flexibility and streamline banking formalities;
 - g. Disseminate information on the services available by the development banks.
8. In order to increase the productivity of agroindustrial enterprises and improve the level of return of the loan portfolio, financing must be complemented by non-financing support services, technical assistance and marketing. All of these must take into consideration the specific situation and the concrete needs of the different production units, particularly small- and medium-scale units.

Some of the complementary credit services that development banks could offer are managerial assistance in entrepreneurial and administrative matters; advisory services in selecting and using the proper agroindustrial technologies; providing suitable information and research services on the possibilities for production, industrial handling and processing techniques, and potential providers of technology. Due to different constraints, these services are not usually available to most agroindustrial entrepreneurs.

9. On the other hand, development banks can help create agroindustrial enterprises by identifying new and profitable investment opportunities and by attracting potential investors. Likewise, development banks should and must participate in setting up a suitable marketing system that helps overcome the difficulties of providing raw materials and access to markets for finished products.
10. Agroindustrial development financing can also profit from the important contribution of external cooperation through various types of financial institutions such as multilateral financing organizations, official aid agencies of industrialized countries, export credit organizations and

international commercial banks, which, to a lesser or greater degree, have experience in the field and can participate in developing the agroindustrial sector in our countries.

11. With a view to encouraging greater participation of all the investment institutions located throughout the region, ALIDE has been carrying out different activities aimed at coordinating and encouraging financial cooperation through the participation of its member development banks and international financing institutions. Over the past years, ALIDE, through its technical committee on projects and investments, has focused its activities on gathering and disseminating information on the characteristics of investment projects promoted by Latin American development banks and on identifying potential international financing sources. The majority of these activities deal with investment possibilities in the agroindustrial sectors of Latin American countries.
12. ALIDE finds it necessary to strengthen the available infrastructure in order to carry out its work of promoting projects and investments in the region. Therefore, it recently created a network of projects and investments to facilitate and improve the conditions needed to establish business opportunities in various economic sectors, among them agroindustry. These opportunities will be promoted by ALIDE's member development banks, through the Financial and Technical Information Service (SIFT) for projects and investments.



APPENDIX

THE FINANCING OF AGROINDUSTRY IN SELECTED COUNTRIES

ARGENTINA

In Argentina, food processing contributes 30% of GDP, and agriculture only 11%. In spite of this situation, there is no direct link between the credit and agroindustrial systems, nor is there a financial institution specializing in agroindustrial credit. The government offers lines of specialized credit for industry, trade and/or agriculture. Because there are no integrated services to foster agroindustrial growth, the agroindustrial sector must use these lines of credit to finance the entire production process.

In order to consolidate the changes imposed by the Plan Austral, industrial policy includes actions which, as part of the overall objective of rebuilding the production apparatus, are aimed at restructuring and modernizing specific industrial sectors (agroindustry, siderurgy, petrochemicals, aluminum, etc.), and at creating and operating new and highly innovative industries (microelectronics, biotechnology, robotics, etc.), in order to increase the competitiveness of national industries on the international markets.

The mechanisms the government plans to use to foster growth are based on the policy which promotes and modernizes small- and medium-scale enterprises; the policy which encourages industrial exports; and the policy on industrial promotion and technological development. Based on this growth strategy, the National Development Bank, which will make major loans to the sector over the medium and long term, has set the following objectives for itself: to grant a larger percentage of total loans made by the Bank, to small- and medium-scale enterprises; to promote industrial exports; and to promote technological development.

In order to achieve the proposed objectives, the National Development Bank has put a broad range of instruments into effect to bring about economic development. The support being given to agroindustry is based on the recognition that forward-backward integration exists in the sector, and, for the promotion of agroindustry, certain lines of credit set aside for industry, agriculture and foreign trade have been opened up to this sector. The Bank has its own resources, those provided by the Central Bank, IDB and the World Bank, and lines of credit with commercial banks in developed countries to obtain working capital.

With regard to agroindustrial investments geared to foreign trade, the National Development Bank fosters technological development and the funding of same.

BRAZIL

As part of general economic policy guidelines adopted in Brazil, the formulation of regional and national agroindustrial policies has been given priority.

Inasmuch as the level of integration achieved in the Brazilian economy over the last decade brought about a transformation of the primary sector, especially in the area of backward-forward linkages between agroindustry and other sectors, it should be mentioned that almost 30% of the total value of industrial conversion is directly linked to agriculture, that food processing contributes 32% of GDP, and that agriculture contributes only 11%. In this way, the stages of marketing, storing and processing agricultural commodities have become more and more important in relation to the agricultural component and the policies to provide funding and support to the sector.

In the case of Brazil, there are national programs administered by the Central Bank; national lines of credit and funds administered by the National Economic and Social Development Bank (BNDES) and channelled through the financial system; and programs and activities for regional support provided by the Regional Bank for Economic Development in Southern Brazil, an important agroindustrial region. In addition, the National Development Fund (FND) is working in cooperation with the Bank of Brazil on the storage sub-program of an agroindustry and agricultural infrastructure program.

Below is a list of the efforts being made in support of agroindustry by the institutions in question:

CENTRAL BANK OF BRAZIL

This bank has a National Agroindustrial Program - PRONAGRI -, which, using its own funds and those provided by the World Bank, finances agroindustrial and related activities such as rural production (calcium, fertilizers, implements and, in general, working capital), funding of farm-level storage facilities, and even credit to individuals. The program is involved in 64% of the investments and allows ten years (plus a three-year grace period) for payment, at an interest rate of 5%, adjusted every six months. The loans are issued through the development banks and the investment banking system.

NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT BANK (BNDES)

The BNDES system provides most of the funds for the government's investment policies. Inasmuch as it provides resources to many sectors, it is directly involved in the process of modernizing the economy. Outstanding among its efforts has been its continued support of programs and projects aimed at reducing regional imbalances, especially in northeastern and northern Brazil, in order to promote industrialization.

Among the numerous promotional and financial activities of the BNDES, worthy of special mention are loans and support for agroindustry. The Bank is also responsible for managing and applying Brazilian government resources and programs designed to develop the sector and which are channelled through the development banks and other institutions. Among these are:

1. POC-FINEM: Implements projects for the purpose of establishing, expanding, relocating and improving the technological pattern or financial strengthening of industrial, commercial or service enterprises whose voting stock directly or indirectly belongs to persons residing in Brazil.
2. PROMICRO: Provides funding for fixed, mixed and working capital investments for industrial, commercial and service microenterprises with annual sales of less than 25,000 OTNs (Treasury Bonds) and for commercial and trade enterprises with annual sales of up to 10,000 OTNs, which do not belong to any economic group.
3. PROINFO: Provides funding for fixed, mixed and working capital investments for national enterprises which produce and use computerized information systems. These must be privately-owned national enterprises; federal, state or municipal agencies; or educational and research institutions.
4. BNDES-RURAL: Provides funding for fixed investments and investments in infrastructure designed to promote the integrated use of production factors available in rural areas, in order to increase the production and productivity of those individuals and corporations that work the land for profit, and of its cooperatives. BNDES-RURAL finances primarily the production of raw materials for agroindustry, but not the acquisition of land and cattle for fattening.
5. FINAME-BNDES- SMALL AND MEDIUM SCALE ENTERPRISES: Provides funding for new machinery and equipment for industries and basic services which are more than 90% Brazilian. Resources are allocated to national enterprises involved in extractive or transformation industries which meet the following requirements:
 - a. Net sales during the preceding year of less than 85,000 MVR (greatest reference value), in effect at the end of that year
 - b. Are not members of any enterprise with a net worth of more than 1,000,000 OTNs
 - c. Are not directly or indirectly associated with or controlled by enterprises not covered in item a.
 - d. a maximum of 80% of whose equity capital belongs, directly or indirectly, to individuals residing in Brazil.

6. **FINAME/BNDES (LONG TERM):** Provides funding for the purchase of machinery and equipment which is produced by firms which are more than 85% Brazilian (in value and weight) and which is applicable to; (a) mining or processing; (b) basic services; (c) agricultural production; (d) transportation, by highway, of cargo and passengers; and (e) other services. This machinery and equipment is to be used by corporations headquartered in Brazil which are controlled by national capital, users, renters or manufacturers of goods, who benefit from funding.
7. **FINAME-Special:** Provides funding for new machinery and equipment which is produced by firms which are more than 85% Brazilian, and which meets one of the following requirements: a) made to order and, when compared with that produced in the country, is technologically superior or manufactured by firms which have a greater degree of Brazilian participation, and b) is competing in international bidding and is to be used on projects of benefit to the national economy.

There is also **FINEP-ADTEM**, the objective of which is research and development of new products and services; absorption and adaptation of imported technology; establishment of enterprises dedicated to the development and marketing of products, processes and services; and the creation of technological research centers. It works with national enterprises in priority sectors of the National Development Plan.

REGIONAL BANK FOR ECONOMIC DEVELOPMENT IN SOUTHERN BRAZIL (BRDE)

This development bank operates in the states of southern Brazil (Rio Grande del Sur, Santa Catalina and Parana) with the aforementioned BNDES funds, its own resources and those of other institutions, on behalf of agroindustrial development.

The support the BRDE lends to the sector differs from that provided by other financial institutions in that the Bank has highly-specialized technical personnel who evaluate the socioeconomic aspects of the projects studied, and its support reaches down to the level of individual farms (financed by BRDE), through the transfer of know-how and techniques.

The financial assistance of the Bank is directed at selected segments of agroindustry, the production processes of which are studied up to and through marketing, to avoid possible intersectoral bottlenecks. Some of the financial and promotional instruments the Bank offers to agroindustry are:

- Provision of collateral to ensure domestic supply services, bidding, supply services that will ensure payment to suppliers, compliance with government requirements, and guarantee of final execution.
- Program in support of the swine industry: credit for financing refrigeration facilities, as technical support to hog farmers, an example of agroindustrial integration.

- Program in support of storage: most of the storage capacity is found in cooperatives in southern Brazil which were financed by BRDE.
- Poultry: Integration was promoted on farms dedicated to the production of fowl, eggs and feed, and to incubation and slaughter.
- Rice: BRDE promoted the verticalization of rice production, encouraging cooperatives to begin using procedures for granulating and parboiling rice.
- Milk: Provided funding for activities ranging from reproduction of animals for breeding to the installation of refrigeration facilities.
- Agricultural Lime Program (PROCAL): Support primarily at the level of cooperatives.

In addition to these, BRDE also participated in numerous activities in support of the following agroindustrial subsectors: vegetable oils, preserves and, recently, the industrial complex founded on apple production.

With regard to funding sources and the methods employed by BRDE, as the main instrument for agroindustrial growth, mention should be made of resources from the Central Bank (including funds from the national treasury, the World Bank and the Inter-American Development Bank), and those from the BNDES (whose funds for agroindustry come primarily from mandatory institutional savings).

COLOMBIA

During this decade, agroindustrial activity has become a priority for the government of Colombia because of its ability to provide interrelationships between the agricultural and industrial sectors. Because of the process of integration which occurs as a result of agroindustry, it has become a leading sector, affecting many agricultural processes and the national food system, which figures prominently in the possibilities for economic and social development of the country.

At the present time, agriculture provides 22% of the GDP in Colombia. If agroindustry and the marketing of its products are added, the figure rises to 37%. It provides 70% of exports and approximately 40% of direct employment. The total value of agroindustrial production for 1987 was approximately 555 billion pesos, 75% of which was produced in food-related industries.

The application of a development strategy for the sector has been proposed in different plans since 1970. In these plans there have been no specific policies for funding agroindustry, even though incentives have been provided for both industry and agriculture.

Since the creation of the lines of external and domestic credit administered by the Bank of the Republic, agroindustrial projects have been financed, affecting especially the food, beverage and tobacco subsectors. Also, the Agrarian Credit Agency, with its own resources and those of the Bank of the Republic, has granted credit to agroindustry.

Below is a list of the funds administered by the Bank of the Republic and the Agrarian Credit Agency which are related to the agricultural sector.

BANK OF THE REPUBLIC

The Bank of the Republic, in its capacity as central bank, acts as lender of last resort, administering economic development funds such as those for agriculture, industry, private investment, enterprise capitalization and export promotion (PROEXPO); as well as external lines of credit such as overall credit and a line for development (PRODESARROLLO), both from the International Bank for Reconstruction and Development (IBRD), all intended to provide the agroindustrial sector with assistance in the production, domestic marketing, storage and transformation stages, by providing necessary infrastructure.

AGRARIAN, INDUSTRIAL AND MINING CREDIT AGENCY

The Agrarian Agency is the major development institution in Colombia. It acts as a development bank, a commercial bank, a shareholder in agricultural input enterprises, an insurance company, and input distributor and as a family subsidy agent.

Among the numerous lines of agroindustrial credit, the social well-being credits aimed at the PYME include projects for infrastructure related to water, electricity, and highways and other roads, all of which are needed for the development of agroindustry and marketing.

The Agency, with its own funds, finances agroindustry at interest rates of between 18 and 24% (nominal) depending on the gross assets of the entrepreneur. It also lends resources from the Bank of the Republic, such as the FFI-FIP, at nominal rates of between 30 and 33%, and the IBRD Pro-development Fund at differential rates of between 24 and 26%.

In terms of the number and total value of loans made, the Agrarian Agency worked primarily with food-related agroindustries, with leather in second place and timber in third. Consequently, the general policy of the Agrarian Agency is reflected in these indicators, showing the preference given to funding activities related to processed and unprocessed food, and to support for the small farmer in the development of agroindustrial projects.

COSTA RICA

NATIONAL BANK OF COSTA RICA

The primary objective of the National Bank of Costa Rica is to provide financial support to various sectors of the economy, especially agriculture. It also supports agroindustry, which produces social benefits, while ensuring that the institution makes an acceptable profit.

The Bank provides direct financing to agricultural and agroindustrial enterprises or groups organized into corporations and cooperatives. Over the last few years, more than 90% of the loans granted were for activities related to agriculture, livestock and industry, including support to agroindustry.

The National Bank advises their clients in the preparation of the project, helps them obtain credit and provides them with technical assistance. The assistance given during the preparation of the projects is aimed at ensuring that the resources be used on projects that are technical in nature and financially profitable and, whenever possible, that deal with the cultivation of export crops, which will create jobs.

INDUSTRIAL DEVELOPMENT FUND (FODEIN)

FODEIN was created with resources from the World Bank and the Central Bank of Costa Rica to fund industrial projects, including agroindustrial activity. It acts as a special trust fund of the Central Bank.

In the agroindustrial sector, FODEIN funds primarily those projects which include only the processing or manufacturing stage of the complete agroindustrial process. Even though this is a restriction, experience shows that most agroindustrial enterprises are set up independently of the agricultural and industrial stages, or formulate projects in which raw materials are acquired from independent farmers.

Of the total number of projects for which FODEIN has provided financing in recent years, approximately 50% were for activities related to agroindustry, and aimed at financing the processing of agricultural raw material, even if they had been processed to some degree previously. Funding has also been provided to small-scale industries, some of which use agricultural products.

CHILE

In 1974, a set of reforms was undertaken in Chile to implement a social market economy, by reducing State intervention and putting national products up against stiffer competition. In recent years, policies have been adopted which are aimed at modernizing the Chilean economy, especially the agroindustrial sector.

PRODUCTION DEVELOPMENT CORPORATION (CORFO)

CORFO is linked to the State through the Ministry of Economy, Development and Reconstruction, and its basic duties are: research on and development of natural and human resources; management and administration of its member enterprises, and as a development bank, providing funding for investment projects. To do so, it uses its own resources and those from banks and international organizations.

Through its credit operations, CORFO serves the needs of sectors such as agriculture, agroindustry, industry, livestock, telecommunications, energy, mining and foreign trade. The Corporation's credit programs have already become multisectoral in nature.

Credit provided by CORFO stipulates different payback periods, interest rates and conditions, depending on the nature and volume of the projects and programs. Most are medium- and long-term loans with real interest rates and amortization payments.

In accordance with government policies, CORFO offers several credit schemes to cover all the stages of agroindustry. Some of these are:

- Overall Multisectoral Credit Program (CORFO-IDB II). The objective is to grant loans to finance fixed assets and working capital. It covers 75% of the investment of the project.
- Reinvestment of Program Recoveries (CORFO-IDB I). The objective is to finance artisanal fishing.
- CORFO-World Bank-SERCOTEC Program. The objective is to support small- and medium-scale industry and agroindustry. Worthy of special mention is PAEM, for microenterprises, with preferential rates.
- IBRD-CORFO-Central Bank Financial Intermediation Program. The objective is to provide a new financial operating structure for enterprises in the industrial, agroindustrial and mining sectors. The program is administered by the central bank, and CORFO acts as financial broker. The primary goal is to reduce the financial burden of the enterprises.

Through its research institutes, CORFO has conducted regional-level technological studies of and economic research on the agroindustrial sector in order to create new agroindustries and strengthen those already in existence, increase their productivity, and set investment priorities. It has also conducted studies on production costs, markets, marketing and transportation.

The Natural Resources Information Center (CIREN-CORFO) also carries out other development activities such as CORFO support for the Production Development Fund (FDP), which is a mechanism for the promotion of technology. There are also numerous research and development programs and studies in agriculture, agroindustry and forestry which contribute to the economic development of the sector and the country as a whole.

MEXICO

AGRICULTURAL TRUST FUNDS (FIRA) - BANK OF MEXICO

FIRA is a trust of the Bank of Mexico (Central Bank), in its role as trustee of the Government, and of the Ministry of Finance and Public Credit, in its role as governing body of the financial sector. FIRA is made up of

three trust funds: the Fund to Guarantee and Promote Agriculture, Livestock and Poultry (FONDO); the Special Fund for the Financing of Agriculture (FEFA); and The Special Technical Assistance and Endorsement Fund for Agricultural Credit (FEGA).

Among FIRA's objectives are: to increase the participation of banks in providing credit to agriculture; to improve the incomes and living conditions of farmers; to promote the production of staple foodstuffs; to foster the export or import substitution of agricultural commodities; to create jobs; to assist in the formation of capital in agriculture; and, to increase the productivity of agricultural and agroindustrial enterprises.

FIRA offers financing through lines of credit for loans or discounts to banks in order that they, in turn, may make loans to farmers. Loans made by FIRA are for agriculture and fishing, and the industrialization and marketing of their products.

Loans granted by FIRA are classified as:

- Working capital (short term), covering the working capital needs of the enterprises, with pay back periods dependent upon the productive capacity of the enterprise, but not to exceed three years;
- Collateral (short term), intended to facilitate the marketing of products, generally with a pay back period of six months.
- Financing (medium and long term), intended to finance fixed investments in the enterprises, with pay back periods dependent upon the useful life of the investment and the enterprise's ability to pay, but not to exceed fifteen years. Grace periods of up to three years to initiate payment of capital may be authorized.

FIRA supports government plans through special credit programs, such as:

- Special support to farmers and agroindustrial enterprises with problems of liquidity, which permits a restructuring of bank liabilities which are negatively affecting the farmers' capacity to make payments. The goal is to give those enterprises with problems of liquidity time to get back on their feet so that they can continue to receive credit and be a part of the national economy.
- Support to increased corn and bean production, which offers credit and technical assistance, through improved technology, for increases in production and productivity;
- Program for production of improved seeds, which grants working capital and financing loans, as well as technical assistance and training, to intensify the production and processing of improved seeds for planting staple food grains, edible oils and forage;

- Program to promote family dairy farms and to support dairy farming in tropical areas, which offers support to dairy farmers in temperate and tropical regions, respectively; and
- Program for drilling and equipping wells, designed to support low-income farmers in bringing irrigation to agricultural areas dependent on rain.

PARAGUAY

Agroindustry in Paraguay is divided into subsectors: foodstuffs, beverages, tobacco, textiles and clothing, leather and fur, footwear, wood and furniture; with foodstuffs, textiles and wood being the most important.

While it is true that during the years of rapid growth in the economy, agroindustries, with a few exceptions, did not grow as rapidly as other segments of the economy, it is also true that their growth did not decline abruptly in the years of reduced growth. This is attributable to the fact that a large part of agroindustrial production is aimed at the domestic market for staple consumer goods, which offers few alternative goods.

There are two categories of enterprises within this sector: the small- and medium-scale enterprise, which are the most numerous and have low levels of technology; and, larger enterprises, which are fewer in number, work with higher levels of technology, have more efficient production structures and make a major contribution to the total volume of production. This sector employs approximately 24% of the economically active population of the country.

Because there are so many small- and medium-scale enterprises, and because they are scattered throughout the country, agroindustry is not integrated into production complexes, which would make it possible to exploit all major products and their by-products in related activities. In addition, the export industry, and especially agroindustry, faces real market problems because of international competition.

Until a few years ago, the national financial system loaned very little money to agroindustry. Most agroindustrial entrepreneurs used their own capital and/or non-bank loans to finance their operations. In recent years, however, some institutions have become more involved in financing the sector.

NATIONAL DEVELOPMENT BANK

The main objective of the National Development Bank is to promote intense economic development by supporting the formation and consolidation of enterprises dedicated to agriculture, agroindustry, industry and tourism.

Thus, it grants short-, medium- and long-term loans to individuals and private enterprises. These loans are aimed at increasing production and productivity, promoting marketing services, and covering the services required for foreign trade.

The National Development Bank has a program for the promotion of agriculture, which began in 1963 under the auspices of the Inter-American Development Bank. The program is designed to aid the small- and medium-scale farmer in expanding and consolidating production capacity through the use of new technology, streamlined application of financial resources, and proper use and conservation of soils.

At the present time, this program receives funding from the Inter-American Development Bank, the International Fund for Agricultural Development (IFAD) and the Kreditanstalt für Wiederaufbau (KfW).

Most of the technical and credit assistance provided by the Bank went into land preparation, planting costs, fertilization, construction and facilities, purchase of machinery and equipment, and the establishment of permanent and semi-permanent crops.

The Bank also has a national wheat program, which has benefitted the sector through mechanization of the production process, incorporation of new and better technology, streamlining in the application of the factors, and increased agricultural production.

Not only has this saved foreign exchange, as a result of self-sufficiency in wheat, but it has also revitalized capitalization of agroindustry.

LIVESTOCK FUND-CENTRAL BANK OF PARAGUAY

The Livestock Fund is the major financial and technical institution in the country dedicated to the development of the livestock sector by supporting small-, medium- and large-scale ranchers. The objective of the loans is to increase investments in infrastructure improvements, and in genetic, nutritional and health improvements, all to obtain higher levels of productivity and production on the ranches.

Among the more important items financed by the Fund are beef cattle, pastures, fences, purchases of machinery and equipment, construction, etc. The technical assistance provided by the Fund is also aimed at increased levels of production and productivity.

PERU

The evolution of the production structure of agroindustry, with a few exceptions, has not included the farmer. In Peru, there is no agroindustrial sector per se, and few enterprises could be called agroindustries. There are actually two separate sectors; agriculture and industry, including the milling industry and the balanced feeds industrial group.

The limited development of agroindustry in Peru is attributable, among other factors, to stagnation in the supply of agricultural raw materials; marketing problems; limited availability of financial resources; inexistence of permanent credit programs; and the concentration of enterprises in

metropolitan Lima, etc. These factors have led to underuse of installed capacity, which produces higher production costs and final prices, resulting in even less demand for agroindustrial products.

In general, credit support for agroindustry from development banks is not significant, which makes it difficult to properly address the problems of the sector.

INDUSTRIAL BANK OF PERU

In recent years, less than 5% of the loans made by the Industrial Bank of Peru (BIP) have been for agroindustry. These loans have been to expand installed capacity and, to a lesser extent, to serve as working capital. The Bank has no specific programs for agroindustry. Any support given to agroindustry is part of the general support given to industry.

AGRARIAN BANK OF PERU (BAP)

The agroindustrial support programs of the BAP are intended to contribute to the generation of rural employment, to improve the standard of living and to achieve greater value added in agroindustrial production. There are four agroindustrial support programs: pre-investment; investment; agroindustrial agreements; and entrepreneurial development.

The line of credit for pre-investment is applied to capitalization loans for pre-feasibility, feasibility and market studies of investment projects. The program covers 100% of the cost of the studies.

The BAP identifies the agroindustrial potential of each zone and prepares profiles for interested investors.

The investment program gives financial support to projects involving the expansion, remodeling and/or installation of small- and medium-scale processing plants, and management and/or conservation of agricultural commodities, preferably through farmers' organizations.

Such studies should assess, in addition to their technical, economic and financial feasibility, the impact on supply and demand, with emphasis on stabilizing prices, generating jobs, improving farmers' incomes and maximizing the use of resources in the zone.

The agroindustrial agreements program channels credit to farmers (agriculture and livestock) and agroindustries for the purchase of raw materials agreed upon by the farmer and the processing enterprise by virtue of production and supply contracts.

The entrepreneurial development program supports management at the enterprise level, by providing guidance as to the administration and organization of agroindustrial production units.

APPENDIX 1

**INTERNATIONAL FINANCING AND INVESTMENT INSTITUTIONS
INTERESTED IN CO-PARTICIPATING IN AGROINDUSTRIAL INVESTMENT
PROGRAMS IN LATIN AMERICA AND THE CARIBBEAN**

- Kreditanstalt für Wiederaufbau (KfW), Federal Republic of Germany
- German Financing Corporation for investments in developing countries (DEG), Federal Republic of Germany
- Westdeutsche Landesbank Girozentrale (WestLB), Federal Republic of Germany
- Banco de la Nación Argentina, Argentina
- Banco de la Provincia de Buenos Aires, Argentina
- Oesterreichische Landerbank Aktiengesellschaft, Austria
- Société Belge d'Investissement International (SBI), Belgium
- Banco do Brasil S.A., Brazil
- Bank of Montreal, Canada
- The Export-Import Bank of Korea, South Korea
- The Industrialization Fund for Developing Countries (IFU), Denmark
- Institute for Ibero-American Cooperation (ICI), Spain
- Agency for International Development (AID), The United States of America
- Bankers Trust Company, The United States of America
- Barnett Banks, Inc., The United States of America
- Export-Import Bank of the United States (EXIMBANK), the United States of America
- Overseas Private Investment Corporation (OPIC), The United States of America
- The First Boston Corporation, The United States of America
- Finnish Export Credit Ltd. (FEC), Finland
- Nordic Project Fund, Finland
- Banque Arabe et Internationale d'Investissement (BAII), France
- Banque Worms, France
- Dutch Financial Corporation (FMO), The Netherlands
- Ministry of Foreign Affairs-Industrial Development Programme (DST/ID), the Netherlands
- Consorzio di Credito per le Opere Pubbliche (CREDIOP), Italy
- The Export-Import Bank of Japan, Japan
- The Overseas Economic Cooperation Fund of Japan (OECF), Japan
- National Bank of Mexico, S.N.C. (BANAMEX), Mexico
- Nacional Financiera S.N.C., Mexico
- National Development Bank (BNF), Portugal
- Government Development Bank for Puerto Rico, Puerto Rico
- Commonwealth Development Corporation (CDC), The United Kingdom
- Libra Bank PLC, The United Kingdom
- S.G. Warburg & Company Ltd., The United Kingdom
- Skandinaviska Enskilda Banken, Sweden
- Swedish Fund for Industrial Cooperation with Developing Countries (SWEDFUND), Sweden
- Ljubljanska Banka-Združena Banka, Yugoslavia

- Yugoslav Bank for International Economic Cooperation, Yugoslavia
- Latin American Arab Bank (ARLABANK)
- International Finance Corporation (IFC), World Bank
- Euro-Latin American Bank PLC (EULABANK)
- European Investment Bank (EIB)
- The OPEC Fund for International Development
- London & Continental Bankers Ltd., The United Kingdom
- Midland Bank PLC, The United Kingdom

APPENDIX 2

LATIN AMERICAN ASSOCIATION OF DEVELOPMENT FINANCE INSTITUTIONS (ALIDE) FINANCIAL AND TECHNOLOGICAL INFORMATION SERVICE (SIFT) FOR PROJECTS AND INVESTMENTS

INVESTMENT PROJECTS IN INTERNATIONAL PROMOTION 1989

The following information is provided for each investment project:

- a) SIFT code and project name
- b) Amount of total investment, expressed in thousands (US\$ x 000)
- c) Type of foreign participation needed
- d) Name of the institute proposing the project

INVESTMENT PROJECTS IN THE AGROINDUSTRIAL SECTOR

ARGENTINA

1.
 - a) ARG/005/G, Industrial processing of timber
 - b) US\$34,817,000
 - c) Purchase of shares in capital stock; medium-and long-term financing; technical-economic feasibility studies; financing of preinvestment; technical assistance; management assistance; access to markets and market services; personnel training; and, services (design, engineering, product development, etc.).
 - d) COFIRENE, Investment Bank, Inc.

BRAZIL

1.
 - a) BRA/005/G, Concentrated citrus juices
 - b) US\$30,000,000
 - c) Purchase of shares (venture capital)
 - d) Minas Gerais Development Bank, Inc.

ECUADOR

1.
 - a) ECU/002/G, Commercial cultivation of tobacco for export
 - b) US\$187,000
 - c) Medium-and long-term loan for US\$78,000; US\$43,000 in capital stock shares; and access to markets and marketing services
 - d) National Finance Corporation

2. a) ECU/004/G Production of asparagus for export
b) US\$497,000
c) Contribution of capital stock; and provision of technology
d) National Finance Corporation
3. a) ECU/015/G, Edible mushrooms for export
b) US\$508,000
c) US\$91,000 in shares of capital stock; and access to markets and marketing services
d) Industrial Development Center of Ecuador (CENDES)

EL SALVADOR

1. a) SLV/014/G, Processing plant for milk products
b) US\$33,000
c) US\$30,000 medium-and long-term loan; US\$3,000 short-term loan (working capital), and machinery and equipment
d) FEDECREDITO, Federation of Credit Funds
2. a) SLV/015/G, "El Ranchero" forage processing center
b) US\$38,000
c) US\$38,000 medium-and long-term loan to finance working capital
d) FEDECREDITO, Federation of Credit Funds
3. a) SLV/016/G, Project for integrated reactivation of "El Tempisque" farm
b) US\$92,000
c) US\$90,800,000 medium-and long-term loan to purchase machinery, equipment and infrastructure works
d) FEDECREDITO, Federation of Credit Funds
4. a) SLA/017/G, Industrialization of soybeans (extraction of milk)
b) US\$118,000
c) US\$118,000 medium-and long-term loan
d) FEDECREDITO, Federation of Credit Funds

GUATEMALA

1. a) GTM/002/G, Industrialization of castor bean (Vegetable oils IXCOH S.A.-AVIX S.A.)
b) US\$4,550,000
c) Financing for preinvestment; insurance and bonds; technical assistance; management assistance; access to markets and marketing services: personnel training; and services (engineering, product development, etc.)
d) National Finance Corporation
2. a) GTM/004/G, Processing of mushrooms (San Lucas Foods, S.A.)
b) US\$2,399,000
c) US\$150,000 medium-and long-term loan; US\$25,000 short-term loan

(working capital); technical assistance; access to markets and marketing services; personnel training; and services (engineering, product development, etc.)

- d) National Finance Corporation
- 3. a) GTM/016/G, Manufacture of particle board panels
- b) Total investment in the project was US\$10,885,000. An investment of US\$1,403,000 is needed to complete the execution of the project.
- c) Medium-and long-term loan: machinery and equipment; technical assistance; access to markets and marketing services; personnel training; and services (engineering, product development, etc.)
- d) National Finance Corporation

HONDURAS

- 1. a) HND/011/G, Jelly and marmalade factory
- b) US\$52,000
- c) US\$39,000 in medium-and long-term financing; and machinery and equipment
- d) Central Bank of Honduras
- 2. a) HND/013/G, Production of honey for export
- b) US\$28,000
- c) US\$26,000 in medium-and long-term financing; and machinery and equipment
- d) Central Bank of Honduras

MEXICO

- 1. a) MEX/011/G, Dehydration plant for shredded coconut and creamed coconut
- b) US\$4,477,000
- c) US\$2,150,000 medium-and long-term loan; machinery and equipment
- d) Trust Funds for Agriculture (FIRA)- Bank of Mexico S.A.

NICARAGUA

- 1. a) NIC/005/G, Processing plant for corn meal
- b) US\$2,300,000
- c) US\$1,750,000 medium-and long-term loan for machinery and equipment that can be supplied by Argentina, Brazil, Mexico and Spain
- d) Nicaraguan Investment Fund
- 2. a) NIC/006/G, "El Caracol" Industrial rehabilitation program
- b) US\$267,000
- c) US\$187,000 medium-and long-term loan; machinery and equipment; and technical assistance for installation of equipment and training of local personnel
- d) Nicaraguan Investment Fund

3. a) NIC/010/G, Substitution of a production line of the National Bottling Company S.A. (ENSA)
- b) US\$1,045,500
- c) US\$943,500 medium-and long-term loan; insurance and bonds; machinery and equipment; technical assistance for installation of equipment and training of local personnel
- d) Nicaraguan Investment Fund
4. a) NIC/012/G, Beer Company of Nicaragua S.A.
- b) US\$6,607,000
- c) US\$5,275,500 medium-and long-term loan; machinery and equipment
- d) Nicaraguan Investment Fund

PARAGUAY

1. a) PRY/001/G, Prefeasibility study for industrialization of papaya
- b) US\$469,900
- c) Medium-and long-term loan
- d) Export Promotion Center (CEPEX)
2. a) PRY/003/G, Feasibility study for installation of jojoba industrialization plant
- b) US\$902,500
- c) Medium-and long-term loan
- d) Export Promotion Center (CEPEX)
3. a) PRY/005/G, Prefeasibility study for installation of integrated industrialized corn plant
- b) Depending on production, capacity, total investment will be US\$4,530,000 for 7,500,000 MT/Yr of finished products, and US\$6,681,000 when production reaches 15,000 MT/Yr
- c) Medium-and long-term loan
- d) Export Promotion Center (CEPEX)
4. a) PRY/07/G, Project for integrated agricultural fruit and vegetable development
- b) US\$26,825,000
- c) Medium-and long-term loan
- d) Export Promotion Center (CEPEX)
5. a) PRY/009/G, Prefeasibility study for industrial park for exports, located in Alto Parana
- b) In regard to paper pulp, investments can vary, according to production alternative: Alternative 1 requires US\$16,000,000 alternative 2, US\$22,600,000; and alternative 3, US\$36,900,000. Investments for particle boards will be US\$2,900,000 and US\$4,400,000 for MFD boards. In regard to carboil, total investment is estimated at US\$713,000
- c) Medium-and long-term loan
- d) Export Promotion Center (CEPEX)

6. a) PRY/010/G, Study for implementation of manioc starch project in Paraguay located in Alto Parana
b) US\$1,100,000
c) Medium-and long-term loan
d) Export Promotion Center (CEPEX)
7. a) PRY/014/G, Full use of manioc
b) Investments depend on the scale of production: US\$376,00 (pellet factory only); US\$495,000 (starch factory only); US\$687,000 (starch and pellet factory); and US\$839,000 (starch, pellet and flour factory)
c) Medium-and long-term loan
d) Export Promotion Center (CEPEX)
8. a) PRY/015/G, Prefeasibility study of powdered milk production plant, for export
b) US\$555,000 investment needed for first alternative, and US\$681,000 for the second alternative
c) Medium-and long-term loan
d) Export Promotion Center (CEPEX)

PERU

1. a) PER/027/G, Processing plant for fresh asparagus, in Valle de Ica
b) US\$1,094,000
c) Access to markets and marketing services
d) Agrarian Bank of Peru
2. a) PER/028/G, Installation of freezing plant for asparagus, in Sullana
b) US\$2.388,000
c) US\$1,095,000 medium-and long-term loan; US\$500,000 short term loan (working capital); Provide technology; machinery and equipment; technical assistance; and, access to markets and marketing services.
d) Agrarian Bank of Peru
3. a) PER/029/G, Processing plant for vinager
b) US\$522,000
c) Access to markets and marketing services
d) Agrarian Bank of Peru
4. a) PER/030/G, Heart of palm plant
b) US\$997,800
c) Machinery and equipment; and, access to markets and marketing services
d) Agrarian Bank of Peru
5. a) PER/031/G, Manufacture of natural coloring (Nor bixina)
b) US\$458,000
c) US\$305,000 medium-and long-term loan; US\$75,000 to 100,000 in shares in capital stock; provide guarantees; provide technology; machinery and equipment; technical assistance; access to markets and marketing

- services; and services (design, engineering, product development, technological research, etc.)
- d) Development Finance Corporation S.A.
6. a) PER/033/G, Fisheries industrial complex
 b) US\$5,353,000
 c) US\$1,300,000 medium-and long-term loan; US\$100,000 short-term loan (working capital); 50% shares in capital stock; provide guarantees; insurance and bonds; provide technology; machinery and equipment; leasing; technical assistance; management assistance; access to markets and marketing services; and services (engineering, product development, etc)
 d) Development Finance Corporation S.A.
7. a) PER/037/G, Start-up of grain processing plant (Procesadora S.A.)
 b) US\$186,800,000
 c) US\$122,000 medium-and long-term loan; machinery and equipment; access to markets and marketing services
 d) Industrial Bank of Peru
8. a) PER/040/G, Industrialization project for fruits, for export
 b) US\$6,000,000
 c) Medium-and long-term loan; provide technology; machinery and equipment
 d) Industrial Bank of Peru
9. a) PER/041/G, F.C.V. Processing Center (freeze dried) for export
 b) US\$790,000
 c) Provide technology; machinery and equipment; technical assistance; and personnel training
 d) Exporters Association (ADEX)
10. a) PER/042/G, Private project for integrated development (exploitation of wood louse)
 b) US\$1,787,000
 c) US\$1,500,000 medium-and long-term loan; provide technology; access to markets and marketing services; personnel training; and services (design, engineering, product development, etc)
 d) Exporters Association (ADEX)
11. a) PER/043/G, Plant for processing and freezing vegetables for export
 b) US\$2,522,000
 c) US\$1,294,000 medium-and long-term loan; US\$764,000 short term loan (working capital); Provide guarantees; insurance and bonds; machinery and equipment; and, technical assistance
 d) Agrarian Bank of Peru
12. a) PER/047/G, Agroindustrial tomato processing plant
 b) US\$909,000
 c) Medium-and long-term loan; and, access to markets and marketing services
 d) National Commission on Foreign Investments and Technologies (CONITE)

13. a) PER/048/G, Processed meat factory
b) US\$1,364,000
c) Shares in capital stock; and, provide technology
d) National Commission on Foreign Investments and Technologies (CONITE)
14. a) PER/049/G, Preliminary feasibility study to establish fruit and vegetable processing plant for quick freezing or cooling (I.Q.F.)
b) US\$999.000
c) Medium-and long-term loan; management assistance; access to markets and marketing services; personnel training; and services (engineering, product development, etc)
d) National Commission on Foreign Investments and Technologies (CONITE)
15. a) PER/060/G, Processing plant for clarified lemon juice concentrate
b) US\$885,000
c) Contribution of capital stock; and, access to markets and marketing services
d) Development Finance Corporation S.A.
16. a) PER/061/G, Agroindustrial plant for frozen asparagus-agricultural phase
b) US\$1,842,000
c) Contribution of capital stock and/or medium-and long-term loan; and, access to markets and marketing services
d) Development Finance Corporation S.A.
17. a) PER/064/G, Modernization of milk storage for industrial processing in Cajamarca-Peru
b) US\$2,251,000
c) US\$1,912,000 medium-and long-term financing; and, machinery and equipment
d) Agrarian Bank of Peru
18. a) PER/066/G, Installation of wood louse wood plant for production of carmine
b) US\$454,000
c) Access to markets and marketing services
d) Agrarian Bank of Peru

DOMINICAN REPUBLIC

1. a) DOM/001/G, Shrimp production (Camaronera Dominicana S.A.)
b) US\$1,814,000
c) US\$800,000 medium-and long-term loan; financing for studies; machinery and equipment; and technical assistance
d) Central Bank of the Dominican Republic
2. a) DOM/002/G, Production of melons, tomatoes, cucumbers, okra, beans and sorghum, for export (AGROEXPO S.A.)
b) US\$4.011,000

- c) US\$1,572,000 medium-and long-term loan; US\$89,000 short-term loan; financing for studies; preinvestment financing; machinery and equipment; technical assistance; and management assistance
 - d) Central Bank of the Dominican Republic
3.
 - a) DOM/003/G, Extraction of oil from African palm (INASCA Agroindustrial C. for A.)
 - b) US\$4,313,000
 - c) US\$1,863,000 medium-and long-term loan; and, machinery and equipment
 - d) Central Bank of the Dominican Republic
 4.
 - a) DOM/004/G, Citrus fruit processing plant (AGRODELTA S.A.)
 - b) US\$10,754,000
 - c) US\$2,666,000 medium-and long-term loan; US\$1,050,000 short-term loan (working capital); machinery and equipment; technical assistance; preinvestment financing; and, personnel training
 - d) Central Bank of the Dominican Republic
 5.
 - a) DOM/005/G, Processing of African palm oil (Induspalma Dominicana S.A.)
 - b) US\$9,365,000
 - c) US\$2,400,000 medium-and long-term loan; US\$493,00 in shares in capital stock; and, machinery and equipment
 - d) Central Bank of the Dominican Republic
 6.
 - a) DOM/006/G, Vinager processing plant
 - b) US\$244,300
 - c) Medium-and long-term loan; and, machinery and equipment
 - d) Central Bank of the Dominican Republic
 7.
 - a) DOM/007/G, Production of snacks (Snacks Inc.)
 - b) US\$513,400
 - c) Medium-and long-term loan; and, machinery and equipment
 - d) Central Bank of the Dominican Republic

URUGUAY

1.
 - a) URY/002/G, Citrus fruit packaging plant
 - b) US\$653,000
 - c) US\$420,000 medium-and long-term financing; machinery and equipment; and technical assistance
 - d) Uruguayan Foundation for Joint Cooperation and Development (FUNDASOL)
2.
 - a) URY/003/G, Fish residue processing
 - b) US\$850,000
 - c) Medium-and long-term financing for equipment and infrastructure
 - d) Uruguayan Foundation for Joint Cooperation and Development (FUNDASOL)
3.
 - a) URY/004/G, Refrigeration plant for meat
 - b) US\$540,000

- c) Medium-term loan for total amount of investment to finance machinery and equipment
- d) Uruguayan Foundation for Joint Cooperation and Development (FUNDASOL)

VENEZUELA

- 1.
 - a) VEN/001/G, Tuna fish cannery (Crab of Venezuela, C.A.)
 - b) US\$850,000
 - c) Long-term financing
 - d) Development Corporation for the Zulia Region (CORPOZULIA)
- 2.
 - a) VEN/002/G, Tropical fruit and vegetable processing, for industrial use
 - b) US\$34,055,000
 - c) US\$2,512,000 in shares of capital stock (35%); financing for studies; financing for preinvestment; machinery and equipment; technical assistance (includes cost of equipment under turn-key program); and access to markets and marketing services (joint venture type)
 - d) Development Corporation for the Zulia Region (CORPOZULIA)

INVESTMENT PROJECTS IN THE FISHERIES SECTOR

EL SALVADOR

- 1.
 - a) SLV/013/P, Production in floating traps and processing of channel catfish (*Ictalurus punctatus*), in Coatepeque and Ilopango lakes.
 - b) US\$13,113,000
 - c) No more than 49% holdings in capital share; US\$10,770,00 medium-and long-term loans; provision of technology; access to markets and marketing services; services of commodities to markets (opening) and advisory services in the installation of equipment and design of processing plant; and personnel training.
 - d) Agricultural Development Bank
- 2.
 - a) SLV/018/P, Catching and processing fin fish in Salvadoran waters
 - b) US\$949,000
 - c) US\$949,000 medium-and long-term loans
 - d) FEDECREDITO, Federation of Credit Funds

PERU

- 1.
 - a) PER/035/P, Commercial hatcheries in Peru
 - b) US\$1,974,000
 - c) US\$290,000 medium-and long-term loans; US\$290,000 short-term loan (working capital); US\$387,000 in capital stock shares; access to markets and marketing services; and services (design, engineering, etc.)
 - d) Development Finance Corporation, S.A.

INVESTMENT PROJECTS IN THE AGRICULTURAL AND RURAL DEVELOPMENT SECTORS
BOLIVIA

1. a) BOL/009/A, Improvement of native cattle in Chaco Chuquisaqueño
- b) US\$9,494,000
- c) US\$6,097,000 long-term financing
- d) Financing Fund for Development in La Cuenca del Plata (FONPLATA)

ECUADOR

1. a) ECU/001/A, Commercial tree tomato cultivation (tamarillo) for export (Cyphomandra Betacea)
- b) US\$160,000
- c) US\$78,000 medium-and long-term financing; and access to markets and marketing services
- d) National Finance Corporation

2. a) ECU/005/A, Production of carnations and clavelinas for export
- b) US\$1,418,000
- c) US\$400,000 medium-and long-term financing; and US\$250,000 in shares of capital stock
- d) National Finance Corporation

3. a) ECU/006/A, Commercial production of roses for export
- b) US\$570,000
- c) US\$123,000 medium-and long-term loan to import equipment; US\$140,000 shares in capital stock; and access to markets and marketing services
- d) National Finance Corporation

4. a) ECU/007/A, Chrysanthemums for export
- b) US\$502,000
- c) shares in capital stock; and access to markets and marketing services
- d) National Finance Corporation

5. a) ECU/011/A, Cultivation and exportation of fresh blackberries
- b) US\$194,400
- c) US\$88,800 medium-and long-term loan; US\$52,800 in shares in capital stock; machinery and equipment; access to markets and marketing services; and services (design, engineering, product development, technological research, etc.)
- d) National Finance Corporation

6. a) ECU/014/A, Cultivation and exportation of mangos
- b) US\$242,000
- c) US\$52,000 in shares in capital stock; and access to markets and marketing services
- d) National Finance Corporation

PARAGUAY

- a) PRY/016/A, Consolidation of Campo Aceval Settlement and areas of influence
- b) US\$37,467,000
- c) US\$6,860,000 medium-and long-term loan
- d) Finance Fund for the Development of the Cuenca del Plata (FONPLATA)

DOMINICAN REPUBLIC

- a) DOM/008/A, Addex, S.A.
- b) US\$1,026,000
- c) US\$179,300 medium-and long-term loan; shares in capital stock; and machinery and equipment
- d) Central Bank of the Dominican Republic

URUGUAY

1.
 - a) URY/005/A, Colonia breeding station
 - b) US\$792,000
 - c) US\$792,000 medium-and long-term loan
 - d) Uruguayan Foundation for Joint Cooperation and Development (FUNDASOL)
2.
 - a) URY/006/A, National Forestry Cooperative (CONAFOR)
 - b) US\$645,000
 - c) US\$181,000 medium-and long-term loan
 - d) Uruguayan Foundation for Joint Cooperation and Development (FUNDASOL)
3.
 - a) URY/007/A, Production and Marketing of export quality tropical raspberries and melons in northeastern Canelones
 - b) US\$234,000
 - c) US\$91,000 medium-and long-term loan
 - d) Uruguayan Foundation for Joint Cooperation and Development (FUNDASOL)
4.
 - a) URY/008/A, Demonstration and experimental field in northeastern Canelones
 - b) US\$280,000
 - c) US\$280,000 medium-and long-term loan
 - d) Uruguayan Foundation for Joint Cooperation and Development (FUNDASOL)
5.
 - a) URY/009/A, Installation of agrarian information system
 - b) US\$1,903,000
 - c) US\$459,000 medium-and long-term loan
 - d) Uruguayan Foundation for Joint Cooperation and Development (FUNDASOL)
6.
 - a) URY/010/A, Irrigated vegetable production in northeastern Canelones
 - b) US\$1,731,000

- c) Long-term financing, and technical assistance
- d) Uruguayan Foundation for Joint Cooperation and Development (FUNDASOL)

APPENDIX 3

LOANS GRANTED BY DEVELOPMENT BANKS

Table 1. Latin American Development Banks: Loans Grante, by Economic Sector, During 1986.

	(US\$ X 000 000)	%
Agriculture and rural development	14 558 400	22.6
Fisheries	164 400	0.3
Agroindustry	1 232 100	1.9
Mining	1 152 100	1.8
Manufacturing industry	11 343 000	17.6
Energy, including petroleum	888 600	1.4
Housing and construction	3 467 300	5.4
Transportation and communications	468 400	0.7
Education, Health and other basic services	3 934 900	6.1
Foreign trade	7 416 700	11.5
Tourism	91 800	0.1
Others	19 638 900	30.5
TOTAL	64 356 200	100.0

SOURCE: ALIDE, preliminary figures.

Table 2. Financing of the Agricultural Sector by Development Banks 1985–1986 (million current US\$).

	1985	1986
TOTAL (all sectors)	59 139.3	64 356.2
TOTAL AGROINDUSTRY	1 116.7	1 232.1
Brazil	244.1	337.3
Mexico	205.6	137.4
Argentina	217.3	249.8
Chile	9.5	5.8
Paraguay	24.7	50.5
Uruguay	unavail.	unavail.
Bolivia	1.2	2.5
Colombia	104.2	136.9
Ecuador	10.9	8.9
Peru	18.0	26.5
Venezuela	1.4	0.9
Costa Rica	unavail.	unavail.
El Salvador	6.2	1.8
Guatemala	unavail.	unavail.
Honduras	4.1	8.1
Nicaragua	211.6	207.7
Panama	unavail.	unavail.
Belize	0.6	0.0
Dominican Republic	24.4	27.2
Puerto Rico	unavail.	7.6
Suriname	18.7	20.0
Trinidad and Tobago	14.3	3.2
Saint Lucia	14.3	3.2

SOURCE: ALIDE.

Table 3. Loan Portfolio of Latin American Development Banks, by Economic Sector.

	1982 (million US\$) ¹	(%)	1984 (million US\$) ¹	(%)	1986 (million US\$) ²	(%)
Agroindustry	1 402	2.3	811	1.7	1.232	1.9
Agriculture	6 053	10.1	9 490	20.3	14 558	22.6
Fisheries	465	0.8	115	0.2	164	0.3
Manufacturing industry	11 338	18.9	6 434	13.8	11 343	17.6
Others	40 665	67.9	29.886	64.0	37 053	57.6
TOTAL	59 923	100.0	46 736	100.0	64 356	100.0

1 Loans Approved.

2 Credits disbursed during the year.

SOURCE: ALIDE.

Table 4. Ownership, Assets, Equity and Loans Made by the Major American and Caribbean DFI that participated in Agricultural and Agroindustrial Development in 1986 (million US\$).

Country institution	Ownership	Total Assets	Total Equity	Total** Loans	Loans to sector Agriculture (%)	Agroindustry (%)
ARGENTINA						
Banco de la Provincia de Buenos Aires	public	4 167.9	584.7	2 563.8	323.6 (13)	unavailable
Banco de la Nación Argentina	public	9 263.6	1 145.3	3 508.8	593.2 (17)	117.9 (5)
Banco Provincial de Santa Fe	public	369.2	49.9	257.9	47.8 (19)	unavailable
Banco Nacional de Desarrollo	public	5 029.4	248.8	446.6	unavailable	61.4 (14)
BELIZE						
Development Finance Corporation*	public	20.9	17.9	2.1	1.2 (59)	0.0
BOLIVIA						
Banco Agrícola de Bolivia	public	73.1	3.0	31.8	31.8 (100)	0
Financiera de Desarrollo de Santa Cruz	public	10.2	2.7	4.7	2.2 (38)	1.7 (37)
BRAZIL						
Banco Nacional de Desarrollo Económico y Social	public	22 137.9	4 500.5	3.527.8	426.5 (12)	0.0
Banco do Brasil	public	48 689.6	5 446.9	13 839.6	7 796.9 (56)	unavailable
Banco do Estado de Pernambuco	public	642.8	26.6	98.7	21.9 (22)	2.5 (2)
Banco do Nordeste do Brasil	public	2 127.6	254.2	926.9	339.5 (37)	29.6 (3)
CHILE						
Corporación de Fomento de la Producción	public	3 623.1	2 523.6	67.0	9.4 (14)	5.8 (9)
Banco del Estado ¹	public			40.0	12.0 (30)	unavailable
COLOMBIA						
Caja de Crédito Agrario Industrial y Minero	public	1 363.2	63.8	457.0	417.8 (91)	1.9 (0.0)

Cuadro 4. Continuación.

Country institution	Ownership	Total Assets	Total Equity	Total Loans	Loans to sector	
					Agriculture (%)	Agroindustry (%)
Banco Ganadero S.A.	private	870.1	38.1	395.5	12.7 (32)	51.7 (13)
Corporación Financiera Colombiana	private	133.3	10.0	96.0	3.7 (38)	20.3 (21)
Corporación Financiera Progreso*	private	13.4	2.2	10.3	1.3 (13)	1.3 (12)
Banco Cafetalero*	public	1 127.8	132.7	165.5	37.5 (23)	47.2 (29)
COSTA RICA²						
Banco de Costa Rica	public	unavailable	5.1	98.3	29.6 (3)	5.1
Banco Nacional de Costa Rica	public	805.3	50.2	185.5	126.1 (68)	5.1
Banco Crédito Agrícola de Cartago*	public	176.0	9.3	21.9	2.8 (13)	5.1
DOMINICAN REPUBLIC						
Banco Continental de Desarrollo	private	9.7	1.8	5.9	1.5 (26)	1.5 (25)
Banco de Desarrollo BHD	private	11.1	3.1	9.7	2.9 (29)	1.0 (11)
Banco de Desarrollo Interamericano	private	6.0	1.7	4.8	1.4 (30)	5.1 (51)
Banco de Desarrollo (FINADE)	private	20.9	1.5	15.1	6.7 (44)	0.6 (4)
Banco de Desarrollo Dominicano	private	16.9	2.6	9.8	6.9 (70)	0.2 (2)
Banco Agrícola de la Republica Dominicana	public	149.0	81.4	70.1	70.1 (100)	0
Banco de Desarrollo Industrial*	private	10.3	1.4	7.9	0.9 (13)	3.2 (41)
Fondo de Inversión para el Desarrollo Económico	public	224.9	106.7	87.2	38.7 (44)	18.5 (21)
ECUADOR						
Banco Nacional de Fomento Financiera del Sur (FINANSUR)	public	966.9	104.6	311.2	258.7 (83)	5.1
	public	74.2	6.3	98.3	7.1 (7)	2.7 (3)
GUATEMALA						
Banco Nacional de Desarrollo Agrícola Crédito Hipotecario Nacional de Guatemala*	public	44.3	5.1	22.1	21.8 (99)	5.1
	public	94.1	7.6	20.3	5.4 (26)	5.1

Cuadro 4. Continuación

Country institution	Ownership	Total Assets	Total Equity	Total Loans	Loans to sector Agriculture (%)	Agroindustry (%)
HONDURAS						
Centro de Desarrollo Industrial	public	4.6	1.8	0.9	0.2 (18)	0.6 (56)
Banco Nacional de Desarrollo Agrícola	public	288.1	30.6	82.3	53.2 (65)	0.3 (0.0)
Banco Sogerin S.A.*	private	121.7	5.3	55.9	17.9 (32)	7.3 (13)
SAINT LUCIA						
Saint Lucia Development Bank*	private	9.7	2.4	2.0	0.3 (16)	unavailable
MEXICO						
Nacional Financiera S.N.C.	public	15 920.5	168.9	3 358.9	694.2 (21)	28.2 (0.0)
Fideicomisos Institucionales en relación con la Agricultura FIRA	public	1 451.7	443.1	884.4	657.3 (74)	109.2 (12)
NICARAGUA						
Banco Nicaragüense de Industria y Comercio	public	1 238.0	12.2	685.4	25.7 (4)	207.7 (30)
PERU						
Banco Agrario Corporación Financiera de Desarrollo	public	2 107.9	44.6	979.0	974.1 (99)	4.1 (0.0)
	public	629.1	106.8	261.7	unavailable	18.4 (7)
PUERTO RICO						
Corporación de Crédito Agrícola Banco de Desarrollo Económico para Puerto Rico	public	64.6	19.6	3.5	3.5 (100)	0
	public	52.5	16.5	27.1	unavailable	7.6 (25)
PARAGUAY						
Banco de Inversiones ³	private	5.1	unavail.	7.4	1.9 (26)	3.0 (41)
Banco Nacional de los Trabajadores ⁴	private	73.9	3.6	109.1	66.2 (61)	28.4 (26)
Fondo Ganadero del Banco Central	public	40.5	13.6	14.9	14.9 (100)	0
Banco Nacional de Fomento	public	158.5	27.4	172.5	140.3 (81)	19 (11)

Cuadro 4. Continuación

Country institution	Ownership	Total Assets	Total Equity	Total Loans	Loans to sector	
					Agriculture (%)	Agroindustry (%)
EL SALVADOR						
Banco de Fomento Agropecuario	public	208.9	101.5	65.5	57.8 (88)	1.8
Federación de Cajas de Crédito	private	66.1	16.8	32.9	8.8 (27)	5.1
Fondo de Desarrollo Económico	public	5.1	5.1	14.4	5.8 (41)	unavailable
PANAMA						
Banco de Desarrollo Agropecuario	public	194.5	87.0	133.9	132.9 (99)	5.1
SURINAME						
Lanboubank*	public	8.7	5.4	22.4	13.2 (98)	0 (0)
Ontwikkelingsbank	public	27.9	13.1	13.5	0.2 (1)	19.9 (89)
TRINIDAD AND TOBAGO						
Agricultural Development Bank*	public	69.0	16.1	7.7	5.7 (75)	1.6 (21)
URUGUAY						
VENEZUELA						
Fondo de Crédito Agropecuario ⁵	public	387.0	349.0	67.6	67.7 (93)	unavailable
Banco Occidental de Descuento*	public	122.1	9.2	140.3	27.8 (20)	unavailable
Instituto de Crédito Agropecuario* ⁵	public	5.1	5.1	142.6	142.6 (100)	0
Banco de Desarrollo Agropecuario* ⁵	public	5.1	unavail.	205.9	205.9 (100)	0

* Non-ALIDE Institutions: There are 15 with (*). The rest are members or ALIDE (44).

** Refers to loans granted.

SOURCE: ALIDE: Information questionnaire for the Latin American Directory of Development Finance Institutions 1986-1987.

1 Banco del Estado: 1986 Report; refers to changes in loan balances.

2 Banco Central de Costa Rica, 1985 and 1986 Reports.

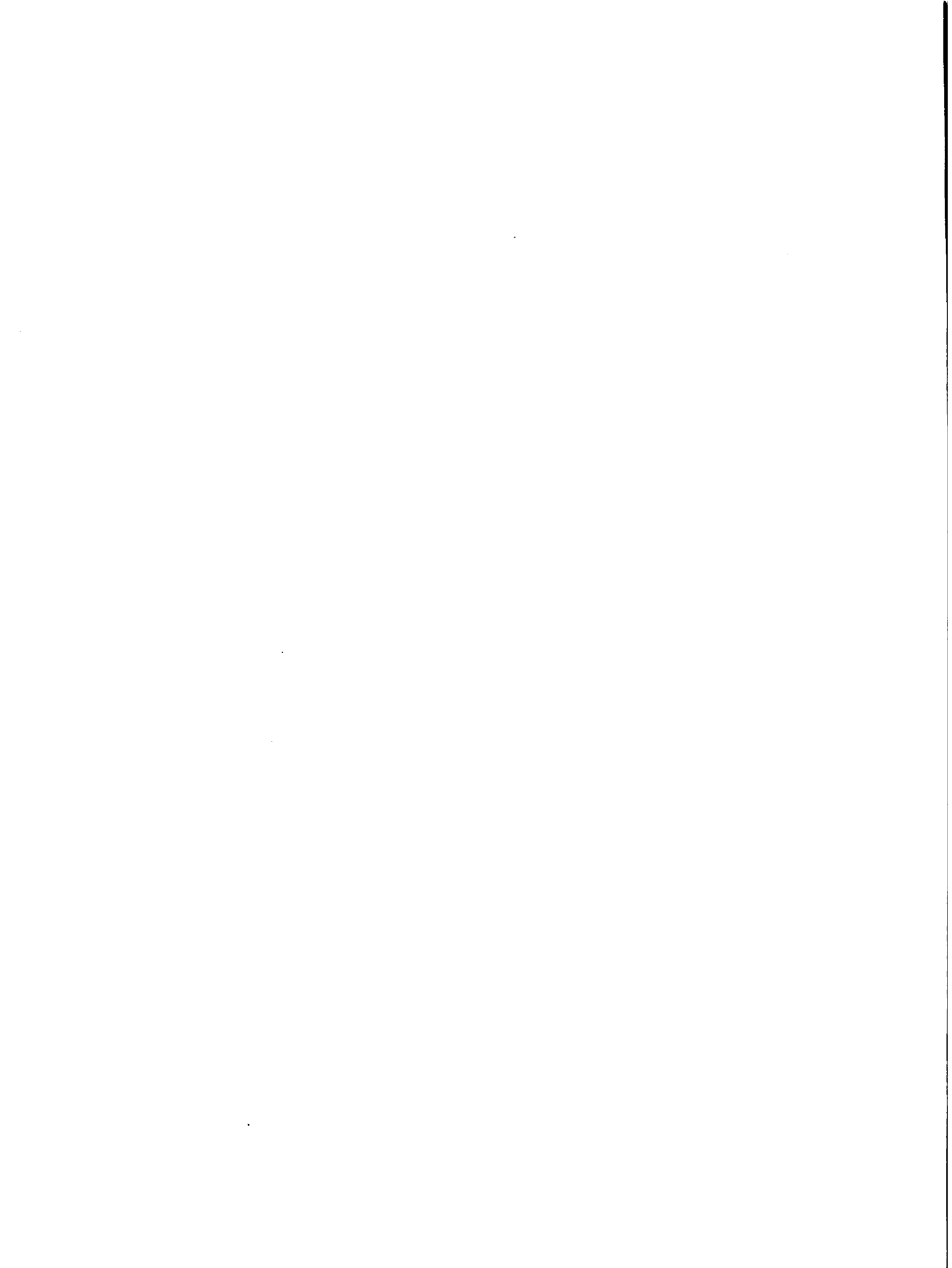
3 Banco de Inversiones del Paraguay, 1986 Report.

4 Banco Nacional de Fomento, Memoria 1986 Report.

5 Banco Central de Venezuela, 1986 Report (Vol. II, Economic Report).

I

**THE MACROECONOMIC ENVIRONMENT FOR
AGROINDUSTRIAL DEVELOPMENT IN THE COUNTRIES
OF LATIN AMERICA AND THE CARIBBEAN**



The first paper under Topic I, entitled Trends in the international economy and markets: Implications for agroindustrial development, was presented by Edward Schuh. The main point of this paper is that agroindustrial development should be looked at from an overall perspective, bearing in mind that most of the countries of the region have open economies. More specifically, what is to be expected is a continued increase in international trade resulting from technological change, the development of an integrated and high-volume capital market, a change from a fixed to a flexible exchange rate system, and increased monetary instability.

Schuh points out that while the economy has become more global in nature, international agricultural trade has developed under less than favorable conditions: a) there are ever-increasing trade distortions, since the agricultural sector is protected in the developed countries and discriminated against in developing countries; b) there is growing instability in the market, especially attributable to monetary instability, with the corresponding sudden and significant variations in exchange rates; c) growth in agricultural production has declined, due primarily to the fact that almost all the agricultural frontier has been used up (less land available) and to the decline in the agricultural productivity growth rate. The latter, in turn, is attributable to a relative drop in investment caused by the financial crisis in the public sector.

As a result of his analysis, Schuh stated that it is difficult to predict in which direction prices for agricultural commodities will go, and that the market for these commodities will continue to be unstable. He expressed the opinion that there will be an adequate supply of capital for agroindustry; there will be sufficient labor available to the agroindustrial sector; there will be strong demand for agroindustrial products, and barriers to trade will be a major constraint on agroindustry. Consequently, the promotion of agroindustry over the long term will demand that overall policies be formulated, and that efforts to liberalize international trade continue.

In commenting on Schuh's presentation, the participants referred to the paradox of an agricultural sector with serious contradictions, and the comment was made that the rules of the game need to be changed because there is no clear frame of reference. Emphasis was placed on the need to speak realistically of integration in Latin America. The question was raised if it would not be more equitable, at a time when most of the developing countries are applying adjustment policies, for the developed countries to eliminate protectionism.

During the discussions, it was mentioned that markets, especially those for agricultural commodities, are highly unstable. This instability in the agricultural sector is attributable, above all, to the distortions (subsidies) in international competition, a situation it is hoped will be corrected in the Uruguay Round of GATT. The problem today is that prices fall to very low or depressed levels, to the detriment of efficient farmers, who would not be harmed so much if these fluctuations occurred under conditions of high, remunerative and undistorted prices.

Jorge Torres Zorrilla presented the paper **Macroeconomic policies and agroindustrial development**, which he co-authored with Carlos Pomareda. Some of the major points of the paper are:

- a. Development policies and agroindustry should be addressed as a whole, giving equal consideration to macroeconomic and sectoral policies.
- b. Structural constraints on agroindustrial development must be kept in mind, especially those related to technology, intersectoral linkages, international relations and market dynamics.
- c. The main theme of the paper is that agriculture and industry can play a key role in the reactivation of the economies of Latin America. For them to do so, it will first be necessary to correct the biased macroeconomic policies that hinder the development of agriculture and agroindustry.
- d. The importance of macroeconomic and sectoral policies, market dynamics, technology, farmers' organizations and efficient business management were highlighted as being essential to the success of the process to modernize agriculture in Latin America.

The document by Pomareda and Torres underscores the need to move toward an integrated policy to promote agroindustry, and emphasizes the implications of macroeconomic policies for the agroindustrial sector. For example, real prices for agroindustrial products are largely determined by exchange rate, trade and fiscal policies, rather than by price guarantees or other price controls. To attempt to counteract the effect of exchange rates with price guarantees would place a heavy burden on the State, and to try to control the prices charged to consumers, out of line with equilibrium prices, would create shortages and a black market. It is unrealistic to think that agricultural-agroindustrial prices can be altered directly; they are, however highly sensitive to exchange rate, fiscal and trade policies. This set of policy instruments actually make up the sectoral price policy.

Once the major pricing policy instruments have been identified, the question remains as to what the level of prices should be. Here, the interests of farmers, agroindustrialists and consumers appear to be in conflict, and there are no clear guidelines for drawing up a pricing policy, although international prices can provide a frame of reference. Finally, but no less important, is the fact that agricultural and agroindustrial production can be increased considerably, with some certainty of there being a market for same, if an effort is made to re-establish the consumption of products with high agricultural value added (milk or fruit juices instead of carbonated and sweetened beverages).

During the discussions following the presentation of the paper by Pomareda and Zorrilla, it was pointed out that agroindustry has not been considered a high priority in most of the countries of the region. In this regard, reference was made to studies carried out in Uruguay, one of which revealed that the dairy industry (in a country characterized by slow economic growth) managed to gain a greater share of the domestic and international market because technology was integrated with other components.

In the analyses of other national experiences, it was pointed out that the success of fruit exports from Chile, which rose from five million boxes in 1973 to one hundred million in 1988, was due in large part to the key role played by services in the production process, which gave Chile the comparative advantage. The idea of stabilizing domestic prices through the use of variable tariffs was also discussed. In this regard, it was mentioned that such instruments have been applied in the EEC and Chile (in some sectors), and that when combined with a lack of production controls, they generate marketable amounts (surpluses that cannot be exported without production subsidies), which saturates the domestic market. It was added that this type of mechanism raises domestic prices and depresses national consumption, especially in the poorest sectors, which is against the interests of society.

Among other comments, several speakers indicated their opposition to protectionist tariffs, in the sense that the market must be left alone to operate freely.

While Schuh's paper provides an overall and forward-looking view, the presentation by Pomareda/Torres takes a more microeconomic approach to the possibility for change in the national structures. While Schuh proposes a liberalization of markets as the way to promote agroindustrial development, the proposal by Pomareda/Torres emphasizes planning as the means to that end. Both proposals emphasize the role played by the pricing system. Schuh feels these prices should be determined within free markets with distortions, but Pomareda/Torres feel that distorted market prices should be compensated for with monetary and fiscal policies.

In Schuh's opinion, the most important area is liberalization through international negotiations. For Pomareda/Torres, it is the fine tuning of macroeconomic and differentiated tax policies. Obviously, it is necessary to define the role of the State in the promotion of agroindustrial development, a topic which was taken up in subsequent sessions of the seminar.

The third presentation related to the macroeconomic environment for agroindustrial development was made by Alexander Schejtman, who spoke on food security, small scale farming and agroindustry. He called for specific policies to meet the nutritional needs of the 150 million poor in Latin America. During the discussions following his presentation, it was pointed out that when Schejtman speaks of food security, he is referring to the social relations which arise from the production structure of the food sector, and those which determine the prevailing consumer patterns. In other words, for him, food security covers two issues: production and consumer patterns, which, of course, are of great importance in the countries of the area. With regard to social relations in the production structure of the sector, it was underscored that most of the countries of Latin America have two-tiered economies, where in the most part, the small-farm economy shows low levels of productivity, born of limited knowledge of new technologies, or little or no technological innovation. When attempts are made to introduce innovations, it turns out to be slow, costly and difficult to make the process work in the short term. This contributes to the high levels of absolute poverty found in some countries, especially Bolivia, as reflected in statistics on health, nutrition and infant mortality. As Schetjman pointed out in numerous works,

commercial economies, or farms dedicated to commercial-scale production, by contrast, are generally geared to external markets, and are managed differently. In this regard, he suggests the advisability of differentiating between the logic of the economy and the lifestyle of the small farmer, the latter being more a way of life rather than an entity or economic agent.

With regard to consumer patterns, the comment was made that in some countries the basic pattern is to consume primary products that are only slightly processed, which creates little demand for industrial processes. This is true, for example, in Bolivia, Peru and Ecuador, where the prevailing pattern is to consume unprocessed products, but which, because of the participation of various intermediaries, distort prices without any appreciable value added and place the small-scale farmer at a disadvantage.

The question then arose as to where to break this social pattern, which generates what Schejtman, quoting Pierson, calls the need for a dynamic sequence of change, a self-sustained sequence in time which will make possible the modification of these social relations related to production. In response to this situation, commercial agriculture can contribute to changing production in the food sector. There are two entirely different worlds in question, which require completely different policies. Is agroindustrialization the answer? Is the introduction of industries to process commodities in the small-farm economies a possibility? On the one hand, it would appear that the answer is yes, because it is well known that agroindustry guarantees a stable market for certain products. This has been successful in the Santa Cruz area of Bolivia, where several agroindustrial plants have been established to process sugar, oils and dairy products. However, when these policies are designed to create markets for the small-farm economy, what is often created are closed and highly protected markets which lead to low-productivity agriculture. Such is the case in the sugar industry in Bolivia. Despite liberalization of the market in recent years, it is still protected and productivity is low.

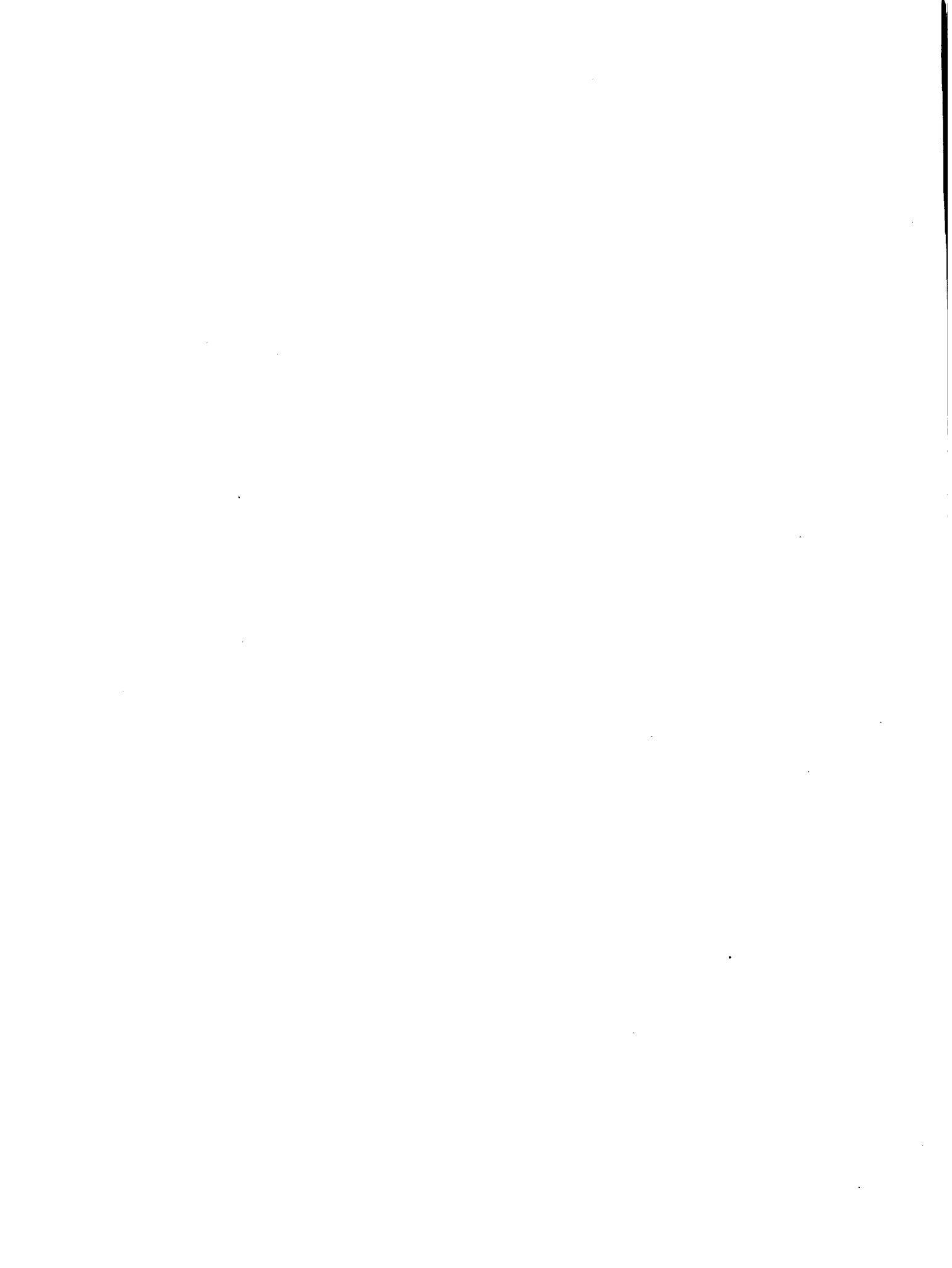
In connection with the relationship between the small-farm economy and the rest of the economy and the need for specific policies, Schejtman addressed five important issues. First, he recognized that small farmers as a segment of the population are deficit consumers, which suggests that despite the fact that a large portion of the population in some of the countries of LAC work in agriculture, they have not achieved even the most basic self-sufficiency. Consequently, this means greater numbers of imports, increased dependence - as Schejtman's paper shows - and makes the countries more vulnerable, in terms of both their economic policies and their relations with other countries.

The second issue is the need for participation by the small-farm sector. In general, in our countries, planning and policies are imposed from above and are expected to bring about change in the small-farm sector, but this seldom occurs. In reality, macroeconomic policies are totally out of touch with the problems of small farmers.

The third is Schetjman's reference to the need for a differentiated strategy for these small farmer groups. Obviously, as it was pointed out, this would require differentiated policies for dealing with the problems of small farmers.

The fourth issue is the urgent need for institutional reforms and the need for professional personnel who are highly qualified and motivated to deal with social problems.

Lastly is the importance of providing training for the small-farm communities. Generally, policies are formulated from above and have little to do with the real situation of small farmers. What is being proposed is truly revolutionary and constitutes going straight to the small-farmer organizations, and, through these organizations, to use a totally different type of training which will produce future trainers from the small-farm communities themselves.



**TRENDS IN THE INTERNATIONAL ECONOMY AND MARKETS:
IMPLICATIONS FOR AGROINDUSTRIAL DEVELOPMENT ***

G. Edward Schuh **

There are two kinds of trends in the international economy and markets that I would like to discuss in my remarks today. The first set has to do with what I choose to call changes in the structure of the international economy. The second set has to do with trends in the global agricultural sector per se. Both sets of trends can have a considerable influence on the development of the agroindustrial sector.

My remarks are divided into three parts. First, I will discuss the changes in the structure of the international economy that are of importance to both agriculture and the agroindustrial sector. This will be followed by a review of significant trends in the global agricultural sector. Finally I will discuss the implications of both sets of trends for the agroindustrial sector. At the end, I will make some concluding comments.

Changes in the Structure of the International Economy

The international economy has experienced enormous changes in the period starting in the mid-1960s and coming forward to the present. When economic historians look back on this period some hundred years from now, there is little doubt in my mind that it will be viewed as the period of greatest change in the international economy in modern history.

It is important to understand that these changes are not just chance events, and that they are not transitory. Some observers believe that the changes of the period we have just come through are of a temporary nature and that we will soon return to the conditions of the 1950s and 1960s. Nothing could be less likely because the changes we are witnessing are due to rather basic forces affecting the international economy. These basic economic forces include technological breakthroughs in the transportation and communications sectors, and the evolution of the international computer industry. These developments have significantly lowered the costs of transportation and communication services, and increased the scope and range of means with which people can communicate with each other on a world scale. They have truly converted us into a global village.

* Presented at the High Level Policy Seminar on Agroindustrial Development in Latin America and the Caribbean, sponsored by IICA, Brasilia, Brazil, April 4-7, 1989

** Dean, Humphrey Institute of Public Affairs, University of Minnesota, Minneapolis.

These developments have contributed to bringing about four significant changes in the structure of the international economy. The first of these is an increase in the dependence of national economies on international trade, a process that has been under way throughout the post-World War II period. It is difficult to appreciate now just how significant this trend has been. However, at the end of World War II almost everybody was pessimistic about the potential for international trade. After all, the 1930s had witnessed the virtual collapse of trade, and very few people expected it to recover in the period following the war.

There were other causes for pessimism as well. The enlarged centrally-planned-economy bloc, revolving around the Soviet Union, had turned inward and did not want to interact with the market economies of the world. In addition, many, if not most, of the developing countries of the world turned inward to pursue import-substituting industrialization policies.

Despite the pessimistic perspective which prevailed at that time, global trade has grown throughout the post-war period at a faster rate than has global GNP. Only five years in this period were exceptions to this general trend, and they were associated with serious economic recessions. In the 1970's, international trade accelerated, fueled by the flood of petrodollars and generalized rapid economic growth on the international scene. Countries as large as the United States saw their dependence on trade double in this decade.

The consequence of this growth in trade is that today almost all nations in the international economy are tied more closely together than they were at the end of World War II. The corollary is that almost all of the world's economies are today more open to forces from the international economy than they were at the beginning of the 1950s, an issue we will come back to at a later point in this paper.

The second change in the structure of the international economy was the emergence of an enormous, well-integrated international capital market. The contrast with an earlier period is also important in this case. For all practical purposes, at the beginning of the 1950s, there was no such thing as an international capital market. Such transfers of capital as took place from one country to another were from one government to another and we called it foreign aid. In the 1960s, however, there emerged a Eurodollar market as banks in Europe learned that they could re-lend the large holdings of dollars they had on deposit. This market grew rapidly, and evolved into what became known as Eurocurrency market as the banks began to relend other currencies as well. This market grew rapidly.

In 1973, we experienced the huge increase in petroleum prices, which provided still another stimulus to the international capital market. Most international transactions of petroleum were both priced and transacted in U.S. dollars. The result of the petroleum crisis was therefore to create a flood of what were called petrodollars. There was great concern at that time

that if these dollars were to lie idle in bank accounts, the international economy would collapse. Banks were therefore encouraged to recycle these dollars, which they did, however, to a fault. The result is what we today call the international debt crisis.

Today, the international capital market is enormous. The volume of transactions on it exceeds the volume of international trade by a factor of twenty, and the market links national economies together in ways every bit as important as international trade. Equally as important, as we will note below, this market connects the economic policies of national governments in ways that are very important to international commodity markets.

The extent to which this market is well integrated is also important. Given the developments in the communications sector, it is possible to conduct a transaction in this capital market at almost any time of the day and with any part of the world.

The third change in the structure of the international economy was the shift from the old Bretton Woods fixed exchange rate system to a bloc floating exchange rate system in 1973. The fixed exchange rate system had prevailed throughout the post-war period. It was established at the end of the World War II in the belief that competitive devaluations had contributed importantly to both the extent and depth of the Great Depression. Under its rules, imbalances in external accounts were to be eliminated by changes in domestic economic policies. Surpluses in the external accounts were to be eliminated by pursuing stimulative fiscal and monetary policies, while deficits in the external accounts were to be eliminated by pursuing restrictive fiscal and monetary policies. Exchange rates were to be changed only under dire circumstances, and in consultation with the international community.

The shift to the bloc flexible exchange rate system came about because it was no longer possible to sustain a fixed exchange rate system. The problem was that the international capital market had become too large for a fixed exchange rate system. Capital flows simply swamped the attempts of central bankers to sustain fixed rates.

It is important to understand the sense in which the exchange rate system is now one best described as bloc flexible. Under the present regime, the major currencies (U.S. dollar, Japanese yen, German Deutschmark, and British pound) float relative to each other. But the currencies of a number of other countries are tied to each of these major currencies. This gives the appearance that there is a great deal of fixity in the system. But as the major currencies float relative to each other, the values of the currencies tied to them shift implicitly. The result is a great deal of implicit flexibility. Consequently, something like 80 percent of international trade takes place across flexible exchange rates.

This bloc flexible exchange rate system has a number of important problems associated with it. For example, as the values of the major currencies shift relative to each other (often driven by large flows in the international capital market) large shocks are felt in the economies of the

countries that have fixed the value of their currencies to them. This interdependence creates serious problems for macroeconomic policy makers in those countries.

The fourth and final change in the structure of the international economy is an increase in monetary instability since 1968. The causes for this are not well understood, but the implications are very important in light of the other changes that have taken place in the international economy, such as large and sustained swings in exchange rates. The value of the U.S. dollar, for example, declined over a six-year period from 1973 to 1979. Then it experienced a six-year rise from 1979 to 1985. Now it is in the fourth year of a rather steady decline. These large and sustained swings have masked underlying comparative advantages for sustained periods of time, both in the United States and in other countries. They have also induced a great deal of protectionism by national governments.

Trends in the Global Agricultural Sector

There are a number of important trends in the global agricultural sector, four of which merit discussion in the context of this paper:

1. The growth in distortions to trade in the global agricultural sector

The post-war period has witnessed a growth in distortions to trade in international agriculture. These barriers to trade are important in both the developed and the developing countries, although those in the developed countries tend to receive more attention from the international economy than those in the developing countries.

Two kinds of distortions to agricultural trade are important in the developed countries. The first are those which limit access, usually designed to protect domestic agricultural sectors. The second are those which subsidize exports, designed in large part to avoid the accumulation of large stocks in the developed countries.

Protectionist policies are characteristic of the European Community, the United States and Japan. The policies of the European Community are probably the most pernicious, since they involve a general use of variable levies. In effect, such levies impose absolute barriers to trade, since it is not possible for efficient producers to get past them. With domestic prices set substantially above international border price levels, and protected with variable levies, the European Community has shifted over time from being a large net importer of agricultural commodities to being a large net exporter.

The United States also sets the domestic prices (to its producers) of many of its principal commodities above border price levels, although it does not make use of variable levies. Instead it makes more general use of standard tariffs and non-tariff barriers. These policies are quite restrictive, however.

Japan is a large importer of food. However, it too is quite protectionist in its agricultural trade policies, with the price of rice, for example, being set some eight to ten times higher than border price levels. There are also high levels of protection for its nascent beef industry and its citrus industry as well. Japan, perhaps more than either the United States or the European Community, keeps the domestic price of food to its consumers quite high compared to border price levels, thus restricting demand. Japan has also made extensive use of an undervalued currency, which is equivalent to an implicit tariff.

The European Community and the United States made extensive use of export subsidies. In the case of the United States, an important part of these export subsidies are inherent in the system of deficiency payments it uses to provide income transfers to its producers. With target prices set above what otherwise would be market-clearing levels, larger supplies come on the market than would have been the case, thus driving prices lower. An advantage of this system is that these lower prices stimulate consumption in the domestic economy. However, given the importance of the United States in the international market, these policies also cause lower international prices. Since 1985, the United States has also been making use of the more traditional cash export subsidies.

The extensive use of export subsidies by the European Community and the United States causes international prices for the commodities to which they apply to be lower than they would otherwise be. While, this is good for the consumers of importing countries, it has a pernicious effect on the producers in those countries.

Barriers to trade in the developing countries, on the other hand, are of a different nature. Rather than limit the access of producers in other countries to their markets, policymakers in developing countries tend to limit their producers' access to markets in other countries. The mechanisms for doing this include the extensive use of overvalued currencies, the widespread use of explicit export taxes, and frequent use of embargoes and quantitative limitations on exports. The extensive use of overvalued currencies is especially pernicious since they are equivalent to taxes on exports and subsidies on imports.

In summary, the net result of this configuration of policies is that agricultural prices in the developed countries are set significantly above border price equivalents, while those in the developing countries are set significantly below border price equivalents. This produces a serious loss of efficiency in the use of the world's agricultural resources. Far too much of the world's agricultural output is produced in the high-cost developed countries, while far too little is produced in the low-cost developing countries.

2. Increased instability in agricultural commodity markets

Agricultural commodity markets have been significantly more unstable in the 1970's and 1980's than they were in the two previous decades. There are two reasons for this increase in instability. The first is the growth in barriers to trade in agricultural commodities. Such barriers limit the potential adjustments which consumers and producers can make to changed conditions in international markets. The result is that shocks to these markets are channeled to those parts of the markets which are relatively open, making those markets inherently unstable.

The second reason for the increase in instability is the changes in the international economy discussed earlier. These changes cause agriculture as a trade sector to bear part of the burden of adjustment to changes in monetary and fiscal policy. In the 1950's and early 1960's, when the fixed exchange rate system prevailed and the international capital market was quite limited, agriculture as a sector was virtual exempt from the effects of changes in monetary and fiscal policy. With the shift to flexible exchange rates and the emergence of a well-integrated international capital market, trade sectors such as agriculture bear the burden of adjustment to changes in monetary and fiscal policies. Changes in monetary policies, for example, induce changes in the trade sectors to be more or less competitive in international markets, and thus to bear the burden of adjustment to changes in the policies.

It is important to note that it is not just domestic macroeconomic policies that produce shocks in the agricultural sector of individual economies. The policies of other countries can have a similar effect. Given the size of the U.S. economy, and the role of the dollar as an international reserve currency, U.S. macroeconomic policies have an especially important effect on international commodity markets.

3. Sluggish growth in the capacity to produce agricultural output

During the first three decades of the post-World War II period, the capacity to produce agricultural output increased in large part as a result of new land being brought into production in the developing countries and of the growth in their agricultural labor forces due to rapid population growth. The potential for continued expansion by this means is now limited, mainly because the stock of easily accessible land has been exhausted. To bring more land into production is now more costly. Moreover, rapid population growth is causing land clearing to push up on hillsides and onto marginal lands. The result is serious environmental problems, the degradation of existing lands, and shifts in man/land ratios which drive down the marginal productivity of labor.

Because of these limitations on the ability to expand the capacity of agriculture on the extensive margin, the international community has been investing in the capacity to expand output on the intensive margin. An important component of this capacity is the system of International Agricultural Research Centers that make up the CGIAR (Consultative Group for International Agricultural Research). There are thirteen such Centers in the

system, located strategically in some eleven different ecological zones. (A center for economic policy, which serves the global economy, is located in Washington, D.C., and a center which deals with germplasm, with a similarly broad mandate, is located in Rome.)

These centers are committed to help strengthen National Agricultural Research Centers (NARCs). The budget for the system as a whole is a modest US\$200 million a year, but the centers have contributed importantly to improving the technological base for tropical agriculture and now have the capacity to produce a steady stream of research and new production technology which leads to improved economic growth in the developing countries.

Over the last ten to fifteen years, the developing countries have also taken significant steps to upgrade their own capacity for agricultural research. Countries such as Brazil, Indonesia, Peru and Argentina have developed national agricultural research systems which turn out a steady flow of new production technology for their producers. In many cases these countries receive support from the international community- the World Bank and bilateral aid agencies- to develop their national capacity.

The combination of investments by the international community and national governments has, for the first time, given the world the capacity to generate new production technology on a sustained basis for tropical food commodities. However, this capacity is still quite modest, and in many cases may now be in a state of decline. For example, Professor Vernon Ruttan, an international authority on such issues, argues that the CGIAR system could productively absorb a budget of up to US\$1 billion a year. Moreover, he argues that, given the location specificity of agricultural technology, a complete international agricultural system should have an agricultural research station in each of its ecological zones. The world is far from having such a system.

The problems of the national agricultural research systems in the developing countries are even more severe. The international debt crisis has caused many such countries to reduce the amount of resources they set aside for sending their scientists abroad and for providing operational support to their nascent research systems. Consequently, many of these systems are in a state of decline compared to where they were some five years ago. A more serious problem is that, in many cases, the graduate training programs in these countries are also in a state of decline. Thus, the capacity to train future scientists is also falling.

The net effect of these multiple forces is that global agricultural output is now essentially on the same trend line as it was during the decade of the 1970s. It should be recalled that many observers thought the world was facing a Malthusian crisis in that decade. There has been a decline in population growth rates in the developing countries since the mid-1970s, but those rates are still quite high in historical terms.

4. Increased demand for agricultural output likely in the future

The mid-1980s witnessed the lowest prices in real terms for some commodities since the 1930s and in some cases the lowest in history. This caused many observers to believe that the world's food production problem had been solved. Nothing could be further from the truth. The low prices of that period were a consequence of weak international demand due to the international debt crisis and sluggish economic growth worldwide. This problem was exacerbated by the export subsidy wars between the United States and the European Community.

A more careful look at demand potential in the developing countries presents a rather different picture. Conservative assumptions about population growth rates and increases in per capita income suggest that it will be difficult to keep agricultural output growing at the same rate as the growth of demand. For example, a population growth rate of 2 percent per year, increases in per capita incomes of 3 percent per year, and an income elasticity of demand of 0.6 results in an increase in demand of 4 percent per year. A population growth rate of 3 percent per year, increases in per capita income of 5 percent per year, and the same income elasticity of demand results in an annual increase in demand of 6 percent per year. Neither of these sets of assumptions are unrealistic.

Sustained growth rates in agricultural output of between 4 and 6 percent per year are not easy to attain, especially when the amount of new lands that can be brought into production has declined. Very few countries have attained such growth rates on a sustained basis in the past. More importantly, such growth rates are outside those attained historically in the now-developed countries.

As one looks to the future, the chances for a strong surge in demand seem to be great. First, the international debt problem has been a serious constraint to increased demand on the international scene. Progress is being made in reducing this problem, with the share of exports required to service the debt already having declined significantly, and the debt problem will eventually be behind us. Second, many developing countries have experienced substantial declines in per capita income during the 1980s. History teaches us that the recovery from such declines can be rapid. Third, there is much new technology to be adopted by the developing countries, especially in their manufacturing sectors. The spread of general education in these countries will make it easier for these countries to adopt this technology. This can help fuel rapid economic growth.

Another positive feature on the international scene is the reform of economic policies in the developing countries. Interestingly enough, the international debt problem is forcing such reforms, inducing country after country to shift their domestic terms of trade in favor of agriculture. This shift broadens the basis of economic growth and provides a powerful basis for increases in demand for agricultural output, even though in the first instance

the associated increase in price for food may limit demand. This shift in domestic terms of trade will also increase the supply of agricultural output, but as noted above, the increase in demand will in most cases outweigh the increase in supply.

The expectation, then, is for a general recovery in economic growth on the international scene, and with it, more rapid growth in demand for agricultural output. The main barrier to such an economic recovery and increase in demand is growing international debt of the United States. That debt is rapidly approaching US\$500 billion, and experts predict that it will not level off until it reaches US\$1 trillion in 1991.

The key issue will be how well the United States manages its macroeconomic policies in the face of that debt. It seems clear that the value of the dollar will have to fall significantly if the United States is to earn the foreign exchange needed to service that debt (estimated at US\$50 billion in 1991). If the U.S. should limit the fall in the value of the dollar by pursuing restrictive monetary policies, and if this should occur in the midst of an economic recession in that country, the result could be a disaster comparable to that of the 1930s. We should all pray for wisdom on the part of U.S. policymakers.

Implications for the Agroindustrial Sector

The combination of changes in the structure of the international economy and trends in the global agricultural sector have important implications for the development of the agroindustrial sector. I have chosen to discuss six of these implications.

1. An upward trend in agricultural commodity prices?

I have posed this statement with a question mark because the post-war period has been characterized by downward trends in the prices of many agricultural commodities. To go against such trends requires considerable courage, or a great deal of confidence in the evidence which suggests that the conditions influencing those trends are changing.

My own judgement is that the conditions have in fact changed, and that the outlook for the next decade is for an arrest in the downward trend of the past, and possibly a period of rising prices. The basis for that judgement is the analysis of demand and supply which I outlined above, and a belief that the managers of U.S. macroeconomic policy will continue to muddle through.

If my view is correct, the agroindustrial sector is likely to face rising prices for its raw materials in the near future. The analysis above focused mainly on the major commodities, and especially on those that are traded. The agroindustrial sector tends to focus on the commodity side on minor commodities and on products that are not traded. However, in many cases the analysis will carry over directly since the various commodities compete for the same resources. Strong demand for tradable commodities pulls resources away from the nontradables, with the rise in prices for the former spilling over to the latter.

The effects on agroindustrial sectors producing modern inputs for agriculture will also be the same. The demand for these inputs is a derived demand. Thus, increases in demand for commodities will also constitute an increase in demand for modern inputs. In this case, however, the outlook for components of the agroindustrial sector which produce modern inputs will be more favorable. Rather than seeing an increase in the price of their raw materials, they should experience an increase in the prices of their final products.

There are two main doubts about the projected increase in prices for agricultural commodities. The first is whether the global economy will in fact recover from the sluggish growth of the 1980s. U.S. macroeconomic policy will be key to this issue, as will economic policies in the developing countries and their ability to resolve their debt problems.

The second doubt concerns the progress made with biotechnology. This new research methodology has considerable potential. However, progress to date has been slow and the expected potential has not been realized. Progress on this front, and the ability of the developing countries to absorb the new technology, is one of the major uncertainties on the international scene.

2. Commodity markets will continue to be unstable

Two factors are likely to continue to contribute to unstable commodity markets in the future. The first is a continuation of unstable monetary conditions. Nothing less than a major reform of the international monetary system can change this, and such reforms are not yet on the horizon. Only a major crisis in the global economy is likely to bring about such a reform.

The second factor is a continuation of present barriers to trade in agricultural commodities on the part of both the developed and developing countries. The Multilateral Trade Negotiations now underway in Geneva constitute a major effort to reduce these trade barriers. However, I am not optimistic that anything will come from those negotiations, since two major issues are being almost totally omitted from the discussions. The first is the role of distortions in exchange rates as a distortion to trade. The second is any consideration of the barriers to trade imposed by the developing countries. Either one of these is far more important in practice than the protectionist policies and export subsidies of the developed countries.

3. Ample supplies of capital will exist for developing the agroindustrial sector.

The critical issue here will be the ability to put the international debt problem behind us. Once this is done, and the international community regains confidence in the ability of the developing countries to manage their economic policies, the international capital market will be reactivated. Those interested in developing the agroindustrial sector will then be able to tap a worldwide pool of savings for investment. Recovery in the global economy, with its increases in per capita incomes, will also increase the supply of investible funds.

4. The supply of qualified labor for the agroindustrial sector will increase

Development of the agroindustrial sector requires an adequate supply of skilled labor. An enlarged supply of such labor is coming onstream, induced in part by the spread of general education. Whether the supply will be adequate will be determined by the willingness of governments to invest more in their human capital. Despite the spread of general education in the developing countries, it is still the case that these countries, especially in Latin America, are grossly underinvesting in education and training.

One can be optimistic that performance in this area will improve in the future, especially if there is significant economic recovery in the developing countries. Most governments now see investments in human capital as the key to economic growth. The major barrier to expanded efforts at this time is budget constraints. Economic recovery will help to ease these constraints.

This is not a place for complacency, however. Those interested in developing the agroindustrial sector should continue to pressure national governments to increase their investments in the training and education of their labor forces. Making such investments is a proper role for government; investing in government-controlled enterprises which produce goods and services that might better be produced in the private sector is not.

5. A strong demand for agroindustrial output is likely

This statement applies to both the producers of modern inputs for the agricultural sector and the production of processed products. As noted above, expansion of global economic activity can be expected to increase the demand for agricultural output overall. An important part of that increase in demand will be for processed products, as consumers upgrade the quality of the food they consume. But a general rise in per capita incomes has another effect as well. It raises the opportunity cost of time in the household as additional members of the family enter the labor force and as wage rates rise. This rise in the opportunity cost of time to the household increases the demand for convenience foods, which, in general, are processed or packaged in one form or another.

6. Trade barriers will represent an important limit to the expansion of the agroindustrial sector

The important point here is that tariffs on processed agricultural commodities tend to escalate, compared to tariffs on commodities in their raw material form. This is characteristic of all countries, developed and developing alike. Everybody wants to internalize the value added of the processing activity. The problem with this escalation is that, like all trade barriers, it imposes negative externalities on all countries, including those that impose them. Such barriers preclude the realization of the gains from international specialization and the international division of labor. Thus they sacrifice potential income growth, and the expansion of markets for all.

Those interested in promoting the development of the agroindustrial sector should urge national governments to reduce and even eliminate this escalation in tariffs for processed products, even though their natural reaction will be to ask for protection of their infant industries. Freer trade will expand markets for everybody.

Concluding Comments

There are two points I would like to emphasize in closing. The first is to emphasize the importance of taking the global perspective I have used to try to explain the agroindustrial sector and its potential for growth and expansion. We are now truly a global village, and hardly any economic activity can be understood outside of its global context.

The second point is the need to recognize that a more liberal trade environment will contribute to developing the agroindustrial sector. The world is now sacrificing a great deal of agricultural output and national income in the misguided pursuit of protectionist policies that are demonstrably counterproductive. It is high time that we recognize that these policies cannot attain their avowed goals in the international economy as it exists now, and we must press strongly for their elimination.

MACROECONOMIC POLICIES AND AGROINDUSTRIAL DEVELOPMENT

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INTRODUCTION

Agroindustry has to be looked at from two basic points of view: as a prerequisite for processing, and as a means for generating economic activity and social returns. As a processing action, it makes it possible to reduce perishability and facilitate marketing (of fruits and vegetables); it makes direct human and industrial consumption of certain products (soybeans, wheat, cotton) possible; it reduces transportation costs (dehydration of cassava and potatoes) and it promotes efficient consumption with animal feed concentrates. As a force generating economic activity and social benefits, through investments in agroindustrial plants (regardless of their complexity and size), capital and technology are brought together to create jobs, with a value of marginal productivity of labor higher than in agriculture.

On the basis of these considerations, agroindustries can be broadly justified. Nevertheless, for agroindustry to develop, certain conditions must be met. These conditions can come about spontaneously or they can be encouraged by specific policies. The haphazard application of policies, particularly macroeconomic policies of a protectionist nature, can create inconsistent and socially inefficient scenarios that allow economically and socially inefficient agroindustries to be created and maintained.

Basically, this summarizes the frame of reference used in developing this paper, which, in the first place, presents some structural conditions affecting agroindustry that should be kept in mind when undertaking agroindustrial development, especially as regards macroeconomic policies. Next, an analysis is made of the most common macroeconomic policies and how they affect agricultural enterprises at both the national and international levels, according to the different structural conditions. Likewise, reference is made to how the demand for agroindustrial products is affected by prevailing macroeconomic conditions. Then, the determining factors in several successful agricultural and agroindustrial modernization processes in some Latin American countries are studied. The characteristics of these processes are examined in relation to the macroeconomic and sectoral policies in effect in each country. Finally, the challenges that must be faced in the future when defining and applying agroindustrial development policies are described, and the elements for a proposal for a comprehensive policy are presented.

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STRUCTURAL CONDITIONS AFFECTING AGROINDUSTRY

Agroindustry, as a microeconomic or entrepreneurial activity and as an economic sector, is characterized by a series of elements that will determine the achievements that may be obtained through macroeconomic policies, within and beyond structural adjustment programs. Therefore, it is helpful to review these elements, with the aid of examples whenever possible. Reference is made to four structural conditions:

- a. production technology, from the point of view of the input-output ratio, and the degree of flexibility of this ratio;
- b. agroindustrial systems or complexes with varying degrees of vertical integration;
- c. intersectoral linkages or inter-industrial relations within the economy; and
- d. the international connection in agroindustrial trade.

The following is a discussion of these elements and their importance.

Technology and input-input and input-output ratios at the enterprise level

The processing of agricultural and livestock products is categorized as an industrial activity for various reasons, among which is the more specific and less flexible input-output ratios. This allows for greater control over the process and reduces production risks, up to the finished product. The finished product is almost always less perishable than the raw materials processed, as long as the necessary technological conditions are met. As will be seen later, the nature of the input-input, input-output ratios and the perishable nature of finished products are important factors that an enterprise must take into consideration to be able to adapt to changing economic conditions.

Table 1 presents some groups of agroindustries with different degrees of flexibility in their input-input and input-output ratios and degree of perishability ¹. In the case of input-input ratios, the greater the elasticity of substitution (flexibility of use), the greater the capability of the enterprise to adapt to changes in the prices of inputs, without (significantly) changing the quality of the finished product. It is quite clear that the greater the enterprise's access to information on prices and input availability, the less vulnerable it is. As technological innovations are introduced that increase the elasticity of substitution of factors and/or

1 In this study, only the possibility of substitution between agricultural and livestock inputs is examined. No reference is made to the possibility of substituting all of these for other factors such as labor, energy, etc.

Table 1. Input-Input, Input-Output Ratio and Perishability in Some Agroindustries.

Input-input ratio		
Fixed	Variable	Very variable
Catchup (tomato-sugar)	Juices Breakfast cereals	Concentrates Food for children
Input-output ratio		
Fixed	Variable	Very variable
Butter Olive oil Wine Flour Coffee	Processed meats	Dairy products
Degree of Perishability		
Low	Medium	High
Dairy products Eggs Poultry Processed meats	Fruit pulp	Canned Goods

agricultural inputs, and, at the same time, lower unit costs and/or marginal costs, more benefits will accrue to enterprises having access to this information, to financing and that have a capacity for change (Goodman et al., 1987).

As regards the input-output ratio, the capacity to adjust to economic change (and in particular to the prices of the finished products and/or income) increases as options for generating different types of finished products increase. A good case in point is the dairy industry, which has different levels of access to and ways of using technology. In Costa Rica, for example, the dairy industry has a high capability for absorbing technology. It produces and markets more than 10 different products (milk, cheese, butter, ice cream, yogurt, etc.) and some 10 different types within each category (cheese: white, Swiss, cream, etc.). In other countries, such as Peru, where this ability to absorb technology has not been developed, milk production has not increased (Camacho, 1989).

The degree of perishability of finished products is also a factor determining the viability of agroindustrial enterprises. To a great extent, they are influenced by transportation time to the final markets and the effective handling of inventories. Technological progress in the agroindustrial process (plastic vacuum packaging, UHT processing and frozen concentrates, for example) will, without a doubt, have a significant impact on fruit production and marketing, and, in turn, will affect consumption patterns. However, as seen further on, in relation to international trade, the viability of these technological processes at the enterprise level is dependent to some degree on the existence of cold storage networks in the international transportation system.

Agroindustrial complexes and the degree of vertical integration

Commercial-sized agroindustries are frequently conglomerates having a high level of vertical integration. This process of integration usually takes place gradually, with the growth of the enterprise, and serves to establish greater consistency and compatibility in decision-making concerning the different components of the production-processing-marketing complex.

It should be noted that the level of vertical integration is not necessarily directly related to the degree of processing. For example, in the case of the agroexporting complex of fresh vegetables in Mexico (Sinaloa), which includes a selection, cooling and packaging process, the producers (usually members of one family) own the packing plant and, in many cases, the trailers that transport the produce to the border (Vidali, 1985). In other cases (for example, the Gloria Evaporated Milk Company in Peru), producers simply supply the fresh milk and have no decision-making power in the company which, due basically to its geographic concentration, functions as a monopoly (Lajo, 1986). It is evident that in the first case, the ability of the system to absorb and distribute the costs of any adjustment process is greater than in the second case, where negative effects on demand are transferred by the enterprise to the dairy farmers, with negative consequences on supply (when costs increase).

The fact that agroindustry is not linked to local primary production is seen as one of the key problems limiting the distribution of agroindustry benefits (Jacobs, 1988). This situation is associated to some degree with external dependence and the internationalization of agroindustries. For example, in the case of Peru, 50% of the domestic demand for flour in 1960 was met by domestic production; in 1980, domestic production provided only 1% (Fernández-Baca et al., 1983).

Inter-industrial relations and intersectoral linkages

Reference, although brief, must be made to this very important topic, if we recognize the fact that an understanding of sectoral linkages (backward, forward and in the final demand) is essential to propose incentive policies that have a high multiplier effect on the economy.

Although multipliers of final demand are frequently higher in developing countries (Bell, et al., 1982), the industrialization of agriculture has a significant impact on the economy. As agriculture develops, more and more production takes place off the farm: technology is already incorporated into the purchased inputs, agricultural products are inputs for agroindustrial processes, and agriculture becomes only one stage in the food system. This process is quite advanced in the United States, where only 10% of the value added of foodstuffs is produced on the farm, while 40% comes from inputs and the remaining 50% corresponds to processing and value added from the marketing process (Levins and Lewontin, 1985).

The importance of these linkages, for both developed and developing countries, is well documented. Studies made at different times in several countries consistently show that the agroindustrial sector is first or second, in terms of its multiplier effects (Table 2). A recent FAO study of five countries indicated that backward linkages in the food industry sector are greater than in other sectors of the economy, regardless of level of development (Table 3).

Nevertheless, these linkages will come about only if there is a rapid increase in production and productivity, accompanied by appropriate changes in sectoral policies. Although some larger countries, such as Brazil and Mexico, have taken great strides in developing integrated food systems, coordination between agriculture and agroindustry is still inadequate in many countries. This creates a need to import large amounts of inputs for agroindustry (Table 4).

Given existing and potential linkages, it can be said that macroeconomic policies affecting the use of local resources, as compared to those affecting the use of imported resources, are determining factors in creating economic activity at the national level. However, this is hardly ever taken into consideration when designing macroeconomic policies; as a result, opportunities for equitable growth are lost.

Table 2. Economic Importance of Agroindustry (AI) in Some Countries.

Countries (in descending order of per capita output)	Value added by AI as % of value added	% of agricultural production destined for agro-industries	Multiplier of final demand of AI Value	Original ranking ^a
Canada, 1985	74	n.d.	2.53	I
United States of America, 1983	155	79	2.62	II
France, 1974	87	62	1.94	I
France, 1962	61	62	1.87	I
Greece, 1966	37	42	2.25	I
Turkey, 1968	17	15	2.09	I
Iraq, 1968	18	15	1.98	III
Tunisia, 1972	27	37	2.17	I
Sahel, 1969	39	58	2.11	II
Morocco, 1969	39	35	2.19	II
Morocco, 1958	15	17	2.36	I
Mali, 1970	5	8	—	—

a Rank is established among 9 economic activities, according to the value of the multiplier coefficient of final demand.

SOURCE: World study of agroindustries project 1975-2000.

Table 3. Backward Linkage Indexes per Unit of Final Demand^a.

	Agriculture	Food Industry	Food Sector	Other Sectors ^b
Brazil	0.9063	1 2865	1 1947	1 0981
Chile	0.9702	1 2230	1 1555	0.9897
Guatemala	0.8372	1 2833	1 0393	0.9891
Mexico	0.8654	1 2642	1 1237	0.9730

a Average for all sectors is equal to 1.

b Does not include fuel, lubricants and trade.

SOURCE: Prepared by FAO, based on information in ECLAC's "Tabla de insumo-producto en América Latina," Cuadernos Estadísticos de la CEPAL No. 7. Santiago, Chile.

Table 4. Ratio of Imported Inputs and Value Added in Agriculture and Agroindustry.

	Agriculture	Imported inputs/Value added Agroindustry	Others
Brazil, 1970	0.7	5.0	6.9
Chile, 1977	7.1	42.8	17.2
Guatemala, 1971	3.9	44.7	13.0
Haiti, 1975/1976	0.8	71.6	51.1
Mexico, 1975	0.5	6.8	6.2

SOURCE: Prepared by FAO, based on information in ECLAC's "Tabla de Insumo-producto en America Latina", Cuadernos Estadísticos de la CEPAL No. 7, Santiago, Chile, 1983.

International relations in agroindustrial trade

At the international level, agroindustry is dependent on four factors: technology, management/organization, financing and markets. This dependence often requires somewhat traumatic adjustments when macroeconomic conditions change. At other times, the enterprises' activity is simply not viable. The following is a brief analysis of these factors, as the issue is studied in more depth in other Seminar presentations.

The technological component often serves as the vehicle for transnationalization and, at times, creates a dependence on certain strategic inputs. The more complex and modern the agroindustry, the greater the dependence. Dependence can be as insignificant as, for example, a flavoring agent for ice cream (for which options exist, including eliminating production of ice cream), or as important as imported wheat. Most countries have become dependent on imported wheat and it is not easy to eliminate this dependence: no minister of agriculture can run the political risk of not having enough bread available at all times.

One positive and beneficial long-term element is the upgrading of managerial capabilities and the contribution made to the development of human resources. Although transnationals may sooner or later withdraw their participation, while they are active in the country they contribute to the development of human resources. Since improved managerial capabilities is a decisive factor in the development of agroindustry, mechanisms should be proposed to capitalize on this input.

Another matter usually considered to be a positive aspect of transnationalization (national or extraregional) is the inflow of foreign capital. However, although external funds are generally provided, the ability of transnational enterprises to extract resources from the country is amply documented. It is perhaps here that the real benefits of transnationalization are questioned. It is a situation that cannot easily be remedied by tariff policies. Instead, it requires profound changes in tax and foreign investment laws. Moreover, these changes cannot control mechanisms established by the international companies to draw local resources out of the country.

Marketing is the fourth element of dependence on the "international connection." This element has taken on more importance in recent years. The selling of a product in a domestic factory at price X, and the corresponding payment of domestic taxes on that price and its sale to consumers in a developed country (Europe, Japan, the United States) at price 10X, can only be explained by two possible factors: extreme inefficiency in the marketing process, which is not very likely, or collusion on the part of two affiliated enterprises, the one that packages and exports at one end, and the other that imports and sells at the other. As long as these processes exist, which are legitimate among enterprises but socially questionable at the international level, the benefits of transnationalization will increasingly be challenged.

MACROECONOMIC POLICIES

In general terms, macroeconomic policies increasingly take into account how the economy of the given country interacts with the continually changing panorama of the international economy. At the same time, macroeconomic policies establish the structure of incentives within the economy, between sectors and between goods; that is, they define how resources are allocated. Therefore, at least marginally, they affect the overall growth of the economy and the capacity for domestic savings, which results in capital formation.

At present, macroeconomic policies are characterized by economic distortions that have a particularly strong effect on agriculture. In other words, development policies do not treat the different sectors equitably, nor do they contain sufficient incentives for the agricultural-agroindustrial sector (AAI). It is not enough, however, to eliminate the obvious distortions, since it would also be necessary to define the frames of reference in order to be able to measure the distortions; it would be necessary to actively promote development and the application of standards of efficiency and equity; it would also be necessary to define a policy in regard to the international economy.

Growth of demand

The growth rate of aggregate demand limits the possibilities of growth in the AAI sector. At the world level, in the long term, the ratio between sectoral and overall growth is approximately 0.6 and 0.75, which is within the normal range of income elasticities of food products. These figures could be adjusted upwards marginally by a successful AAI export or food import-substitution policy, or downwards, as a result of increased dependence on imports or a drop in competitiveness in export markets. Seldom do these figures vary for long periods of time, the major exception being the present decade of crisis when agricultural growth surpassed overall growth. In regard to the sectoral-overall growth ratio, agricultural goods are faced with a demand characterized mainly by price elasticities which, in absolute values, are lower than one. Therefore, growth in agricultural supply would tend to reduce the real income of producers, unless demand is increased at the same or at a greater rate.

Likewise, an increase in the growth rate of demand could bring about an increase in real agricultural prices, but this would depend to a large degree on the existence of coordinated development and foreign trade policies. Otherwise, the increase in demand could turn into increased food imports. From the point of view of national welfare, however, it is not advisable to allow real agricultural prices to rise, although the opposite was true during the 1980s in almost all the countries of the region. These considerations, among others, underscore the need to modify current economic policy, using an historic approach in order to facilitate understanding of the current economic situation.

Be that as it may, it should be noted that changes in demand caused by changes in income usually differ for the various groups of agroindustrial producers; not only because of income elasticities, but also because of the portion of income spent on the product and the facility with which the government "adjusts" its price control and/or foreign trade policies.

Monetary policies

Historically, there has been a trend in the region to follow an overvalued domestic currency policy. During the 1980s, this trend was reversed in several countries, under strong pressure from the foreign debt and the adjustment programs. Although the RER (real exchange rate) is a single price (of foreign exchange) at the overall level of the economy, there is a growing conviction that this price greatly affects real agricultural prices, that is, in terms of intersectoral exchange (Schuh, 1987; World Bank, 1986 and 1987). It is evident that the two most important determining factors of real agricultural prices are international trends in these prices and the RER.

It has been shown that an overvalued currency has a very negative impact on real agricultural prices and, as a result, on the purchasing power of rural families. At times, this type of policy is drawn up in an effort to stem inflation, and at other times, it originates to benefit industries geared to the domestic market, but which heavily depend on imported inputs. As to the management of the RER, regardless of the objective of the policy, sooner or later it becomes evident that the policy cannot be sustained since it creates unmanageable disequilibria in the balance of payments situation.

It should be noted that an increase in the RER will foster import substitution, which can be beneficial. Nevertheless, as already mentioned in the case of some agroindustries, technological dependence means that in the short term certain imported components cannot be substituted. This situation should be evaluated carefully to determine how much of an increase in cost can be anticipated in different agroindustries, as a result of increasing the RER.

Unfortunately, the devaluation of exchange rates is not a widespread practice throughout the region. In several countries, we see a pattern of multiple exchange rates and a system for rationing foreign exchange with a ranking of goods. Under this system, the AAI sector does not necessarily hold a favored position. In addition, we must also realize that, generally speaking, inflation rates in the region have been higher this decade than during the 1970s. Although the exchange rates are more flexible, at times devaluation tends to lose strength vis-a-vis the relentless progress of inflation. Thus, agricultural sector authorities should consider giving priority to "monitoring the real exchange rate." When multiple exchange rates or foreign exchange rationing systems exist, this monitoring will make it possible to calculate "the agricultural exchange rate," that is, the exchange rate that corresponds to international agricultural transactions. For this purpose, all types of hidden costs must be taken into account, such as the required advance deposits for purchasing foreign exchange, which can also vary

according to the ranking of the goods. Unfortunately, the balance of payments situation in the region suggests that these complications in the exchange systems may very well continue for several more years, at the very least.

Trade policy

Trade policy consists of tariffs, explicit or implicit import quotas and measures aimed at encouraging exports. It should be noted that trade policy is not the sole factor determining economic protection rates, since they are also affected by exchange rate, tax and subsidy policies. Nevertheless, trade policy is a key element in protectionist policies.

Three general trends in trade policy have been observed in several economies of the region: a) greater economic protection for the industrial sector than for the agricultural sector; b) protection has favored import substitution sectors and commodities, to the detriment of export commodities; c) rates of protection within the agricultural sector are highly uneven among commodities and levels of technology. From the point of view of economic efficiency and, as a result, of the prospects for economic growth, the average level of economic protection is less important than its consistency among producers and sectors. The average should be modest. In any event, it should fall within the range acceptable to GATT, that is, between zero and 30%.

The uncertainty of the current world economy is not reflected solely in capital flow and exchange rates, but also in real international prices, particularly prices for raw materials. An effort should be made to stabilize international prices to some degree before this instability affects the domestic economy. The broad scope of effects produced by the exchange rate make it an inappropriate instrument for dealing with every shift in international prices.

It is here, therefore, that trade policies can play a very important role. When real agricultural prices drop on international markets, tariffs could be based on moving averages of international prices. In turn, a downward-scaled tariff could be applied when international prices rise. Tariffs could even be eliminated when there are sharp increases. A similar principle has been applied to taxes on traditional exports in many countries. Whatever the approach, the goal is clear: to lessen fluctuations not linked to prices.

Fiscal policy

Fiscal policy concerns two topics: taxes and expenditures. As to its impact on the performance of the sector, the main concern at the moment is not collection or expenditure, but rather their modalities. The mode of taxation, for example, can have a marked effect on determining relative prices and the rates of economic protection; thus tax policy is an important aspect of price policy. The same can be said about the structure of subsidies granted to producers, agroindustries and consumers. Although the taxes agriculture pays in some countries may not be very significant, in relation to the total fiscal

balance, there are several notable exceptions, particularly as concerns processed raw agricultural and livestock commodities (meat, coffee, soybeans, sugar, cacao, cotton, vegetables).

In countries where the agricultural sector makes a significant tax contribution, there are few new options for changing taxing methods. This makes it even more urgent to rethink agricultural tax policies. Taxes on exports reduce production and income to levels lower than those that could be achieved otherwise, frequently reducing the competitiveness of raw materials or processed products with comparative advantages on international markets. Moreover, this policy negatively affects rural income levels by decreasing the multiplier effects on income, and by creating an uneven distribution of income, to the detriment of rural areas.

Alternative taxation methods should be sought for the AAI sector, although this may take time since much pressure exists to reduce fiscal deficits in the current economic situation. The challenge is to find alternative tax methods that do not distort prices heavily, particularly if we recognize that, in general, taxes on the basic factors of production (income, land and water) do not create economic distortions of relative prices and in the allocation of resources, while taxes on products do.

For future actions, it should be noted that taxing agricultural lands would have a series of institutional and administrative effects, and would require an updated land record system as well as an intense effort to train tax collectors. Thought should be given to gathering practical approaches and experiences on this matter, analyzing and discussing them. A review of the tax policies of the sector should cover taxes on agroindustry, including implicit taxes on government-controlled agroindustries.

These same ideas can be applied to fiscal policies dealing with subsidies for products, which give rise to distortions in resource allocation and which, unlike taxes, are costly for the national treasury. This does not mean that subsidies do not have a role to play in fostering agroindustries; nevertheless, they must be justified in light of the policy objectives and the efficiency of other instruments used for meeting the desired objectives. If the main purpose is to protect domestic products against fluctuations in international markets, then the most appropriate instrument is a variable tariff, which, in addition to being flexible, generates fiscal income instead of fiscal expenditures. Likewise, if the purpose is to protect producers from the effects of export subsidies granted by industrialized countries, the most appropriate instrument is tariffs, preferably modest ones.

Within the framework of such a strategy, care should be taken not to overly bias the allocation of resources toward import substitutes, to the detriment of exports. Thus, a modest protection policy, through tariffs, would have to be accompanied by export subsidies (instead of taxes!). In principle, income from tariffs could be earmarked for these subsidies. If the purpose is to encourage the reconstruction of a particular agroindustry (i.e., sugar) or to diversify agriculture, a subsidy could be justified and be consistent with the norms of economic efficiency, as long as it were temporary (i.e., with a three- to five-year duration, preferably scaled downward

annually) and tied to a concrete reorganization plan. This type of subsidy would promote dynamic efficiency in the economy. This concept has been used successfully by the Japanese to encourage the reorganization of their heavy industry.

MODERNIZATION, AGROINDUSTRY AND MACROECONOMIC POLICIES

Modernization and agroindustry

In order to identify the factors that contribute most directly to the modernization of agriculture in Latin America and the Caribbean, IICA has initiated a study of specific subsectors in selected countries. Modernization in specific subsectors of agriculture is identified by sustained growth in production, productivity and net incomes at the agricultural enterprise level, without significant protection from the State through subsidies or high tariffs and non-tariff barriers on imports. The hypothesis set forth in the study is that the factors determining modernization can be divided into five categories: market access, favorable macroeconomic and sectoral policies, adoption of appropriate technology, organization of producers, and business management skills.

IICA's study seeks to determine the characteristics of the modernization process, particularly the spreading of the process to all production units; the effects on productivity, labor and wages; and the multiplier effects on production and employment which can be generated through backward and forward linkages. Given the importance of the last point, a second phase of the study will focus on the multiplier effects of the modernization of specific subsectors in Latin American agriculture.

The study is under way in eight Latin American countries, focusing on subsectors that have already shown signs of sustained growth associated with the modernization process. Table 5 lists the eight countries.

The study begins with a description of the dynamics of the process and an analysis of the macroeconomic and sectoral policies applied in each country and in each subsector. Next, the other factors of modernization (marketing, technology, organization of producers and business management skills) are analyzed.

In most of the cases studied, an important share of production is channeled to exportation. This indicates that modernization has involved achieving a high degree of competitiveness on world markets, based on the use of comparative advantages such as climate or reduced production costs resulting from well planned economic policies.

The elements of the agroindustrial process contributing to efficient participation in international trade have been: quality control of fresh produce, packing, processing of raw materials, use of transportation services, marketing and other export services. Also, products destined for the domestic market, such as poultry and dairy products, undergo a significant amount of processing.

Table 5. Modernization Case Studies.

Country	Subsector	Market
Chile	Fruit	External
Peru	Poultry	Domestic
Costa Rica	Dairy	Domestic
Mexico	Vegetables and Fruits	External
Argentina	Grains	External
Brazil	Soybeans	External
Colombia	Flowers	External
Ecuador	Shrimp	External

Table 6. Modernization of Agriculture in Eight Latin American Countries: Production and Exportation Dynamics.

Subsector	Annual Growth Rate of Production		Annual Growth Rate of Exports	
	Subsector	Agriculture	Economy	
Fruits (Chile)	12.2	3.3	2.2	17.7
Vegetables (Mexico)	5.1	2.8	1.1	5.6
Grains (Argentina)	3.9	1.7	0.7	10.3
Poultry (Peru)	6.7	0.9	0.7	—
Dairy (Costa Rica)	3.7	2.3	2.0	—
Soybeans (Brazil)	15.0	3.9	2.7	16.0
Flowers (Colombia)	18.3	3.4	4.0	18.3
Shrim (Ecuador)	18.8	3.0	2.1	24.9

SOURCE: The production and exports growth rates of the subsectors are taken from the case studies of the project on agricultural modernization and generally refer to the 1970-87 period. Agricultural growth rates of the countries are taken from IICA's statistical data bank and refer to the 1970-86 period. Economic growth rates are taken from ECLAC, 1981-88.

Thus, for example, exportation of fruit from Chile (apples, peaches, grapes) and fruit and vegetables from Mexico (tomatoes, melons, watermelons) involves an elaborate selection procedure, meeting international quality control standards, packing, labelling, refrigeration and transportation. This process must be carried out quickly in order to comply with the markets' demands for fresh produce. Flower exports from Colombia require a carefully timed process, in which refrigeration and the speed of transportation are key factors in providing the final market with fresh flowers. Exports of fresh shrimp from Ecuador also require refrigeration and rapid transportation.

All of these export activities require substantial investments, which depend on the relative stability of macroeconomic and sectoral policies and a long-term outlook in the markets where the products are sold. Investments are needed to increase the area under cultivation and to build fences, and for export infrastructure (selection, packaging and refrigeration plants). In some cases (Chile, for example), new investments are geared to technologies that conserve fresh produce in controlled atmosphere chambers, which make it possible to keep the produce fresh for longer periods of time and, consequently, to reach terminal markets in high-price seasons.

Macroeconomic policies in agricultural-agroindustrial modernization

The first results of the study show that, during the 1970s and 1980s, there was substantial growth in the subsectors studied, in spite of the economic crisis caused by the foreign debt situation in Latin America in recent years. In particular, the study indicates that the average annual production growth in the subsectors studied is, in all cases, greater than agricultural growth and overall economic growth (Table 6). The greatest annual growth rates are seen for fruits in Chile (12%), soybeans in Brazil (15%), shrimp in Ecuador (19%) and flowers in Colombia (18.3%).

In six of the eight case studies, production was geared mainly for export to extraregional markets; in all six cases, growth in exports exceeded the increase in production. This can be explained in some of the cases by the positive trend in international commodity prices, but it is also a reflection of the greater bias in domestic production toward agroexports, particularly during this decade. The highest annual export growth rates are seen for fruits in Chile (17.7%), vegetables in Mexico (5.6%), soybeans in Brazil (16%), shrimp in Ecuador (24.9%), flowers in Colombia (18.3%) and grains in Argentina (10.3%).

The modernization process in the agricultural-agroindustrial subsectors of the eight cases can be explained basically by the existence of favorable export market conditions, appropriate economic policies, significant technological development and good business management. Nevertheless, this paper considers the main factor to be economic policies that foster the modernization process. Among these are pro-export macroeconomic policies, particularly exchange rate policies and policies that encourage exports with export subsidies.

In regard to exchange rate policies, four countries (Chile, Mexico, Brazil and Colombia) followed a policy to increase real exchange rates during the 1980s. In all of these countries, the pro-export exchange rate policy was a key element of the structural adjustment program followed to generate a positive trade balance, with a view to complying with foreign debt commitments (IICA, 1987). This policy has benefited the agroexporting sector and is considered to be a determining factor in the vitality of fruit exports from Chile, vegetable exports from Mexico, soybeans from Brazil and flowers from Colombia. Colombia also offers tax refund certificates for flower exports.

Two other countries, Argentina and Ecuador, followed a policy that includes a certain degree of exchange rate overvaluation and a relative lack of protection for agriculture. As a result, agricultural exports were discouraged. Nevertheless, in these countries certain factors have tended to compensate for the lack of incentives occasioned by their exchange rate policy. In the first place, there are natural comparative advantages that allow for grains in Argentina and shrimp in Ecuador to be produced at competitive costs for the international market. Secondly, special subsidies for non-traditional Ecuadoran exports (shrimp) exist in the form of tax refund certificates; these export revenues compensate, to a certain degree, for the overvaluated exchange rate. Thirdly, Argentina has an agrarian policy of public investment in technology generation and transfer for the production of grains and oilseeds.

In the cases of Peru and Costa Rica, agricultural policies for the subsectors studied (poultry and dairy) are aimed basically at the domestic market. Nevertheless, the overvaluated exchange rate policy followed by these countries has favored the importation of key inputs for these activities, such as the components of balanced feeds (corn, sorghum, soybeans), which has kept production costs low. In any event, it should be noted that this has represented a lack of protection for the domestic production of grains for animal feed.

Although management of exchange rate policies has been a determining factor, other macroeconomic policies (credit, fiscal and trade) have also favored the development of the subsectors analyzed in the eight case studies.

CONCLUSION: TOWARD AN INTEGRATED POLICY

This article has highlighted the need to move towards an integrated policy for AAI commodity prices, since the effects mentioned have important implications for economic policies: real prices are usually determined by exchange rate, trade and fiscal policies, and not by guaranteed and other controlled prices. The attempt to counteract the impact of the exchange rate, for example, through guaranteed prices, can be costly from the point of view of the national treasury. On the other hand, when prices are controlled at the consumer level, and if they are actually different from equilibrium prices, they often create shortages and/or generate a black market. In summary, it is unrealistic to think that agricultural prices can be changed

significantly in a direct manner. On the other hand, experience has shown that agricultural prices are quite sensitive to exchange rate, fiscal and trade policies, the instruments that really constitute a "price policy," which should be used in the effort to modify relative prices.

While most of the concern and the public programs focus on the specific product and input level, a broader, sectoral approach is required to link the performance of the agricultural-agroindustrial sector to the rest of the economy. In this sense, it is best to begin with the input-output framework, in which the agricultural sector is characterized by the following structural components: i) sectoral production, that is, the total supply of agricultural goods (the flow of products from the sector); ii) the demand of the sector for basic inputs and resources (the flow of products, services and resources to the sector); iii) the prices of raw materials, basic inputs and resources; and iv) net sectoral incomes (net flow of payments to the sector). These four factors are interrelated; the fourth is the logical and arithmetical result of the first three. They, in turn, are determined together with another group of variables: v) the sale of commodities from the sector to the domestic market; vi) the sale of commodities from the sector to external markets; vii) the importation of agricultural and agroindustrial products and inputs. In the longer term, the level of all these variables depends on the amount of the sector's fixed capital, and on the production, processing and marketing technologies that are available and used.

Decision-making at the individual enterprise level can target several objectives, such as maximizing earnings and minimizing risks. Nevertheless, it can be said that the decisions depend, to a great degree, on the following exogenous elements: i) current prices of commodities and inputs; ii) the availability of tested technologies; iii) the availability of inputs needed to apply the technologies; and iv) reproducible and non-reproducible capital endowments. To a large degree, the efforts of public entities seek to have an impact on the last three elements. The effect of the first element (price), which is beyond the producer's control, is critical, since it affects both sales (on the demand side) and production (on the supply side). Here is where domestic policy guidelines regarding relations with the international economy come into play to affect the transmission of international prices. Relative prices (between different commodities, between domestic and international markets, and between commodities and inputs) are the most important aspect of price management. In regard to prices, it is here that we find the main influence of macroeconomic policies.

One important question remains after the main instruments of price policy have been identified: what is the desired level for these prices? Here the interests of producers, agroindustrialists and consumers rarely coincide, at least in the short term, and there are no objective guidelines for bringing them together on price management. Nevertheless, a frame of reference is provided by international prices, adjusted by marketing margins to make them compatible with local prices. What matters here is the concept of approximately uniform rates of protection among commodities and among sectors, with a clear differentiation among groups of producers using different levels of technology. It should also be noted, however, that international prices are not always efficiency prices.

In the future, an essential goal of macroeconomic policy should be to strengthen ties between sectors. In fact, from the point of view of input-output theory, economic development increases the density of the input-output table, which translates into creating new flows of commodities between sectors and expanding existing flows. Agriculture and agroindustry have always enjoyed a symbiotic relationship; they offer a great variety of opportunities for strengthening ties between sectors and, in this way, for helping increase the national value added.

Traditionally, agriculture and agroindustry have been considered separately when analyzing and formulating policies. This has limited the possibilities of developing an integrated policy among sectors and taking advantage of their common potentials. For example, if expansion of the livestock and poultry subsectors is anticipated, a study should be made as to the feasibility of increasing the production of corn, sorghum and forages, and creating or strengthening feed concentrate industries. In the same way, it would be ineffective to evaluate the competitiveness of cotton fiber without ascertaining the availability of processing plants. It is also not very useful to evaluate the comparative advantages of crops or products at the farm level, unless viewed as part of the total production, processing and marketing system (for both products and inputs). Estimates of comparative advantages and rates of economic protection would be much more beneficial if applied to the complete product chain or system and then broken down by each stage of the chain. This would provide a better basis for policy design.

In order to establish a macroeconomic framework consistent with sectoral development objectives, existing notions on food security should be re-evaluated. At first glance, it would not appear that the question of food security corresponds to the sphere of macroeconomic policy. Nevertheless, macroeconomic policies determine the real income level of population groups, both rural and urban.

There has been a marked tendency to interpret food security as agricultural or staple grain self-sufficiency of countries. However, the real concern should be whether disadvantaged families have economic access to basic foodstuffs, in such a way as to reduce the risk of undernourishment and its subsequent effects on nutrition. Therefore, in order to ensure food security for disadvantaged families, programs are required that target these groups with specific subsidies for consumption. Such programs are not perfect (there will always be those who benefit from the program and should not and others who should benefit from the program but do not). Nevertheless, the benefits usually reach the target population and are much less costly than generalized subsidies, which are still in place in several countries.

Last, but not least, is the fact that production of many agricultural items could be increased considerably, and with a certain degree of market security, if consumer habits were re-established for products with a high agricultural value added. This is particularly true in the case of natural fruit juices and milk, which have been replaced by carbonated and sweetened

beverages, and many of which use imported sweeteners rather than sugar from the hard-hit national industry. Re-establishing consumer habits (also feasible in several other products) would contribute strongly to expanding the market for agricultural products and to providing better nutrition for infants and improved health to the adult population.

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FOOD SECURITY, SMALL-SCALE FARMING AND AGROINDUSTRY

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INTRODUCTION

The issue of food security has lost some of its topical importance today; this is hardly surprising if we bear in mind that its origins are basically associated with the so-called food shortage crisis of 1972-1974, which caused worldwide alarm over the access of countries with shortages to necessary and complementary foods. This occurred in the context of a world market that was registering not only a growing imbalance, but also sharp increases in basic food prices. Within a relatively short period, however, and contrary to all the predictions being made at the time, the shortage crisis in the world market turned into a situation of oversupply as a result of the well-known protectionist policies which Dr. Edward Schuh mentioned in the paper he presented to this Seminar.

The fact that food security became associated exclusively with the problem of access to the complements needed to guarantee an aggregate national supply overshadowed other more serious problems that the countries face in this area. A broader view of this concept should be taken so as to include the problems faced by countries as regards aggregate supply as well as the problems of the sector of the population that lacks the purchasing power to express its needs in terms of market demand; in this way, the market itself can be allowed to guarantee this sector the minimum indispensable foods. It has also been shown that poverty and malnutrition persist beyond periods of prosperity and indeed become more acute in times of recession. In this context, at least two aspects linked to supply and two to demand should be taken into consideration and distinguished.

With regard to supply, one problem concerns sufficiency, that is, domestic supply, plus imports, which allows countries' effective demand to be covered, with an additional margin to meet the needs of those sectors that lack the potential capacity to express their needs as demand. In addition, there is the problem of the stability of fluctuations which, as a result of domestic production cycles or supply and price instability on the international market, results in a relatively stable domestic food supply. A problem then arises in connection with aggregate availability, and another with the stability with which such availability is expressed. Where demand is concerned, fundamental consideration must be given to the existence of a section of the population that is systematically unable to meet its basic needs. This is undoubtedly the most critical of food security problems, since

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to a certain extent it exists independently of whether or not there is sufficient domestic supply, as shown by some of the data analyzed in this paper.

Basically, the aim of this document is to analyze three points connected with food security: first, to review what has taken place in this field in these last few years; second, to determine the link between food security and the strengthening and modernization of the small-scale agricultural sector, and finally, to reflect on the relationship between agroindustry and the strengthening of small-scale agriculture and the ensuing improvement in food security conditions.

FOOD SECURITY SITUATION IN LATIN AMERICA

In order to examine what has occurred in Latin America in this area it is important to consider two structural trends that came to light during the 1960-1980 period and the decline undergone by one of those trends as a consequence of the domestic and foreign debt crisis and the adjustment policies adopted to counter it. It must be borne in mind that, strictly speaking, it is impossible to distinguish to what extent this resulted from the crisis itself and how much from the policies designed to confront it.

If we analyze, first, the trend shown by sufficiency levels, we see that during the period prior to the crisis only 20% of the countries of the region registered domestic supply levels 5% or more below effective demand. Conversely, 50% of the countries showed levels of domestic supply more than 10% higher than average food requirements. This indicates, in fact, that sufficiency in terms of aggregate supply could coexist with persistent poverty in terms of access, as shown by the figures mentioned below. In general, up to the time of the crisis, sufficiency levels in most of the countries were registering an upward trend. There were very few exceptions. Peru, Haiti and two or three other countries of the region had not only low sufficiency levels and critical supply situations during that period, but also downward trends in terms of calorie intake. Unfortunately, the same did not occur with stability, measured in terms of fluctuations in domestic demand with respect to trends in effective demand; two-thirds of the countries of the region showed a high level of instability in that regard.

In terms of autonomy, that is, of the capacity of food systems for self-sufficiency, the situation also caused considerable concern. Seventy percent of the countries of the region showed levels of grain dependence 30% higher than their domestic consumption, and levels of calorie-intake dependence were higher than 20% of domestic consumption. In the majority of cases this tendency was rising: dependence on supplies of imported calories, particularly grains, showed upward trends in most of the countries of the region. In many cases, such as the Andean countries, there were high levels of insufficiency, considerable instability and a fast-growing tendency toward increased dependence on external supply. The topic of autonomy should of course be treated not only in terms of the relationship between imports and domestic consumption, but also in terms of the nature of the countries' penetration of foreign markets. In other words, a 30-percent external

dependence for countries with growing exports at stable prices in safe markets does not have the same significance as for countries facing foreign markets when conditions are reversal. Nevertheless, an overview of the Latin American situation shows in general that without dynamic and stable penetration of foreign markets as exporters, national food systems show a growing tendency toward loss of autonomy.

With regard to the equity of food systems, unfortunately no accurate records exist of levels of malnutrition, which, in the final analysis, involves measuring the impact on the anthropometric characteristics of different strata of the population. Consequently, the only solution is to deduce, on the basis of income-distribution and calorie-intake indicators, what the malnutrition situation is. It should be stressed, in this regard, that nutrition specialists, and the FAO in general, have revised what was previously taken to be indispensable minimum levels. At a recent meeting of experts on food and nutrition, rather than maintaining levels below those required for reasonable average standards of living and activity, a more absolute indication was sought, consisting of a percentage above the basal metabolism rate, which was set at between 20% and 40%. In contrast to previous estimates, and in order to quantify these percentages, this implies the consumption rates of around 1600 to 1700 calories, in keeping with population distribution by sex, size, weight, etc., instead of the 2200 to 2300 calories that served as the indicators of consumption in the past.

If the percentage is determined at about 40% above the basal metabolism rate, and if we take into account the countries' average consumption rates, deduced in accordance with the methodology proposed by the FAO (which correlates closely with estimates made by the countries themselves), the result is that in the eighties, prior to the onset of the crisis and before the adjustment policies began to have any effect, the situation was as follows: of a total of ten countries for which data on income distribution for 1980 existed, six registered malnutrition levels above 24%; some of the Central American and Andean countries even had malnutrition rates of 40% or 41%. In other words, it was found that a certain proportion of the population probably had a calorie-intake level below 40%.

As regards sufficiency, what can be seen in generic terms for the region as a whole is a drop in the calorie-intake growth rate, which had been increasing at an annual cumulative rate of 0.6% during the seventies, and which rose only 0.2% during the crisis. Although, in general, a certain artificial trend is expected in calorie intake growth rate, it was not anticipated in the region, in view of the prevailing conditions of malnutrition and underconsumption.

The above mentioned average is due to the situation of some countries, which, to a greater or lesser degree, maintained their growth (this is the case for many Central American and Caribbean countries, some of which increased their calorie-intake rate during that period). However, it is also strongly influenced by a drastic downturn in the countries of the Southern

Cone, which was already under way during the seventies. In those areas the phenomenon is not so critical since average calorie-intake levels are much higher than in other subregions, but it is much more alarming in the Andean countries, which, as has already been mentioned, showed a downward trend in sufficiency and an increase in instability and dependence.

It can, therefore, be seen that in regard to food sufficiency, the indicators registered a downturn. In many countries, this was expressed as a drop in the average calorie-intake levels prevalent during the period prior to the crisis. If, however, we examine the mechanisms to which the countries resorted in order to sustain in some way their calorie-intake levels, we see that in some cases there was an increase in production and in a number of cases there was a drop in imports (where part of their export production was set aside for domestic consumption), but in every case there was a systematic and drastic reduction in stocks. That is, to a certain extent, the reduction in stocks in almost every case and the drop in exports in some made it possible to sustain those levels and compensate for what occurred in practically all the countries: a drop in imports and, therefore, a reduction in the imported portion of the calories consumed. This was offset by resorting to existing stocks and to reducing the use of cattle-feed products and fodder. It also led to an increase, which was significant in the final analysis, in the calorie-per-kilo content of national diets. In other words, a decline in the consumption of high-cost products with a low calorie content per unit of weight (meat and dairy products) was compensated for by an increase in the consumption of cereals, grains, etc., which are low-cost products with a high calorie content per unit of weight. These trends also shaped the content and composition of imports, that is, there was a deterioration in the structure of consumption in order to avoid a more drastic drop in sufficiency levels.

With regard to autonomy, it has already been mentioned that there was an apparent increase derived basically from lower levels of consumption and the substitution of what was previously imported, but this situation was short lived. Stability declined as imports fell off: the latter had been contributing to a certain extent to increasing the stability of flows. Instability was on the rise and, most importantly, although precise figures for the behavior of income distribution are not available, there was a drastic drop in the terms of equity, that is, a significant increase in problems related to access to food. In this regard, one need only point to the decrease in real wages, which was very pronounced in the lowest paid jobs. This situation particularly affected heads of households and was especially drastic in the lower income groups. All these factors paint a picture which shows graphically that the crisis contributes significantly to the already considerable levels of underconsumption characteristic of the region.

MODERNIZATION OF SMALL AGRICULTURE AND ITS RELATION TO FOOD SECURITY

In this section, a few reflections will be made with the aim of showing the importance of strengthening and modernizing small-scale agriculture in the pursuit of food security, particularly for those countries where 30% or more of the population is rural and where, consequently, almost the entire rural population consists of small-scale farmers. In these cases, most of the

poverty is likely to be found in rural areas, thus contributing, through migration, to increasing urban poverty. In 1980, the last year in which estimates on "poverty" drawn up under an ECLAC ad hoc project, more than 50% of the poor were of rural origin.

According to the above mentioned estimates, 36% of the cultivated land in the region (a percentage which in fact varies from country to country) and approximately 50% of the basic foods for domestic consumption (this figure is much higher in countries where more than 40% to 45% of the population is rural) corresponded to small-scale farmers. What we have here is a paradoxical double equation: this is the sector most affected by poverty (and therefore by undernourishment, malnutrition, etc.), and at the same time it produces a significant part of the food consumed in the region. Thus, any action designed to improve the sector's conditions for production will increase supply, improve sufficiency and automatically develop the equity of the food systems. In addition, other features should be borne in mind: the vast amount of literature on small-farm economics, which was in vogue and whose timeliness later diminished, in addition to all the theoretical background and empirical material on small-farm economics, make it possible to draw important corollaries for the subject under discussion here.

In the first place, in the small-farm economy there is a logic in the allocation of resources that is not strictly speaking the same as that governing a capitalist style agricultural enterprise. I do not mean to imply that small farmers do not seek to improve their situation and their earnings, or that they do not sell their products on the market, but rather that in view of the type of factors involved and other reasons, the logic governing this productive process obeys certain rules that are not identical to those of entrepreneurial agriculture. This makes it possible, in certain circumstances, to achieve a productive supply from small-scale farming with lower price levels than those that would be necessary to stimulate, under identical conditions, production of an entrepreneurial nature. And this occurs even when the conditions for reproduction and growth of small-scale agriculture are assured.

Second, the very fact that part of its production is a necessary condition for its own survival makes this an element of stability in the flow of domestic supply.

Third, because of its very nature, the small-farm economy's capacity for absorption of labor per production unit is greater than other types of production units in conditions of underemployment and unemployment and, in general, in conditions where there is a need for income generation. That, obviously, is a desirable attribute.

Fourth, imported inputs also tend to be used less in these types of units and they are also more efficient in certain circumstances if confronted with the need for energy subsidies per calories produced. In part, this stems from the fact that small-farm agriculture converts certain marginal resources,

many of which are not even transferrable to the market economy, into useful products. An example is the leisure time of part of the family, a resource whose level of profitability would not be attractive to entrepreneurial activities.

The main problems, in fact, lie in the very low productivity levels and the enormous heterogeneity of situations that characterize what we generically define as the small-scale agriculture sector, which covers a wide spectrum ranging from units which are so small that virtually none of their earnings are of agricultural origin, to others which would be perfectly capable of taking a step forward to incorporating modern technology and generating significant surpluses if they were in an appropriate socio-institutional environment. That heterogeneity of situations makes it necessary to design differentiated and specific policies for each type of producer. The possibility of limited government agencies having differentiated policies, (in the past, they have not shown much capacity for designing policies that involve a certain sophistication as regards differentiation), as well as ensuring that measures taken in urban areas for "market-price" normalization do not translate into a deterioration of the urban poor's access to food, also constitute a central problem. Given current budgetary conditions faced by the governments, it is virtually impossible to deal with the situation of urban poverty, unless the measures taken target in a very precise and limited way, in terms of quality and quantity, the people having difficulty with access to food. And in the rural environment, the heterogeneity of support needs experienced by different producers cannot be taken into account unless it is based on policies specifically oriented to the different types of producers, and which must therefore be different in their composition and nature.

Such a change in the institutional framework involves at least the following conditions: decentralization of the decision-making capacity of public agencies, such that the specificity of problems can be perceived with absolute clarity; decentralization of resources, in such a way that the decentralized decision-making structure has the support it needs for action to be taken. In addition, once the specific nature of the problems has been perceived, spheres of organized participation by homogeneous local population groups must be established so that their collective interests can be expressed. This does not occur if organizations bring together heterogeneous groups, because in the end they express the interests of those with the most bargaining power and the broadest representation in the organization. Involved, then, is the creation of an interactive information and communications network among rural development units or urban areas with specific needs, where the monitoring of nutritional conditions or technical, economic and production requirements can be expressed efficiently in relation to the different public institutions. A balanced macroeconomic policy, accompanied by certain positive factors, makes it possible for market indicators to function more fluidly. But there are other areas where such indicators do not exist or, if they do, have a tendency to get lost. In other words, there is scope both for sectoral policies and for those targeting specific social strata and which have no reason to conflict with the flexibility of markets.

AGROINDUSTRY AND THE STRENGTHENING OF SMALL-FARM AGRICULTURE

Fortunately, as regards this topic, specific experiences have shown the potential role of agroindustry in dealing with both urban malnutrition problems and, particularly, the problems posed by the modernization of small-scale production, in contexts where appropriate measures have been taken. In urban areas, the highly efficient industrial production of foods with a high nutritional value using national inputs can constitute what in some cases has been an enormous stimulus to primary production of inputs for this type of industry. By means of subsidies, part of those foods can reach the neediest sectors. Agroindustry can contribute substantially to meeting the needs of low-income population groups through the design of packaging suited to the income and purchasing power of low-income consumers, and which do not require refrigeration for conservation, and through the production of certain types of products.

Poor city-dwellers who have no access to conventional forms of commercial distribution frequently tend to pay much more by weight and calorie than consumers who are able to buy in supermarkets. Poor consumers end up paying higher prices for identical products or for the same amount of calories consumed. In rural areas, this situation is more pronounced. Beyond obvious factors such as the value added on primary products, there are other factors, that generally do not receive sufficient consideration such as the effects that agroindustry can have on rural development.

One advantage of agroindustry is its greater flexibility in efficiency of scale as compared with other types of industry. This makes it possible for scaling to be proportionate with the size and resources of sites where rural agroindustry is to be installed. Second, it can integrate processes having high capital intensity per unit of employment generated (as occurs with many agroindustrial options of that kind of capital intensity) processes that absorb labor, both in agroindustrial activity as such (in some of the chain processes) and, above all, by combining agricultural activities which, as part of an industrial processing operation, allow greater labor intensity per hectare. The considerable growth of fruit and vegetable agroexports, which in many countries has linked transnational companies even with small-scale producers, shows that this type of association is not only viable but also efficient and competitive. Third, agroindustry can become an element of integration or ordering of primary activity, which facilitates the planning of activities in the area that constitutes its source of direct or indirect supply, including those cases where agroindustrial activity is reduced to husking or milling plants, etc. In this regard, the agroindustrial nucleus becomes the focal point that sets the standards for the rate of work, volumes of production and quality of supply. In addition, it contributes to stabilizing supply, reducing pre- and post-harvest losses (particularly the latter) and so forth.

It is important to analyze a few issues that arise in this context. First, agroindustrial development does not replace the need to strengthen and modernize the very activity that is supposedly going to supply it. Therefore, those who view agroindustry as a substitute for rural development do not fully perceive the necessary complementarity and the priority of an initial phase of

strengthening agricultural activity to allow the efficient establishment of some kind of agroindustrial activity. Second, it should be borne in mind that an important part of the region's agroindustry has levels of idle capacity which can hinder the implementation of more decentralized initiatives in the rural sphere. Third, the expectations that normally exist as regards the capacity of agroindustry to provide direct employment may be frustrated by what has already been pointed out: in many agroindustries, particularly those that have a greater potential for creating significant "reverse" effects, the density of investment in employment is very high.

To sum up, I would like to quote a revealing statement by the Taiwanese researcher Samuel P.S. Ho, which seems pertinent in ending this paper. It shows the contrast between the growing difficulties faced by Korea in establishing a centralized agroindustry, and Taiwan, which has developed a decentralized agroindustry: "Rapid industrialization is not incompatible with a specially decentralized situation and when they occur simultaneously, decentralization has beneficial effects on the rural sector." He continues: "Owing to its many links with other sectors, a strong, diversified agriculture is more likely to stimulate the growth of non-agricultural rural activities..." (which, incidentally, are a growing source of rural employment in Latin America) "...than a depressed, slow-growth agriculture. (...) If rural industrialization is a desirable goal, a well-developed transport network and a rural education system are crucial elements for achieving it." And he concludes: "In view of the fact that industries that are appropriate for decentralized locations tend to be more labor intensive and do not possess significant economies of scale, the type of industries promoted by public policy will very probably affect the rate and the nature of rural industrialization." In other words, there is clearly room for a sectoral policy that goes beyond what a mere macroeconomic equilibrium and extremely orthodox laissez-faire policy would seem to suggest.

II.

**ACCESS TO AND PENETRATION OF DOMESTIC AND INTERNATIONAL
MARKETS BY AGROINDUSTRIAL PRODUCTS**

The first paper under Topic II was presented by Ronald Duncan on the subject of penetration of industrial country markets by processed agricultural products from developing countries. In it, the author updates a previous study (in which he compared the situation in 1970 and 1980) to cover the 1980-85 period. The paper gave rise to extensive discussion which highlighted the following points.

Within current trade schemes, special attention is required in order to increase participation in the markets of the industrialized countries. It requires a sound knowledge of the market to be penetrated, as well as the capability to make a strategic and timely analysis of its development, in order to detect opportunities and obstacles that may arise. The participants felt that the situation calls for the creation of joint producer-exporter organizations of an intraregional and cooperative nature. They also pointed out that it is essential to find proper market niches.

Special emphasis was placed on the need to explore options for penetrating marketing channels in general, and distribution channels, in particular. In regard to distribution, cooperation agreements must be set up with those involved transportation, with ports, as well as with distributors, and should include the possibility of acquiring distributorships in the target markets. The Chilean experience was pointed out as a good example of this.

Production and marketing systems must be flexible. This is essential, given the technological advantage of developed countries over developing countries, and the highly sophisticated and variable nature of the markets. From this point of view, special attention must be given to trade relations, and the author recommends that analyses be made focusing on the "long-term equilibrium rate."

Mention was also made of the fact that the countries of the region maintain very close trade relations with the United States of America with respect to the products being discussed. In the opinion of the participants, this fact offers advantages and disadvantages, opportunities and threats. Duncan's paper also generated much discussion on the role governments should play in facilitating access to and penetration of target markets. The author indicated that governments should pressure these markets to reduce trade and non-trade barriers. On the other hand, governments should assume a more active role in promoting trade activities, including the design of strategies, while also providing subsidies to private enterprises. In the same vein, the State should continue to actively foster conditions favorable to foreign trade.

Alejandro Jara's paper on protectionism in OECD countries and the evolution of preferential access systems and the ensuing comments provided important insight into the following facts, among others: serious distortions exist in the allocation of resources, to the detriment of developing countries; markets of countries with high degrees of protectionism tend to be isolated; non-tariff measures are becoming the main form of protectionism; massive transfers of resources are used as subsidies in several developed countries; national policies are the root of the problem under consideration, which makes it a political problem.

Also presented was an analysis of provisions of the General Agreement of Tariffs and Trade (GATT) which are applied in a special way to agricultural trade. In addition, the shortcomings and ineffectiveness of these provisions were discussed.

The Generalized System of Preferences (GSP) and other preferential schemes were mentioned and it was noted that the coverage given to agroindustrial products under the GSP is quite limited. Subsequently, the discussion focused on the evolution of the multilateral trade negotiations of the Uruguay Round of GATT, which seem to indicate that the current preferences enjoyed by the developing countries will deteriorate or be eliminated, either as a consequence of the liberalization of the Uruguay Round or as a result of policies to phase them out. The goal of the Round is to agree on a broad plan to reform national policies, with new multilateral disciplines that will gradually bring about a substantial freeing up of agricultural trade, and eliminate distortions to competition, such as subsidies for production and/or exports.

Robert Wicks read Lester Crawford's paper on the benefit of harmonized health and sanitary regulations in the world of international trade. The paper presents a detailed description of the work of the three most important international scientific organizations that set standards, hygiene codes, certification methods, and that distribute information on these regulations.

In the discussion on Crawford's paper, participants described various national experiences. They pointed out that the main obstacles to the export of products are barriers linked to animal health and plant protection, and that solutions have been sought to this problem by using the CODEX and GATT standards. However, some countries do not immediately adopt certain CODEX regulations, since if they do, they themselves must comply with them. The discussion and comments clearly highlighted the need for all the countries of Latin America and the Caribbean (LAC) to achieve true integration with regard to these types of regulations.

Within this context, a topic arose which later became a recommendation. The European Economic Community is moving toward 1992 when it will unify its foreign trade. When the countries of Europe participate in international organizations, they tend to establish rules according to their trade interests. Thus, it would be advisable for the LAC countries to act similarly by pooling their efforts to achieve better trade conditions.

The final speaker on the topic of access to and penetration of markets was Harold Riley, who presented a paper on developing agroindustrial capabilities to exploit domestic and international market opportunities. His presentation centered on a number of points, including the formulation of strategies to promote agroindustrial development, keeping in mind the fact that models for changing national food systems work over the medium and long term. Also mentioned was the fact that it is often possible to penetrate and effectively exploit export markets, thanks, primarily, to the creation of a greater capacity to serve domestic markets and their growing demands. In addition, government policies can have a substantial impact on seven basic areas: infrastructure, credit availability, information systems, limitations

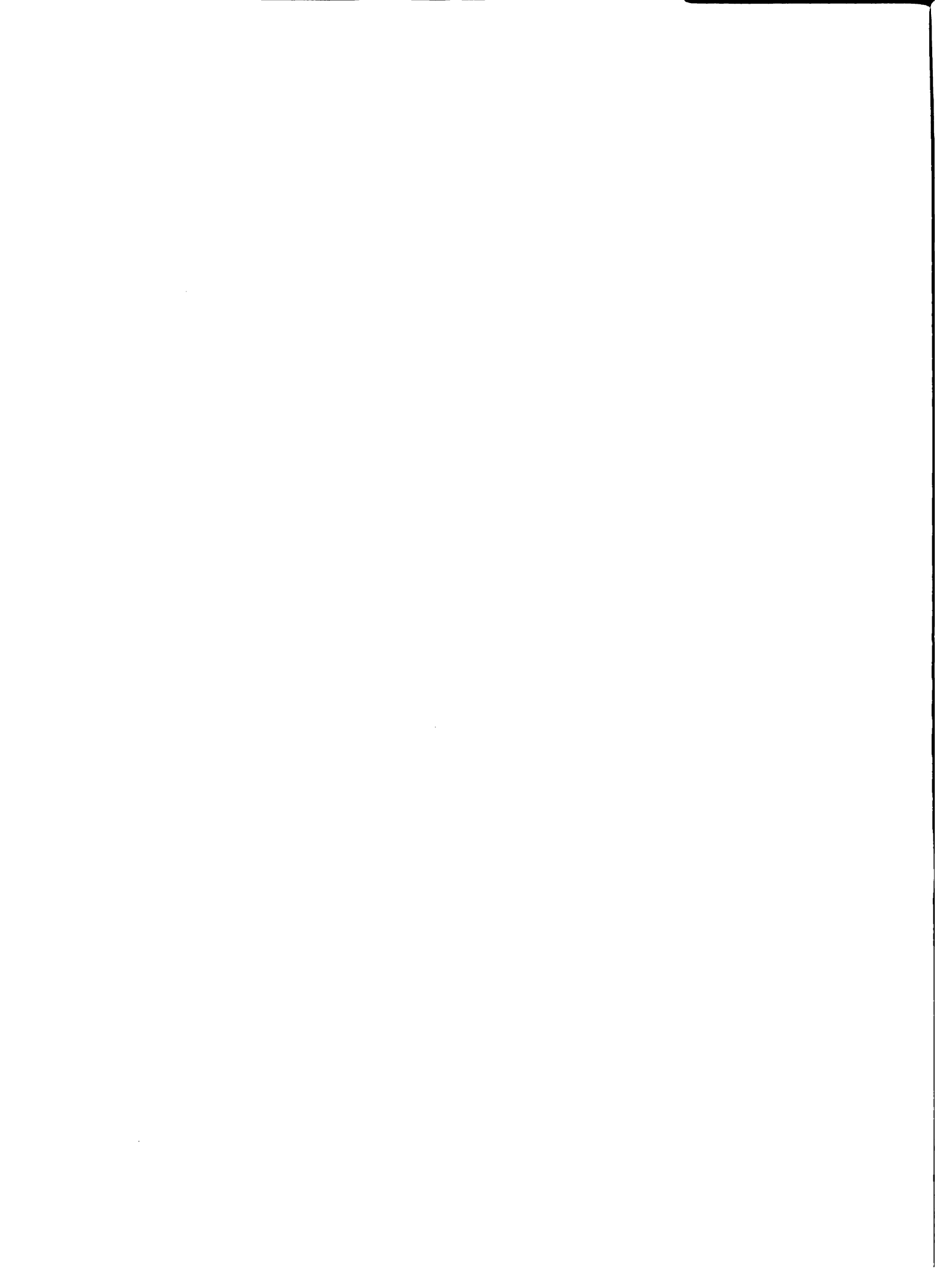
on importing indispensable inputs, price control, research and training. Riley also suggested that policies on joint ventures and contracted production systems should be carefully re-evaluated. Finally, he recommended that the development of agriculture and export markets be based on serious feasibility studies, and that private sector initiatives should result in solid commitments with the public sector.

During the discussion of Riley's paper, participants stressed the idea that agroindustry involves much more than processing alone. In order to be successful, agroindustrial development must be based on marketing. To emphasize this, the following definition of marketing was offered: "to provide the right product to the right consumer, in the right time and place, at a convenient price and with proper advertising." This involves carrying out six very complicated consecutive actions; effective marketing is difficult to achieve and requires a lot of time, energy, experience and money. Consequently, the modernization of agroindustry takes a long time.

As to the State's role in the agroindustrial sector, the participants indicated that government must show good faith: it should facilitate sectoral development, regulate the behavior of producers and help keep industry strong. It should not, however, participate in trade. Any initiative that contributes to diminishing mistrust between the public and private sectors will expedite the development of the food system. Nevertheless, it should be kept in mind that the objectives of national development and the objectives of the private sector are not necessarily one and the same.

Government policies and programs that hinder the growth of the private sector should be modified at the latter's request. Government must take the interests of the private sector into consideration when designing policies and programs; thus, the State apparatus cannot be run by people who have a limited understanding of how the private sector works.

One of the constants in agroindustrial development in many LAC countries is the shortage of experienced administrators. Enterprises are usually family run and do not have specialized personnel. They often lack the staff that can ensure delivery of the product to the consumer. This can represent a serious flaw in countries with weak production and marketing systems.



PENETRATION OF INDUSTRIAL COUNTRY MARKETS BY PROCESSED AGRICULTURAL PRODUCTS FROM DEVELOPING COUNTRIES

Ron Duncan *

INTRODUCTION

Duncan and Lutz (1983) reported on a study of the penetration of processed agricultural commodity exports from developing countries into industrial country markets over the period 1970-80. This paper updates the 1983 study, to cover the period up to 1985, which includes a period of recession in industrial countries (1981-82) and pressures for increased protection against imports, and years of low to negative growth, constrained finance for investment and emphasis on exports in developing countries.

In the earlier study it was shown that over the period 1970-80, the developing countries as a whole were able to increase their shares of the industrial country markets for manufactures of food, beverages and tobacco from 3.5% to 3.7%--a growth rate in their share of total apparent consumption of only 0.6% per annum (p.a.). By comparison, market penetration of all manufactures exported from developing countries increased at a remarkable rate of 8% p.a. over the same period. The shares of processed agricultural products markets held by Latin American countries increased only slightly while the ASEAN (Association of South East Asian Nations) grouping of countries took the major part of the increase in share. The share held by all other developing countries declined. The developing countries' share of the European Economic Community (EEC) and Japanese markets stagnated; only in the US market did the developing countries' penetration increase--but only by 1.7% per year. In only two of the 16 product groups--manufactures of cocoa, chocolate and sugar confectionary, and canning and preserving of fruits and vegetables--were the developing countries able to increase their market shares.

In this paper, we present the results for the 1980-85 period to show how the developing countries' share of these markets have changed. We also show which of these markets in the industrial countries have grown the fastest; which markets have provided the fastest import growth for developing country exports; and which developing country regions have made the most of opportunities for growth. Over a period of time when the industrial countries experienced very different growth rates, and were under great pressure to increase protection, and when Japan apparently began to allow greater scope to express its higher incomes through consumption, it is also of interest to see if there are significant differences in import penetration rates among the major industrial countries.

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Data and Definitions

We have taken data on industrial country production and trade values from a data base now maintained by the Organization for Economic Cooperation and Development (OECD). The original concordance between the Standard International Trade Classification (SITC) and the International Standard Industrial Classification (ISIC), as well as the data assembly, was done by the World Bank (see Hughes and Waelbroeck, 1981). The food, beverages and tobacco products covered here include 16 ISIC products at the 4-digit level (see tables). The developing countries' shares of the industrial country markets (or market penetration) for these manufactured products are calculated as a percentage of apparent consumption (i.e., imports from region x / (production by importing region exports + imports from all sources)). The available data allow us to focus on the United States, Japan and the EEC-7 (Belgium, Luxembourg, France, Germany, Italy, Netherlands and the United Kingdom; Greece and Portugal are included in the developing country region of Southern Europe, Middle East and North Africa). These countries cover by far the bulk of industrial country imports.

The source of the imports are shown by the following groupings, which are not exclusive: all countries, industrial countries, all developing countries, Asia region, Africa region, EMENA (Southern Europe, Middle East and Northern Africa), Latin America and Caribbean, Sub-Saharan Africa, Central America and Caribbean, ASEAN (Indonesia, Malaysia, the Philippines, Thailand and Singapore) and Exporters of Manufactures. To a very large extent, these classifications correspond to World Bank regional groupings as used, for example, in its World Development Report.

Processed Agricultural Commodity Markets in the Industrial Countries

As can be seen from Table 1, the markets for processed agricultural products are large markets in the industrial countries. In 1985 the total apparent consumption of manufactures of food, beverages and tobacco (ISIC 31) in these three markets totaled US\$660 billion, with the US market dominating. Within the US and EEC markets, meats (ISIC 3111) and dairy products (ISIC 3112) are by far the largest markets at the 4-digit ISIC level. In Japan, the consumption pattern is different, with fish products (ISIC 3114) and bakery products (ISIC 3117) being most important.

In Table 1, the figures for 1980 were put into 1985 dollar values by inflating with the implicit GNP/GDP deflator for the respective countries/regions. Real apparent consumption of these products in the United States therefore declined over the 1980-85 period by 1.1% p.a. In Japan, real apparent consumption increased by 3% p.a. over this period. Unlike the Japanese case, where the exchange rate changes over the period were not very important, the exchange rate changes between the US dollar and EEC currency were very large: an estimated average 80% depreciation vis-a-vis the US dollar between 1980 and 1985. If these changes in the EEC's exchange rates are assumed away, rather than declining in US dollar terms by 10.6% p.a. as in Table 1, the EEC-7 market would have increased by 0.6% p.a.. Due to exchange

rates changes which have taken place since 1985, in US dollar terms, the Japanese market would now be greater than US\$250 billion and the EEC-7 market would now be in excess of US\$270 billion.

A further point of measurement to discuss is the issue of the deflator. If the wholesale price index is used as the deflator instead of the GNP deflator, it makes no difference in the numbers for the EEC. However, since the wholesale price index changes over this period are much lower than the changes in the GNP deflator for both Japan and the United States, use of the producer price deflator changes the results for those countries. In that case, the US market increases over the 1980-85 period at 1.3% p.a. rather than declining in real terms and the Japanese market increases in real terms at a 4.9% p.a. rate. It is debatable whether the wholesale price index (a measure of the price changes of the raw materials for these processed products) or the GNP deflator (a measure of all price changes in the economy) is a more appropriate deflator. If the answer lies somewhere in between, then the growth rate in these processed products markets in the United States may well have been zero over the 1980-85 period. For Japan, it would still be a healthy 4% p.a.

In summary, therefore, lifting the veil of exchange rate changes, the processed agricultural products markets appear not to have grown in real terms in the largest market, the United States, over the 1980-85 period. They appear to have grown little, if at all, in the EEC, and to have grown robustly in Japan.

From Table 1 we can also see which markets have had the strongest performance and which have done least well. In the United States, the sugar products market (ISIC 3118) has experienced, by far, the largest percentage decline, followed by vegetable and animal oils (ISIC 3115), animal feeds (ISIC 3112), fish products (ISIC 3114) and meat products (ISIC 3111). The largest decline in absolute value terms was in the largest market, that for meats. The fact that these declines, with the exception of fish products, took place in products which have been the focus of concern over health issues in the United States (animal and vegetable fats and sugars) seems more than coincidence. This is consistent with the observation that the fruits and vegetables sector has been increasing. However, two other sectors growing well are soft drinks and tobacco products. Soft drinks have experienced sharp declines in prices in real terms, which must be a contributing factor. The shift from sugar to other sweeteners (HFCS and chemical sweeteners), as well as the important restrictions on sugar, have been the primary factors leading to the sharp drop in sugar consumption.

In Japan, the fastest growing markets have been meat, grains, fish, malt liquors, soft drinks, and fruits and vegetables. While small, the sugar market has declined; moreover, its importance to exporters is very large as Japan is the second largest sugar importer. The animal feeds, cocoa and spirits markets have grown only slowly. While slower to be adopted than in the United States, the use of sweeteners other than sugars in products such as soft drinks has been the major factor in reducing sugar consumption in Japan and, because grain imports are not restricted like sugar, has led to an increase in maize imports for processing into HFCS.

Table 1. Apparent consumption of Processed Agricultural Products in Industrial Countries, 1980 and 1985 (constant 1985 dollars)^a

ISIC Code ^b	EEC-7 ^c		Japan		United States	
	1980	1985	1980	1985	1980	1985
	(billion US\$)					
31	368.2	210.5	122.9	142.5	324.7	306.9
3111	65.2	36.6	10.2	13.0	75.7	65.7
3112	54.6	33.9	7.1	8.0	40.5	37.4
3113	14.9	7.9	6.0	7.1	21.7	25.0
3114	5.2	3.1	13.8	16.7	5.8	5.0
3115	22.0	14.0	4.2	4.6	20.2	16.0
3116	25.6	13.5	6.3	8.2	20.4	19.2
3117	27.7	15.5	13.8	15.4	20.6	21.5
3118	11.0	6.0	2.7	2.5	10.5	5.8
3119	17.1	10.4	3.9	4.2	11.6	12.4
3121	19.8	13.3	17.1	20.3	28.3	28.0
3122	31.3	17.1	7.5	7.9	17.6	14.4
3131	10.8	5.5	8.7	9.5	5.3	4.6
3132	9.2	2.1	0.2	0.3	3.6	3.6
3133	19.8	11.2	6.0	7.5	13.3	13.3
3134	10.3	6.1	4.2	5.0	15.4	18.2
3140	23.6	14.4	11.1	12.3	13.6	16.7

Source: OECD.

Notes:

a 1980 values were inflated by the implicit GNP deflator for each country/region.

b For ISIC codes see Table 2.

c EEC-7 consists of Belgium-Luxembourg, France, Germany, Italy, Netherlands and United Kingdom.

Of the markets for processed products in the EEC, those doing relatively poorly during the period were wine (though the data for 1985 are suspicious and this item was subsequently dropped from Table 2), spirits, fruits and vegetables, grains, animal feeds and sugar products. Animal and vegetable oils, dairy products and cocoa products declined least in Table 1. The picture is very different in the United States. (Obviously, the Europeans like their dietary vices too much to give them up.)

Market Penetration by Developing Countries

Tables 2, 3 and 4 show the shares of the various exporting regions in the processed products markets of the EEC, Japan and the United States, are shown for the years 1980 and 1985. The exporting regions include all the major developing country groupings as well as special groups of interest such as Sub-Saharan Africa, ASEAN (the group of developing countries which have built up a large manufacturing export sector), and the regions of interest to this conference, Central America and the Caribbean--a subset of Latin America and the Caribbean.

The data in Table 2 show that the share of total imports in apparent consumption of processed agricultural products in the EEC increased substantially over the 1980-85 period: from 20.8% to 24.1%. However, the industrial country exporters benefited most and it is likely that this is largely intra-EEC trade. Developing country exporters gained modestly, from 5.2% to 5.78%. The Latin American and Caribbean (LAC) region gained most of this increase, with gains in its shares of fruits and vegetables, oils and grains. LAC's share of the sugar market fell sharply, which was also reflected in the share of the Central American and Caribbean (CAC) region. The CAC region also lost market share in the grains market.

The developing countries as a whole gained market shares in fruits and vegetables (Southern Europe, Middle East and North Africa region (EMENA) and LAC), oils (Asia and LAC) and grains (Africa, Sub-Saharan (SSA) and LAC). The developing countries lost a substantial share of the sugar market (Africa, SSA, LAC and CAC) and cocoa (Africa, SSA). It is surprising that the Africa region has continued to do poorly in the cocoa market. In the earlier paper by Duncan and Lutz, special mention was made of how poorly the African cocoa-producing countries had done in the EEC market, despite the fact that under the Lomé Convention between the EEC and the African, Caribbean and Pacific (ACP) countries, barriers to trade in cocoa products had been removed. This poor performance was compared with LAC's good performance in the US market (which did not continue in the 1980-85 period).

In Table 3, it can be seen that in Japan, import shares of both industrial and developing countries fell in the 1980-85 period. Of the developing country regions, the shares of the Africa and LAC regions fell the most. The Africa region lost very significant shares in both the grains and sugar markets as well as in oils and cocoa products. The LAC region lost market shares in sugar (significantly), meats, grains and oils. The CAC region's share of the Japanese processed agricultural products markets fell by

Table 2. Market Penetration of Processed Agricultural Products in the EEC-7, 1980 and 1985.

Processed Agricultural Products	ISIC Code	All														Exporters 1980	Exporters 1985	Exporters 1980	Exporters 1985						
		World		Industrial Countries		Developing Countries		Asia Region		Africa Region		EMENA ^a		LAC ^b						SSA ^c		CAC ^d		ASFAN ^e	
		1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985					1980	1985	1980	1985	1980	1985
Manufactures of food, beverages and tobacco	31	20.81	24.12	15.08	17.79	5.20	5.78	0.98	1.11	1.46	1.43	0.29	0.33	2.46	2.89	1.30	1.34	0.48	0.37	0.51	0.66	1.89	2.46		
Slaughtering, preparing and preserving meat	3111	30.34	32.97	25.24	27.92	3.23	3.35	0.70	0.58	0.59	0.63	0.34	0.38	1.61	1.75	0.31	0.44	0.01	0	0.05	0.04	2.62	3.00		
Manufacture of dairy products	3112	17.20	17.98	17.06	17.88	0.01	0.02	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0.08	0.06		
Canning and preserving of fruits and vegetables	3113	3573	50.54	24.71	35.17	9.39	12.91	2.86	2.84	2.04	1.84	2.24	4.05	2.26	4.17	0.76	1.00	0.18	0.22	0.56	1.07	6.98	10.26		
Canning, preserving and processing of fish	3114	41.15	45.36	27.82	31.01	11.42	13.03	3.87	4.41	2.72	3.51	2.27	2.62	1.06	1.10	2.65	3.48	0.37	0.59	2.70	3.29	3.12	2.10		
Manufacture of vegetable and animal oils and fats	3115	48.71	53.86	26.46	28.42	22.11	25.07	7.01	8.33	3.42	1.76	1.15	0.51	10.52	14.47	2.68	1.58	0.16	0.13	5.32	6.09	7.87	10.13		
Grain mill products	3116	33.88	42.63	7.07	9.79	26.80	32.79	2.31	2.53	9.33	12.14	0.03	0.09	15.12	18.02	9.33	12.13	3.84	3.20	1.58	1.67	4.64	8.57		
Manufacture of bakery products	3117	4.54	6.33	4.50	6.26	0.04	0.07	0.03	0.05	0	0	0.01	0.02	0	0	0	0	0	0	0.01	0.03	0.04	0.04		
Sugar factories and refineries	3118	26.21	23.70	9.74	10.70	16.13	11.99	2.12	2.42	7.27	5.30	0.27	0.16	6.47	4.11	7.23	5.10	4.35	3.22	0.04	0.60	2.20	1.14		
Manufacture of cocoa, chocolate and sugar confectionary	3119	19.26	21.68	15.38	18.27	3.78	3.12	0.27	0.33	2.57	2.15	0.06	0.05	0.88	0.59	2.48	2.10	0.03	0.03	0.15	0.30	0.71	0.82		
Manufacture of food products NES	3121	19.07	20.65	16.07	17.58	2.87	2.86	0.35	0.38	0.56	0.63	0.12	0.24	1.84	1.61	0.53	0.62	0.19	0.13	0.17	0.17	1.62	1.69		
Manufacture of prepared animal feeds	3122	4.02	5.56	3.90	5.38	0.09	0.13	0.04	0.06	0.01	0.02	0	0	0.03	0.04	0.01	0	0	0	0.04	0.05	0.03	0.03		
Distilling, rectifying and blending spirits	3131	15.40	17.77	13.69	16.30	1.46	1.48	0.02	0.04	0.12	0.10	0.01	0.01	1.31	1.33	0.08	0.09	1.26	1.25	0	0.01	0.21	0.16		
Wine industries	3132																								
Malt liquors and malt	3133	4.28	5.26	4.19	5.12	0.01	0.02	0	0.01	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0.02	0.03		
Soft drinks and carbonated waters industries	3134	3.91	5.21	3.85	5.00	0.03	0.03	0.01	0.01	0	0	0.01	0.01	0.01	0.01	0	0	0	0	0	0	0.03	0.03		
Tobacco manufactures	3140	7.95	10.95	7.75	10.79	0.20	0.16	0.01	0	0.03	0.03	0.03	0.02	0.13	0.10	0.03	0.03	0.12	0.10	0	0	0.01	0.01		

Source: OECD.

a Southern Europe, Middle East and North Africa region. b Latin America and Caribbean region. c Sub-Saharan Africa region. d Central America and Caribbean region. e Region includes Indonesia, Malaysia, the Philippines, Singapore and Thailand. f Brazil, China, Hong Kong, Hungary, India, Israel, Rep. of Korea, Poland, Portugal, Romania, Singapore, Taiwan (China), Yugoslavia.

Table 3. Market Penetration of Processed Agricultural Products in Japan, 1980 and 1985.

Processed Agricultural Products	ISIC Code	All																						
		World		Industrial Countries		Developing Countries		Asia Region		Africa Region		EMENA ^a		LAC ^b		SSA ^c		CAC ^d		ASFAN ^e		Exporters ^f		
		1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	
Manufactures of food, beverages and tobacco	31	6.33	4.8	3.60	2.72	2.64	2.00	1.44	1.32	0.44	0.13	0.01	0.01	0.75	0.54	0.17	0.09	0.22	0.11	0.65	0.41	1.01	1.18	
Slaughtering, preparing and preserving meat	3111	24.09	21.24	19.08	15.59	4.57	5.36	3.13	4.39	0.35	0.29	0.01	0	1.08	0.68	0.26	0.24	0.06	0.03	0.56	0.63	2.89	4.15	
Manufacture of dairy products	3112	4.57	3.52	4.37	3.34	0.04	0.08	0.02	0.03	0	0.03	0	0	0.01	0.02	0	0	0	0	0	0.01	0.18	0.15	
Canning and preserving of fruits and vegetables	3113	7.10	7.93	2.61	2.57	4.44	5.31	4.16	4.44	0.08	0.16	0.07	0.14	0.13	0.58	0	0	0.01	0.01	0.33	0.45	4.01	4.59	
Canning, preserving and processing of fish	3114	3.09	3.36	1.43	1.36	1.60	1.90	1.56	1.84	0	0.01	0	0.01	0.03	0.05	0	0	0	0	0.16	0.15	1.31	1.63	
Manufacture of vegetable and animal oils and fats	3115	11.92	8.34	4.85	2.52	6.92	5.72	4.21	4.43	0.22	0.06	0	0	2.49	1.23	0.05	0.05	0	0	3.39	3.43	1.38	1.65	
Grain mill products	3116	12.15	8.64	0.70	0.48	11.45	8.16	2.02	2.14	2.65	0.96	0.02	0.02	6.75	5.03	2.63	0.96	1.63	1.14	1.54	1.56	2.85	2.90	
Manufacture of bakery products	3117	0.29	0.31	0.19	0.24	0.10	0.08	0.10	0.08	0	0	0	0	0	0	0	0	0	0	0.03	0.02	0.08	0.06	
Sugar factories and refineries	3118	55.97	12.86	18.01	3.60	37.86	9.13	20.29	5.17	11.47	1.59	0	0	6.10	2.37	0	0	5.90	1.97	14.20	3.71	4.90	1.18	
Manufacture of cocoa chocolate and sugar confectionary	3119	4.36	3.71	2.60	2.17	1.75	1.53	0.55	0.61	0.23	0.17	0	0	0.96	0.75	0.22	0.15	0.01	0	0.33	0.31	1.04	1.11	
Manufacture of food products NES	3121	2.75	2.22	1.83	1.34	0.90	0.87	0.51	0.52	0.06	0.02	0.01	0.01	0.33	0.33	0.03	0.03	0.01	0.03	0.31	0.23	0.39	0.50	
Manufacture of prepared animal feeds	3122	0.47	0.66	0.40	0.54	0.06	0.11	0.01	0.09	0	0	0	0	0.05	0.02	0	0	0	0	0	0	0.06	0.01	0.02
Distilling, rectifying and blending spirits	3131	3.47	2.12	3.40	2.01	0.06	0.09	0.02	0.05	0	0	0	0	0.04	0.04	0	0	0.01	0.01	0	0.01	0.01	0.05	
Wine industries	3132	24.23	27.38	18.57	21.85	2.11	3.00	1.41	2.00	0	0.13	0.08	0.03	0.58	0.83	0	0	0	0	0.12	0.17	4.88	4.36	
Malt liquors and malt	3133	3.74	2.01	3.35	1.81	0.05	0.02	0.04	0.02	0	0	0	0	0.01	0.01	0	0	0	0	0.04	0	0.09	0.03	
Soft drinks and carbonated waters industries	3134	0.20	0.17	0.16	0.08	0.05	0.09	0.04	0.05	0	0.03	0	0	0	0	0	0	0	0	0.04	0.03	0.04	0.05	
Tobacco manufactures	3140	0.58	0.89	0.55	0.88	0.03	0.02	0.03	0.02	0	0	0	0	0	0	0	0	0	0	0	0.01	0.03	0.01	

Source: OECD.

a Southern Europe, Middle East and North Africa region. b Latin America and Caribbean region. c Sub-Saharan Africa region. d Central America and Caribbean region. e Region includes Indonesia, Malaysia, the Philippines, Singapore and Thailand. f Brazil, China, Hong Kong, Hungary, India, Israel, Rep. of Korea, Poland, Portugal, Romania, Singapore, Taiwan (China), Yugoslavia.

one-half because of the losses in the sugar and grains markets. 1/ Growth markets for developing countries were meats (Asia), fruits and vegetables (LAC), and wine (Asia and LAC). However, their total share declined because of decreases in oils (Africa, LAC), grains (Africa, LAC) and sugar (Asia, Africa and LAC). The sharp fall in the share of imports in sugar consumption is largely a result of the differences in world prices for sugar in 1980 (a peak) and 1985 (a trough).

Total import penetration also declined in the United States (see Table 4). The industrial countries' share increased but the developing countries' share declined substantially. Again the loss was mainly suffered by the LAC region (and the CAC region) because of the decline in the market shares for sugar and grains. The Africa (and SSA) region also lost heavily in the grains and sugar markets. On the positive side, the developing countries were able to increase their shares in one of the growth markets in the United States--fruits and vegetables--as well as in the fish products and wine markets. The LAC region has been largely responsible for the developing countries' increasing share of the fruits and vegetables market.

Looking across the developing country groups of interest, it can be seen that the group of developing countries which has become significant exporters of manufactures has not done significantly better than other developing country groups. The ASEAN group, which may have been expected to perform well in Japan due to its proximity, in fact lost shares in that market, while it increased shares in the EEC and the United States. It was the loss of the sugar market in Japan, by the Philippines and Thailand, which offset gains in most other markets.

The LAC region lost market shares in both Japan and the United States, while gaining in the EEC. Meats, oils, grains, sugar and cocoa were the main areas of loss, with offsets by gains in fruits and vegetables, fish, oils, wines and spirits. Of course, in a fast-growing market such as the Japanese market during this period, a smaller market share may still be consistent with increases in volumes sold.

The CAC region lost market share in all three importing regions. The main losses were in the grains and sugar markets (in all three importers) and meats in the United States. Market gains were made in fruits and vegetables (in the EEC and the United States) and in fish products (in the EEC).

SUMMARY

The markets for processed agricultural products in the EEC, Japan and the United States are large markets with apparent consumption totaling over US\$660 billion in 1985. Over the 1980-85 period, the US markets for these products appear not to have grown, and the same is true of the EEC. However, the

1/ Ironically, The United States gained from the shift from sugar to HFCS because it has been able to increase its maize exports.

Table 4. Market Penetration of Processed Agricultural Products in the United States, 1980 and 1985.the

Processed Agricultural Products	ISIC Code	All										Exporters ^f											
		World		Industrial Countries		Developing Countries		Asia Region		Africa Region		EMENA ^a		LAC ^b		SSA ^c		CAC ^d		ASFAN ^e			
		1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985
Manufactures of food, beverages and tobacco	31	6.17	5.58	2.53	2.76	3.53	2.73	0.68	0.70	0.41	0.22	0.02	0.03	2.42	1.79	0.35	0.19	0.75	0.44	0.47	0.48	1.10	0.99
Slaughtering, preparing and preserving meat	3111	4.89	4.16	3.49	3.18	0.99	0.71	0.14	0.13	0.02	0.02	0.02	0.02	0.81	0.54	0.01	0.01	0.40	0.20	0.01	0.04	0.68	0.50
Manufacture of dairy products	3112	1.72	1.81	1.62	1.69	0.05	0.09	0	0.01	0	0	0.01	0.02	0.04	0.06	0	0	0	0	0	0	0.06	0.05
Canning and preserving of fruits and vegetables	3113	2.67	7.64	0.77	2.25	1.89	5.31	1.16	1.88	0.04	0.15	0.04	0.16	0.65	3.12	0	0	0.06	0.22	0.52	0.86	0.93	3.55
Canning, preserving and processing of fish	3114	8.23	14.03	4.64	6.48	3.53	7.48	2.65	6.44	0.01	0	0.08	0.09	0.78	0.95	0	0	0.02	0.04	1.23	4.24	1.69	2.49
Manufacture of vegetable and animal oils and fats	3115	3.77	5.04	0.64	0.94	3.12	4.08	2.63	3.24	0.01	0.01	0.02	0.02	0.45	0.81	0.01	0.01	0.06	0.07	2.48	3.01	0.42	0.55
Grain mill products	3116	26.01	17.23	0.62	0.71	24.77	16.51	2.13	1.69	3.89	1.96	0.01	0	18.74	12.86	3.89	1.96	4.69	3.39	1.72	1.39	5.85	3.95
Manufacture of bakery products	3117	0.99	1.60	0.82	1.38	0.16	0.21	0.09	0.13	0	0	0.02	0.02	0.05	0.07	0	0	0.01	0.01	0.02	0.02	0.10	0.13
Sugar factories and refineries	3118	27.74	21.23	2.33	2.74	25.41	18.46	3.24	3.22	346	1.61	0	0.05	18.71	13.59	1.85	0.86	9.47	6.64	2.67	2.59	5.49	3.78
Manufacture of cocoa, chocolate and sugar confectionary	3119	6.94	8.02	2.38	3.12	4.53	4.87	0.48	0.82	0.75	0.97	0.03	0.04	3.27	3.05	0.74	0.92	0.17	0.19	0.38	0.57	1.97	2.35
Manufacture of food products NES	3121	2.95	2.90	0.89	1.51	2.06	1.38	0.28	0.32	0.11	0.06	0.01	0.02	1.66	0.98	0.10	0.06	0.21	0.14	0.14	0.14	1.24	0.75
Manufacture of prepared animal feeds	3122	0.36	0.53	0.35	0.47	0.01	0.07	0	0	0	0	0	0	0.01	0.06	0	0	0	0.02	0	0	0	0.03
Distilling, rectifying and blending spirits	3131	28.64	30.14	26.85	28.11	1.55	1.72	0.01	0.02	0	0	0.02	0.05	1.51	1.64	0	0	0.43	0.45	0	0	0.07	0.11
Wine industries	3132	26.80	31.55	26.58	31.00	0.22	0.28	0.01	0.04	0.01	0.01	0.01	0.08	0.10	0.15	0	0	0	0.01	0	0	1.72	1.38
Malt liquors and malt	3133	4.35	5.62	4.08	4.97	0.26	0.64	0.03	0.11	0	0.01	0	0	0.23	0.51	0	0.01	0	0.02	0.02	0.03	0.02	0.07
Soft drinks and carbonated waters industries	3134	0.31	0.90	0.29	0.70	0.02	0.19	0.01	0.03	0	0	0	0	0.02	0.16	0	0	0	0	0	0.01	0.01	0.04
Tobacco manufactures	3140	1.01	0.54	0.44	0.27	0.57	0.28	0.05	0.01	0.05	0	0	0	0.46	0.26	0.03	0	0.27	0.23	0.01	0.01	0.16	0.01

Source: OECD.

a Southern Europe, Middle East and North Africa region. b Latin America and Caribbean region. c Sub-Saharan Africa region. d Central America and Caribbean region. e Region includes Indonesia, Malaysia, the Philippines, Singapore and Thailand. f Brazil, China, Hong Kong, Hungary, India, Israel, Rep. of Korea, Poland, Portugal, Romania, Singapore, Taiwan (China), Yugoslavia.

Japanese market has grown at around 4% p.a. in real terms. The largest markets for processed agricultural products in the EEC and the United States are meat and dairy products, while the consumption pattern differs in Japan, with fish and bakery products being most important. The fastest growing markets of interest for the developing countries have been fruits and vegetables (Japan and the United States), meats, grains and fish (Japan) and oils, dairy products and cocoa (EEC).

The developing countries have lost total market shares in processed agricultural products in both Japan and the United States, mainly due to the sharp drop in their share of the sugar market--a market which at the same time has declined significantly in real terms in both importing countries. The main reason for this decline in consumption in Japan and the United States has been the switch away from sugar to other sweeteners for production of soft drinks. A related factor is likely to be the high domestic price of sugar in both countries due to import barriers. The decline in import shares in the United States is the direct result of the adoption of import quotas since 1980 and the fact that these have been reduced significantly over the 1980-85 period; in Japan, the reduction in import share was the result of the fall in world sugar prices between 1980 and 1985.

In the US market, there has been declining consumption of vegetable and animal oils, animal feeds, meats and fish--a pattern generally consistent with the consumer shift away from products high in saturated fats. So far, this behavior is not reflected in the EEC and Japan.

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**PROTECTIONISM IN THE OECD COUNTRIES AND THE DEVELOPMENT
OF PREFERENTIAL SYSTEMS OF ACCESS**

Alejandro Jara *

INTRODUCTION

First of all, it should be pointed out that the topic under discussion is confined to trade in agricultural commodities, including agroindustrial products. In the context of this paper, no differentiation can be made between primary and processed agricultural products, since neither international agreements nor conditions of access to markets make a formal distinction between them. And today this responds increasingly to the economic reality of greater integration of production processes and the agricultural sector's interrelation with the rest of the economy.

A second point to be borne in mind is that one cannot generalize about protectionism in countries of the Organization for Economic Cooperation and Development (OECD), since within this association very different conditions exist with regard to national agricultural policies and foreign-trade policies, and therefore varying degrees or levels of protection. Furthermore, the difference in the volume and size of the production and markets of these countries means that their effects on international trade are very disparate.

It is common to refer to the OECD countries as "industrialized." This is paradoxical, since there has been a change in production structures and in world trade exchanges over the years. As a consequence of the agricultural policies and technological advances applied in agriculture, the so-called industrial countries have been transformed, where traditional agricultural commodities are concerned, into the principal producers and exporters, with the logical consequences this has on the structure of international trade in agroindustrial products. In contrast, the developing countries have become the principal group of importers, despite the fact that some of them have made considerable progress in increasing their production and exports. The figures in appendix I show the change that took place between 1963 and 1987 in the relative share of different groups of countries in world trade, and reflects the trends observed since the Second World War. Thus, for example, the developed countries increased their share of world trade in agricultural commodities during the above mentioned period from 55.4% (US\$24.55 billion) to 65.3% (US\$222.25 billion), while the share of the developing regions dropped from 34% (US\$15.40 billion) to 25.5% (US\$86.80 billion).

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INCREASE IN AGRICULTURAL PROTECTIONISM IN THE DEVELOPED COUNTRIES

Agricultural protectionism in the developed countries has increased in a constant manner. All the tariff-protection indicators, as well as those related to the application of non-tariff measures, show an increase. This is in marked contrast to the trade liberalization that has taken place, in general, in other sectors of production (excluding, of course, certain areas such as textiles and clothing, steel, leather goods, etc.). This situation gives rise to reflections along three lines of analysis.

First, the marked differences in levels of protection in the different sectors of production could be generating a serious distortion in the allocation of resources on a worldwide scale, to the detriment of the developing countries. In considering this distortion, it must also be borne in mind that for most of the principal agricultural commodities, a high level of effective protection is maintained as a result of strong tariff pressures.

Second, the protection applied to the main agricultural products in the most highly developed countries is so great that in practice, their respective national markets have been isolated; the latter, therefore, do not respond to signals from international markets, nor do they adapt their production to those signals.

Third, it should be pointed out that although levels of tariff protection continue to be significant, the incidence of non-tariff measures has increased considerably, which has nullified whatever influence external prices could have on domestic production. Non-tariff regulations have become the main form of protection; these include subsidies granted both to production and to exports. This merits an explanation. Many non-tariff measures (for example, quantitative restrictions, or health and plant health restrictions) obviously limit or hinder trade; they therefore have a negative effect on production for potential exporters. On the other hand, it is often said that in the end, subsidies have the effect of contributing to expanding production and exports; and from this point of view, are less harmful than other non-tariff measures. Nonetheless, it should be borne in mind that: (i) a subsidy to production discourages imports of a similar product; (ii) a subsidy to exports makes it possible to sell in foreign markets, displacing another potential exporter; (iii) export subsidies, depending on their size and the volume of the product benefited, have the effect of depressing international prices. This discourages production and/or exports in countries which are unable to grant subsidies, or decide not to do so, and which maintain open export policies. From that viewpoint, subsidies are a form of protectionism. These mass transfers of resources by the main market-economy countries are of such magnitude that it could perhaps be said that nowadays subsidies have become the most perverse form of protectionism in agriculture.

In the final analysis, the situation outlined above stems from the design and application of specific national agricultural policies. That is the root of the problem, and therefore we are faced with an eminently political issue. National agricultural measures have been conceived for very different objectives, and they vary in content and emphasis according to each country's own situation. In the majority of OECD countries, among the policy

objectives, two should be stressed: first, a major concern for maintaining viable production volumes consistent with national security objectives, that is, to ensure a minimum supply in case of conflict and avoid excessive external dependence, etc.; second, to assure adequate earnings for agricultural sector producers and workers, ideally on a par with those of the industrial sector. This involves allocating resources to benefit the agricultural sector. In many cases, that objective has been reinforced by electoral structures that give rural sectors a disproportionate representation in relation to their population, with the consequent imbalance of power or of political influence.

The policy instruments implemented both internally and at the borders have had the effect of creating incentives for growing overproduction. Even in cases where such policies have been accompanied by measures to control production or supply, they have been either insufficient or ineffective in preventing the generation of large surpluses, whose very existence has the natural effect of depressing international prices. Finally, such surpluses are placed on international markets through export subsidies, with the consequences and effects that have already been pointed out.

Those policies are financed by governmental budgets, or the cost is simply transferred to consumers, with foreseeable consequences on the general well-being. The size of the increasing cost is of such magnitude that in the last few years there has been the growing realization that one of the major limitations of those policies is the budget problem they cause. International competitiveness in the principal commodities has been aptly characterized as a competition between the public treasuries of the main OECD countries, and in this context it would be superfluous to mention which one has the greatest comparative advantages. Costs have increased to unsustainable levels. At the beginning of the eighties, the EEC was spending US\$11 billion in the agricultural sector and by 1986 the level had risen to US\$22 billion. The U.S., for its part, was spending US\$4 billion on its agriculture programs in 1979, and by 1986 the figure had risen to US\$26 billion. Despite these growing expenditures, the net income of EEC agricultural producers has dropped to a level similar to the years before 1980, while the drop in income of U.S. producers was 30% between 1979 and 1984. In order to complete the picture of the dimensions of the current situation, to which the U.S. and the EEC are the main contributors, it is important to point out that between them they total more than half of the world's trade in food grains, skimmed milk and butter, and they are substantial exporters of meats and sugar, among other traditional products. There is no doubt that any change in world agricultural trade, whether within or outside the Uruguay Round, will depend primarily on the will and the responsibility of the U.S. and the EEC.

THE GENERAL AGREEMENT ON TARIFFS AND TRADE (GATT)

Let us now examine the conditions in which international trade is evolving, or should be evolving. Reference must necessarily be made to the General Agreement on Tariffs and Trade (GATT), which for more than 40 years has been the only multilateral juridical instrument governing international trade. It is frequently said that the GATT does not apply to agriculture; this is erroneous. The fact is that the GATT has general rules covering all

products, including agricultural products. In addition, it has special provisions covering only agricultural products, among them the exceptions to the prohibition on applying quantitative restrictions and to providing subsidies to exports. These exceptions contain important limitations whose principal purpose is to maintain some degree of access to markets and prevent measures such as subsidies from being used to acquire part of the stocks in the world market at the expense or to the detriment of other suppliers.

Unfortunately, these provisions have not been effective for two reasons. The main one is that national policies have simply exceeded the limitations imposed by GATT regulations. The second is that multilateral rules are most unsatisfactory in their focus and wording. Such measures, for example, apply to procedures at borders, when the real problem lies in domestic policies. With regard to subsidies, the obligations are built on the effects that these subsidies may have; that is, a subsidy may be considered illegal if, in applying it, the country that grants it acquires "more than a fair share" of the world market in the product concerned. And that circumstance cannot be determined until the effect has been produced, in other words, until the damage has been done. The discrepancies in interpreting GATT regulations, particularly those that apply more to the principal trading powers, reveal not only the shortcomings of those regulations, but also, more importantly, the total lack of a basic consensus among the parties to the GATT on the rules of the game that should govern trade policies. In other words, concrete provisions exist, but they are evaded or simply ignored. As well as being ineffective, they are deficient.

A brief look at history is necessary in order to understand why, aside from whatever shortcomings the GATT regulations may have, the developed countries were unwilling or unable to observe them. The GATT was basically an Anglo-Saxon creation; the principles and institutions that were established were modeled basically on the experience the United States had gained up to that time from the bilateral treaties it had signed with various countries. The special provisions on agriculture were largely drawn up to accommodate U.S. agricultural policy. In the early fifties, however, the new United States law on agriculture established a system that could not be contained by the GATT's multilateral rules.

In 1955, the parties to the GATT voted in favor of an exemption to the prohibition of imposing quantitative restrictions, which the U.S. had requested so that it could put its agriculture law into effect without breaching its obligations under the General Agreement. This exemption was agreed to without a specified time limit, and it has been the only one granted in the GATT under those conditions. At the same time, the European countries and Japan, which was then applying for GATT membership, had invoked the exceptions provided for under that agreement because of balance-of-payments problems, in order to justify the application of quantitative restrictions on imports of various products, among them agricultural commodities. The United States has continued to use the exemption granted in 1955 up to the present; currently it applies restrictions on imports of dairy products, sugar, peanuts and cotton.

As their balance-of-payments situation improved towards the end of the fifties, the European countries and Japan gradually removed the quantitative restrictions they had applied. Nevertheless, a few restrictions still persist, although now they are no longer covered by the balance-of-payments exception, and thus clearly breach GATT regulations. These particularly affect the agricultural sector. But of much greater importance was the Treaty of Rome, under which the European Economic Community was established in 1958; one of its pillars is the Common Agricultural Policy (CAP), by virtue of which new instruments and measures were applied to imports - such as variable rights - and to exports - such as restitutions - which, in the course of a few years transformed the European Economic Community from a net importer of many products into a powerful export center. The Japanese agricultural market, for its part, remained a very closed one, with high costs for consumers; it is only in the last few years that a certain opening-up has been observed, thanks largely to strong pressure from the U.S. and to a certain degree by the EEC. The other European countries also applied national policies on the basis of strong State intervention, through direct or indirect subsidies; these mechanisms for protecting income and/or prices would definitely have been unable to function without maintaining tight controls on imports.

SYSTEMS OF PREFERENTIAL ACCESS

Leaving aside these reflections for a moment, let us examine the conditions of access to markets for the agricultural exports of developing countries, among them preferential systems of access. Conditions of access have already been described. The agricultural sector is the one that has been least liberalized in relation to others. Levels of protection in the principal OECD countries have gradually risen, particularly through the application of non-tariff instruments, which are discriminatory and prevent prices from playing a role in levels of production and trade. There has been a growing displacement of the developing countries' exports in third markets owing to the competition and subsidies war practiced particularly by the U.S. and the EEC. Although in recent months some of the prices of important commodities have registered an upturn, very depressed price levels persist, and these do not create incentives for producers in the developing countries.

One of the most harmful tendencies of trade policies is the proliferation of managed trade. Thus, for example, even when faced with relatively insignificant problems, the importing developed countries allow a certain level of access to their markets in exchange for voluntary export restrictions on the part of foreign suppliers; in most cases this is negotiated with no compensation of any kind for the exporting country and, in the end, such transactions replace regulations on safeguards provided for by the GATT. Other instruments are also increasingly being used to replace those safeguards, such as investigations and the application of anti-dumping and compensatory duties, with the aim of countering the alleged prejudicial effects that can be caused by imports carried out under dumping (price discrimination) or subsidized conditions, respectively. Consequently, it can be said that, generally speaking, there has been a constant and growing deterioration in the conditions of access to markets for exports from the developing countries.

Practically all the developed countries have established preferential systems of access to their markets, some of which benefit the developing countries; the principal and best known one is the Generalized System of Preferences. Before making a few comments on those systems, it is essential to take a broader overview; to that end, I will refer principally to the U.S. and Western European markets. First, it should be noted that there is a growing tendency towards "regionalism," to the detriment of multilateralism. For example, since its establishment, the EEC has undergone two substantial expansions. Outside the EEC, but in the same region, the remaining Western European countries maintain the zone known as EFTA (European Free Trade Association). Between the EEC and each of the EFTA member countries there is some kind of free-trade agreement. In short, the whole of Western Europe is a large free-trade zone although it covers agricultural commodities in a very limited way. Furthermore, the EEC upholds agreements of association with other countries of the Mediterranean Basin.

The Lomé Convention should also be mentioned. This grants preferential conditions of access to commodities from various European ex-colonies in Africa, the Caribbean and the Pacific. This framework should also include the fact that products from the German Democratic Republic enter the Federal Republic of Germany free of customs duties, and for this reason the former has sometimes been referred to as the thirteenth EEC member State. More recently, there have been important advances in political and economic relations between the countries of the Council for Mutual Economic Assistance (CMEA or Comecon) and the EEC, which opens up a vast range of possibilities on the commercial level. Although at the moment this is purely speculative, it may not be overly bold to think that it will not be long before preferential agreements are cemented between some of the Socialist countries, Hungary for instance, and the EEC. Thus, around the EEC nucleus an immense network of commercial agreements and interests has been built up which reflects not only regional realities, but also priorities in foreign policy relations.

The United States currently has two free-trade agreements, one with Israel and the other with Canada. U.S. authorities have stated on various occasions that if multilateral solutions are not reached in the Uruguay Round - solutions meaning solutions that satisfy that country's interests - they will seek to broaden U.S. bilateral or multilateral commercial agreements. In this context, possible agreements with Japan, the countries of Southeast Asia and Mexico have frequently been mentioned. Here we should also mention the Caribbean Basin Initiative (CBI), whereby the United States grants preferential access to many products from certain countries in that region.

Preferential access for products from the developing countries to developed country markets is basically granted under the Generalized System of Preferences (GSP) or, depending on the area, under other systems already mentioned, such as the CBI in the case of the U.S. or the Lomé Convention in the case of the EEC; the latter two are not limited to commercial affairs, but cover other areas as well. As regards trade exchanges, they provide for slightly more favorable conditions of access than the GSP. These systems are relatively important where agricultural commodities are concerned. For example, the GSP was basically conceived to facilitate the access of manufactured products from the developed countries, which, together with the

high sensitivity of agricultural products in developed-country markets, implied that only in exceptional cases were those products included as beneficiaries. Nonetheless, there are two exceptions in this regard.

First, when we refer to agricultural commodities, they do not include those known as "tropical" products. Traditionally, the latter have been treated separately in the context of international trade negotiations; above all, this has occurred so that they may be given priority in trade negotiations and to grant them greater ease of access over other agricultural commodities, since tropical products are of major interest for most of the developing countries. Tropical products include cocoa, coffee, spices, jute, tea and a number of others. The rest are known as temperate-zone agricultural commodities. Of course, certain products are found in both tropical and temperate zones, such as sugar and the different varieties of vegetable oils, which are largely interchangeable. Generally, tropical products have free access to developed-country markets, without the need for preferences, at least when they are exported in non-processed or non-manufactured forms. It should be added that even though tropical agricultural processed products, that is, those resulting from developing countries' agroindustry, should as a general rule benefit from preferential systems, they receive very limited coverage under the GSP, precisely because they imply economic processes that involve manufacture; in addition to this, there is a high level of effective protection in the markets of the OECD countries.

The second exception is that although there is marginal coverage for tropical agricultural commodities, including processed ones, under the GSP they generally face a very great disadvantage in certain important markets, particularly those of Western Europe. This stems from the fact that the free-trade agreements or customs agreements between various developed countries mean that they grant one another more favorable conditions of access than those for imports from the developing countries, and particularly from Latin America to the European region. For example, in Austria, customs duties under the GSP are 50% of the most-favored-nation tariff, but if the same product is imported from a European country with which Austria has a free-trade agreement, the import is duty-free. As a whole, it could be said that in relation to the conditions of access that some developed countries grant one another, the preferences under the GSP are negative.

To sum up, the systems of preferential access in the developed countries are of marginal significance for agricultural products from temperate and tropical zones and for those processed or manufactured in either group. We should now reflect on the prospects and advisability of improving and expanding preferential systems of access. The prospects are not good and, to a certain extent, nor are they desirable. Since they were first applied, GSP benefits have suffered constant deterioration. Many products from some countries have been excluded because of provisions such as the clause on competitive requirements in the U.S. system, which also exists under different names in other systems. In view of this type of regulations, when exports of an eligible product from a developing country reach a certain level and/or value, the country loses its status as beneficiary for that product. There are also provisions on "grading," whereby some developing countries lose their status as beneficiaries if the country granting preference considers that the other has reached a degree of development that makes preferential access

unnecessary. A number of developing countries have also been excluded or had their status as beneficiaries suspended because of political motives, trade controversies or economic-relations problems other than those strictly to do with trade. The prevailing tendency, therefore, leans towards excluding specific products from certain countries, as well as entire countries. Expansion of GSP coverage has been very marginal and in general has not included the agricultural commodities sector.

MULTINATIONAL TRADE NEGOTIATIONS

It should be borne in mind that the Multilateral Trade Negotiations (MTN) of the Uruguay Round are under way and are expected to conclude by the end of 1990. In this Round of MTN there is the intention and the possibility of negotiating a reduction and/or elimination of customs duties, as well as the suppression and/or limitation of non-tariff measures. A certain degree of trade liberalization is foreseeable and, under GATT rules, this will take place on a most-favored-nation basis; that is, the benefits must be extended automatically and unconditionally to all members. This will imply, at least in the area of customs duties, that the margins of preferences that many developing countries enjoy today will deteriorate and in many cases will simply be eliminated, which means that the significance or trade value of systems such as the GSP, CBI and the Lomé Convention will be even further reduced.

Consequently, it would be advisable for the governments and economic agents of developing countries that currently benefit from preferential access to plan their activities over the long term on the basis that these facilities will disappear; that is, that they will have to compete under the same conditions as the rest of the world in developed-country markets. Although this may seem to be a negative prospect, it is not altogether bad. For at least twenty-five years, the developing countries have insistently called for all kinds of special treatment to meet their needs. In other words, they have tried to obtain what in technical terms is called "differential and more favorable treatment." The GSP was one of the earliest expressions of new forms of trade relations between developing and developed countries. As we have seen, the GSP contains strong limitations, added to which is the question of unilateral preferences, that is, they can be withdrawn at any time. On many occasions they have been used by some developed countries as an instrument of pressure to obtain changes in policy or in the regulations applied by certain developing countries in other spheres; for example, in the area of internationally recognized copyright or labor rights. There is no doubt that the limitations and instability inherent in preferential systems are not conducive to making new investments in the developing countries based on the use of preferences.

Under these circumstances, that is, with the limitations, instability, discriminations and perspectives of deterioration and eventual disappearance of the GSP, it does not seem advisable for the developing countries to put much effort into negotiating the maintainance of this type of preference. What, then, are the options? In accordance with GATT rules, when a liberalization of trade is negotiated through the reduction or elimination of customs duties, the results are legally or contractually protected. Reference is made to a "consolidation" of the concessions negotiated; this involves, in

legal and practical terms, that the country that commits itself in this way as regards a product cannot do anything, directly or indirectly, to annul or erode the value of the concession. Despite the gaps and exceptions to this rule, the GATT system has enormous value in terms of stability and security in the conditions of access to markets. Therefore, in view of the fact that the Uruguay Round opens up the possibility of negotiating better conditions, though not on a preferential basis, from the economic, legal and political points of view, the developing countries should concentrate their efforts on ensuring that negotiations in the agricultural sector conclude with a substantial liberalization, which should at least be on a par with what has been obtained for vast sectors of manufactured and semi-manufactured goods.

At the same time, it should be borne in mind that the liberalization conceived in those terms would serve no purpose unless all the measures that affect imports and competitiveness in foreign markets are subjected to the rules and regulations of the GATT, which should be strengthened and made operationally effective. This is precisely the major negotiating objective to which the parties to the GATT committed themselves when they approved the Declaration of Punta del Este, which set in motion the Uruguay Round of Multilateral Trade Negotiations in September 1986. It is for this reason that the negotiations on agriculture are the ones with the greatest importance, scope, complexity and difficulty. It is a matter of agreeing on effective limits on national agricultural policies and restoring more open, free and non-discriminatory competitive conditions. In other words, it is a question of initiating a profound process of reform of national policies, which will necessarily be gradual. This is probably the only opportunity that the developing countries will have, until the beginning of the next century, to assure better long-term conditions of access for their exports, particularly exports of agroindustrial products.

In the two years of negotiations conducted under the Uruguay Round, considerable progress has been made in the area of agriculture, both in identifying the problems and in formulating and debating the proposals for negotiation put forward by different countries or groups of countries. However, during the ministerial-level meeting held by the Trade Negotiations Committee in December 1988 in Montreal, Canada, the topics of agriculture and copyright obstructed the discussions and prevented the approval of a set of decisions that would have allowed the negotiations as a whole to move forward towards their final stage. The principal stumbling block was an impasse between the U.S. and the EEC. The United States insisted on directing the negotiations towards long-term commitments leading to the elimination of agriculture subsidies and the liberalization of import regulations. The European Economic Community, however, rejected long-term commitments of that type and proposed negotiations on short-term measures in certain products which responded to a greater or lesser degree to the changes it had introduced or had planned to implement in the near future and which, in short, involve some kind of disincentive to the generation of larger surpluses. The EEC has endeavored to negotiate an agreement on market share by product, that is, the definitive cartelization of markets for traditional commodities and for the products processed from the latter. It should be pointed out that the atmosphere has become even more complicated because of other controversies that have arisen in the GATT between both trading powers, particularly as

regards the use of hormones in meat and the fact that the EC has questioned the exemption that the parties to the GATT granted to the U.S. in 1955 in applying quantitative restrictions on agricultural imports.

The issue was finally resolved at the beginning of April 1989 with an agreement that lays the groundwork the bases for the negotiations to continue, although this does not mean that major differences in viewpoints and interests have been surmounted.

A multilateral framework for trade in services, initially promoted by the U.S. and with the subsequent support of other countries, including some of the developing countries, is also being negotiated in the Uruguay Round. Many studies have been carried out that reliably show the vital importance of services in development and, in general, in national economies. For many industries, including agroindustry, comparative advantages in international trade are created in terms of what is known as "services to producers." In other words, such advantages are no longer the function of the endowment of natural resources alone, but also, based on the latter, a more decisive role is played by the services that make possible the chain of processes at every stage of agricultural-industrial activity, from crop sowing to the marketing and sale of a product processed in foreign markets. These negotiations of the Uruguay Round are, therefore, vital to the future of the economies of the countries of the region, which should determine, at the sectoral level, the conditions under which both their exports and their access to the supply of services will be negotiated multilaterally.

ECONOMIC INTEGRATION, AN IMPERATIVE

Finally, the context of trade between the countries of the region should be taken into account, and this makes it essential to refer to economic integration. There has in fact been a great deal of disillusionment with the limitations shown by the integration processes that have been promoted since the sixties. Moreover, the acute financial problems of our countries have dealt a hard blow to the expansion of intraregional trade. With regard to the agricultural sector, a recent CEPAL report points out: "Intraregional trade in food products is showing rather erratic behavior: it grew at constant prices and very dynamically in the first half of the seventies (almost 20%) and fell off between 1975 and 1980 (to 15%). In terms of volume, intraregional trade grew at a lower rate than agricultural trade with third countries, and the existence of regional integration agreements has not altered the situation. Exports within ALADI, for instance, dropped from 6.1% to 1.5% in constant values during the period mentioned, while those of the Central American Common Market grew from 0.2% to 3% of the total. In general, there was a drastic drop in intraregional trade in terms of value and volume." (pp. 145-146 of Document LC/R. 733 of January 16, 1989). The experiences and frustrations of the past demand that we be very realistic. In this respect, it should be formally stated that integration is a political imperative, and that on the commercial plane it demands a great imaginative effort from private and public sectors and from international agencies in order to find the structures and mechanisms that will enable political objectives to become a reality and be consistent with the legitimate economic interests of our peoples.

APPENDIX 1

ACI TABLE – WORLDWIDE EXPORTS OF AGRICULTURAL PRODUCTS, BY MAJOR REGION, IN 1963, 1973 AND 1979-87 (In billions of dollars and percentajes)

Origin	Desti- nation	Developed countries		Developing regions		Eastern countries		Worldwide	
		Value	Partici- pation	Value	Partici- pation	Value	Partici- pation	Value	Partici- pation
Developed countries	1963	19.10	43.1	4.05	9.1	1.40	3.2	24.55	55.4
	1973	60.45	49.8	12.45	10.2	5.05	4.2	77.95	64.2
	1979	121.55	45.8	32.45	12.2	12.30	4.6	166.30	62.7
	1980	131.70	44.0	43.20	14.4	16.25	5.4	191.15	63.8
	1981	125.00	42.4	46.75	15.8	17.55	5.9	189.30	64.1
	1982	118.30	43.4	40.35	14.8	14.30	5.2	172.95	63.4
	1983	116.85	43.4	40.20	14.9	11.85	4.4	168.90	62.8
	1984	120.35	42.7	41.90	14.9	13.15	4.7	175.40	62.2
	1985	117.45	43.8	36.60	13.6	11.00	4.1	165.05	61.5
	1986	143.10	48.1	35.70	12.9	8.75	2.9	187.55	63.0
	1987	172.90	50.8	39.90	11.7	9.45	2.8	222.25	65.3
Developing regions	1963	11.35	25.6	2.60	5.9	1.45	3.3	15.40	34.7
	1973	23.30	19.2	6.45	5.3	3.30	2.7	33.05	27.2
	1979	51.15	19.3	18.10	6.8	8.80	3.3	78.05	29.4
	1980	51.85	17.3	20.40	6.8	12.25	4.1	84.50	28.2
	1981	44.95	15.2	20.80	7.0	13.55	4.6	79.30	26.9
	1982	42.15	15.4	19.10	7.0	12.80	4.7	74.05	27.1
	1983	43.25	16.1	18.90	7.0	12.20	4.5	74.35	27.6
	1984	48.45	17.2	20.95	7.4	11.60	4.1	81.00	28.7
	1985	47.10	17.5	18.70	7.0	11.90	4.4	77.70	28.9
	1986	53.30	17.9	17.50	5.9	11.30	3.8	82.10	27.6
	1987	56.45	16.6	18.45	5.4	11.90	3.5	86.80	25.5

Cont. ACI TABLE

Origin	Desti- nation	Developed countries		Developing regions		Eastern countries		Worldwide	
		Value	Partici- pation	Value	Partici- pation	Value	Partici- pation	Value	Partici- pation
Eastern Countries	1963	1.50	3.4	0.60	1.4	2.30	5.2	4.40	9.9
	1973	4.95	4.1	1.80	1.5	3.75	3.1	10.50	8.6
	1979	8.20	3.1	4.90	1.8	7.75	2.9	20.85	7.9
	1980	8.70	2.9	6.10	2.0	9.00	3.0	23.80	7.9
	1981	8.90	3.0	6.20	2.1	11.45	3.9	26.55	9.0
	1982	7.75	2.8	6.20	2.3	11.90	4.4	25.85	9.5
	1983	7.25	2.7	6.30	2.3	12.20	4.5	25.75	9.6
	1984	7.65	2.7	6.30	2.2	11.70	4.1	25.65	9.1
	1985	7.90	2.9	6.10	2.3	11.70	4.4	25.70	9.6
	1986	9.55	3.2	6.10	2.0	12.30	4.1	27.95	9.4
1987	11.70	3.4	6.70	2.0	13.10	3.8	31.50	9.2	
Worldwide	1963	31.95	72.0	7.25	16.3	5.15	11.6	44.35	100.0
	1973	88.70	73.0	20.70	17.0	12.10	10.0	121.50	100.0
	1979	180.90	68.2	55.45	20.9	28.85	10.9	265.40	100.0
	1980	192.25	64.2	69.70	23.3	37.50	12.5	299.45	100.0
	1981	178.85	60.6	73.75	25.0	42.55	14.4	295.15	100.0
	1982	168.20	61.6	65.65	24.1	39.00	14.3	272.85	100.0
	1983	167.35	62.2	65.40	24.3	36.25	13.5	269.00	100.0
	1984	176.45	62.6	69.15	24.5	36.45	12.9	285.05	100.0
	1985	172.45	64.2	61.40	22.9	34.60	12.9	268.45	100.0
	1986	205.95	69.2	59.30	19.9	32.35	10.9	297.60	100.0
1987	241.05	70.8	65.05	19.1	34.45	10.1	340.55	100.0	

Source: GATT. International :Trade 1987-1988.

**THE BENEFIT OF HARMONIZED HEALTH AND SANITARY REGULATIONS
IN THE WORLD OF INTERNATIONAL TRADE**

Lester Crawford *

Trade, by its nature, has evolved to be more than just a means of transferring world resources. It has not been by coincidence that the most successful trading partners have been the major world powers and that, as a result, world trading systems have become politicized. Trade barriers emerged in the form of tariffs and quotas, and competition -the foundation of trade- has become distorted because of these "politically" imposed conditions. Unfortunately, even health and sanitary regulations have in some cases become unnecessary barriers to trade.

In 1987, the U.S. tabled a proposal at Punta del Este advocating harmonization of health and sanitary regulations as a means to reduce trade distortions. The premise behind that proposal was that every citizen of the world should have access to an adequate supply of wholesome foods that meet nutritional needs and are offered at an affordable price.

A prime requisite of international trade should be that sanitary and health considerations not be compromised. However, it is also important that the health safety is not altered in order to support artificial trade barriers.

When scientific facts are used as the basis for determining health and sanitary regulations for all nations, the natural forces of competition can respond to market signals. This is fair and all countries can have an unobstructed opportunity to participate in international trade.

There are international rules for sports matches. The score in a soccer game is kept the same way in England as it is in Brazil, the United States or France. Harmonized health and sanitary regulations are analogous to the game of world trade.

The GATT discussions taking place today are breaking new ground which will simplify and enhance trade for all countries. The system being developed relies on recognized international bodies of scientists to establish consistent health and sanitary regulations for all 96 member nations of the GATT. These bodies are not new organizations. Nations of the world have participated in their operations for years. What will be new is that the GATT

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will rely on their scientific assessments as the basis for some of the rules of the game for international trade. And, while these international bodies may not be perfect, reality dictates that any newly developed substitute system would not be any closer to perfect.

The three international bodies that have been proposed as the scientific organizations to deal with trade issues include the Codex Alimentarius Commission (CODEX) for food products, the International Office of Epizootics (IOE) for animal health, and the International Plant Protection Convention (IPPC) for plant health issues. The (IOE) has existed since 1924, the IPPC since the 1950s. Relatively speaking, CODEX is the infant of the group, but mature in its status with international governments.

Each of these international scientific organizations exists for the purposes of establishing commodity standards, codes of hygiene, methods of certification, and dissemination of regulatory information. However, multilateral organizations of the United Nations have either directly or indirectly coordinated their activities for a long time.

Let me, at this point, explain the organization and mission of each of these scientific bodies.

The CODEX Commission, representing 133 nations, was established in 1963 with the purpose of implementing the Joint FAO/WHO Food Standards Programme. Its goals are to protect the health of consumers and to ensure fair practice in world food trade; to promote coordination of all food standards work undertaken by international governmental and other organizations; to determine priorities and initiate and guide the preparation of draft standards; and after acceptance by governments, to finalize standards and publish them in a Codex Alimentarius either as regional or worldwide standards. The Codex Alimentarius includes standards for all principal foods (raw, semi-processed and processed) that are distributed to consumers.

The Commission is comprised of an Executive Committee and 25 subsidiary bodies. These subsidiary bodies, called the Codex Committees, fall into three broad groups: (1) those dealing with food commodities, (2) those dealing with general subject areas, and (3) those dealing with regional matters. The subject committees review provisions with respect to the hygienic and nutritional quality of food, including microbiological contamination, food additives, veterinary drug residues, other contaminants, labelling, and methods of sampling and analysis. The activities of the Codex Committee on Food Additives and the Committee on Residues of Veterinary Drugs are outstanding examples of coordination between trading partners that have already become an integral part of international trade.

Many agricultural products are currently excluded from trade between some nations because of differing interpretations of scientific information and differences in analytical capabilities of government food protection agencies. The Codex subject area committees actively work to resolve these barriers to agricultural trade. The commodity committees focus on developing standards for products within a given commodity group, based on technical data related to product standards. Expert Committees are convened by the commission to

provide additional review of the scientific data for particular issues. Currently, three such committees are in operation. One of these is dedicated to looking at food additives; an area already of great international interest. This group recently reviewed and passed judgement on the safety of hormones in meat, currently the highly publicised subject of an ongoing EC/US disagreement.

The Codex Food Standards Programme performs an advisory function in worldwide efforts to harmonize food standards, in correction with the introduction of new food products in international markets. In addition to its standard-setting function, it provides informal forums for international government and industry representatives. This informal network is an effective tool for promoting an understanding of each nation's regulatory policies relating to food. Although the objective of Codex is to achieve complete harmonization of international food laws, an important indirect benefit is the stimulation of international trade through a network of commercial and government contacts.

It is certainly our belief that, based on the scientific assessment abilities of Codex experts, the international hormone dispute would not exist today if the Codex Committee on Veterinary Drug Residues had been in place in the early 1980s when the hormone issue was first brought into question. This is one example of where Codex could have a significant impact in preventing international differences from becoming disputes.

While Codex is the dominant international body for development of food product standards, the International Office of Epizooties (IOE) is its parallel regarding animal health issues. It was founded in 1924 in Paris, from where it continues to operate, serving more than 100 member countries.

The mission of the IOE is twofold: (1) to develop and maintain a worldwide livestock reporting system, and (2) to expedite international livestock trade that is free of the risk of diseases. A financial contribution is required from each member country, with the level of assessment depending on the countries' development classification.

IOE operations include four specialized commissions which meet semi-annually: (1) the International Animal Health Code Commission, (2) the Norms Commission, (3) the Foot-and-Mouth Disease Commission, and (4) the Fish Disease Commission. Regional commissions also exist for (1) Africa (2) the Americas (3) Europe and (4) Asia, the Far East and Oceania. The International Animal Health Code Commission was created to study and recommend sanitary regulations for the importation and exportation of animals and animal products. The Norms Commission studies and recommends appropriate testing procedures relating to importation, exportation and vaccine production. The Foot-and-Mouth Disease Commission monitors the global occurrence of foot-and-mouth disease and makes recommendations relating to vaccine banks, research, regional control programs and import/export regulations. The Fish Disease Commission was established because of the peculiar nature of the information system used in this field and specific regulations relating to fish.

Regional commissions, member countries or the Director General of IOE may raise issues for review. After comment by member countries, the appropriate specialty commission proposes new or revised regulations or testing procedures. Member countries have a second opportunity to comment before a final regulation is presented at a general session for approval by member countries. Approved regulations and standards recommended for trade of animals and animal products are published as the "International Zoosanitary Code".

IOE publishes monthly disease bulletins, annual disease status reports from member countries, and a variety of scientific and technical reviews of animal diseases, which are advisory in nature. Its recommendations are based on a scientific evaluation of issues. IOE's monitoring and reporting functions provide an invaluable service for world trading partners in preventing the spread of economically devastating animal diseases. The organization represents a well-established network of government officials responsible for ensuring animal health within their respective countries.

International standards for plant health and protection are developed predominantly by the International Plant Protection Committee (IPPC). The IPPC, currently with 88 signatories, was established in the 1950s and is administered by the FAO. The IPPC provides a general framework for preventing the spread of plant pests and diseases internationally, through the: (1) formation of national plant protection services; (2) conduct of plant pest surveys and reporting of plant pest conditions within member countries; (3) development of plant quarantine requirements which protect international resources with minimal restriction on trade and commerce; (4) control of plant pests within a country by internal quarantine; (5) issuance of the "Phytosanitary Certificate," which ensures that shipments of plants or plant products have been inspected, found free of quarantine plant pests other injurious pests, and conform with the plant quarantine import requirements of the destination country. Additionally, IPPC fosters the formation of regional plant health organizations among countries sharing common geography, climate, plant species, resources, and pest concerns.

Regional plant health organizations are the core of IPPC operations. These include the: (1) European and Mediterranean Plant Protection Organization (EPPO), (2) North American Plant Protection Organization (NAPPO), (3) Caribbean Plant Protection Commission (CPPC), (4) Asia and Pacific Plant Protection Commission (APPPC), and (5) several affiliated organizations of African and Latin American countries. Both EPPO and NAPPO are predominantly funded by their member countries with membership fees assessed on the basis of their agricultural production. The CPPC and APPPC are largely funded by the FAO, due to their high relative percentage of developing-country members.

The FAO continues to play a role in administering the IPPC by providing training for developing-country plant protection organizations and by providing funding for the CCPC and APPPC, as well as by publishing IPPC reports and bulletins that describe changes in plant health regulations. The

FAO also serves as the dispute settlement body between the regional organizations, although its activity in this regard has been little utilized. Each of those organizations and commissions serves an advisory function. In dispute settlements, the decision by the FAO is non-binding.

There is, however, one organization with regulatory function for enforcement of internationally agreed upon standards. This is the GATT Standards Code. The GATT Standards Code, also called "The Agreement of Technical Barriers to Trade," seeks to establish international rules among governments, regulating the procedures by which standards are prepared, adopted and applied. The GATT Standards Code was initiated through the Tokyo Round of the GATT. It has allowed for a new openness in the promulgation and revision of standards by governments. The Code requires that signatories publish proposed standards or revisions to current standards, and allow time for international response. In doing so, the Code recognizes the concept that governments cannot adopt standards in isolation, and that a nation's regulations impact other countries' people and economies. It is the intent of the Code to ensure that products introduced into international trade are not discriminated against or treated unfairly because of arbitrary standards imposed by governments. The GATT Standards Code requires uniform implementation and requires that imported products not be held to more rigorous standards than those applied to domestic goods.

Adoption of the GATT Standards Code by all countries would greatly enhance the GATT in its designated role; that is, to facilitate free trade between and among trading partners. In this current Uruguay Round, GATT members are being requested to fully endorse and enforce the Standards Code that were adopted in the Tokyo Round.

It is recognized that harmonization of sanitary regulations among nations is a complex undertaking. Many differences exist in nations' health and sanitary laws as protection against devastating economic health risks. Numerous animal and plant diseases are endemic to certain regions of the world, if not to specific nations. Import restrictions often exist for very good reasons, that is, to prevent the spread of highly contagious and devastating diseases. It is not the intent of harmonization to "equalize" the world in terms of animal and plant disease. However, it is possible through the application of sound scientific information to identify those regulations that exist solely for political reasons as opposed to those established for scientific reasons. The goal of the harmonization process is to facilitate free trade and to protect nations from the effects of unfair trade barriers caused by unnecessary and capricious import and export restrictions.

International standard-setting bodies, including the Codex, the IOE, and the IPPC, are scientifically based and hold the respect of the global scientific community. There is an important role for these organizations to play in support of the GATT Standards Code, which was established to enforce scientifically developed international product standards.

The GATT discussions are moving forward, and, while there are many issues yet to be agreed upon, there is no disagreement over the potential benefits of harmonization. Health regulations based on scientific principles are desirable. Although it is more difficult to agree upon the method for achieving this goal, the time has come to deal realistically with this issue.

The Codex has already made great progress in forging, or actually reaffirming, its relationship with and role vis-a-vis GATT, a liaison first established nearly ten years ago. Although the relationship was weakened considerably at one point, there is a strong consensus now that it be revived.

International trade rules that are based on scientific consensus are fair. Fair trade allows market forces to function, giving the competitive advantage to the producer who can most efficiently deliver the best products at the lowest price to would-be buyers.

Each nation of the world is rich in natural resources and has specific commodities to offer to the international marketplace. The success of the GATT negotiators will assure that all nations share equally in the benefits of freer international trade. Remember, by definition, trade is not a unilateral activity: it requires partners willing not only to sell but also to buy.

2

**DEVELOPING AGROINDUSTRIAL CAPABILITIES TO EXPLOIT DOMESTIC AND
INTERNATIONAL MARKET OPPORTUNITIES**

Harold M. Riley *

INTRODUCCION

I am impressed with the scope and substantive content of IICA's Plan of Joint Action for Agricultural Reactivation in Latin America and the Caribbean. Its diagnosis of the macro and global economic conditions that confront the region pose an unprecedented challenge to future growth and development (Planella, 1983). The severe downward adjustments in GNP per capita and related declines in employment and incomes during the 1980s have depressed living standards and seriously impacted the well-being of a large proportion of the population. (Garramón et al., 1988)

The IICA strategy emphasizes the potential contributions of agricultural modernization as a means to achieve short-term economic recovery and longer term goals for economic growth with equity. The proposed lines of action call for "a revision and reorientation of macroeconomic policies" in order to assure a coherent approach to the "reactivation of agriculture." It is also suggested that the old controversy between agriculture and industry be abandoned in favor of strategic actions which recognize the interdependent, synergistic relationship between these sectors (Piñeiro, 1988). This approach broadens the scope of "agricultural development" to include activities from the manufacture and distribution of inputs, such as fertilizer, seeds, chemicals and machinery, to the delivery of products to consumers in both domestic and international markets. The plan of action also explicitly recognizes that the modernization of agriculture takes place as part of a long-term industrialization process required to meet the changing demands for agriculturally-based products generated through the utilization of increasingly more complex technologies and with institutional arrangements to coordinate commodity systems.

I approached the preparation of my paper with the point of view that agroindustrial capabilities evolve within the long-term modernization of food systems, and that public policies which promote and support private sector initiatives are crucial for exploiting growth opportunities.

The paper has three interrelated parts. The first presents a conceptual framework for thinking about medium-to long-term development of agroindustry. The second part sketches out some policy issues. The last part provides suggestions for operationalizing action programs. My main thesis is reflected

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in the title of my paper, that is, we should strategize and plan agroindustrial development to exploit both domestic and international market opportunities. My reasoning is that:

- a. It makes good sense to plan and organize commodity systems to meet actual and/or potential market demands.
- b. In many instances the potential for competing effectively in international markets can best be achieved by first building capabilities to serve growing domestic market demands.
- c. There are often complementary production and marketing relationships between domestic and export markets, which can reduce risk and enhance overall project success.

For the purpose of this paper I prefer to use a fairly broad definition of "agroindustry." It has as its core the transformation of raw agricultural commodities into products designed to meet the specific demands of consumers. This usually means significantly changing the raw commodity to reduce perishability and/or modifying the form as to make it more convenient for consumer use. Auxilliary agroindustrial activities include the manufacture of specialized farm inputs such as machinery, fertilizers, seeds, pesticides, animal feeds, as well as packaging materials and equipment needed by processors and product handlers. Although it has not been a common practice to include the production and marketing of "fresh" fruits, vegetables, milk and fish as part of agroindustry, we can now see the increasing application of sophisticated industrialized procedures for coordinating the production, sorting, packing and shipment of high-valued products to distant and discriminating markets. Hence, I would not exclude them in my working definition of agroindustry.

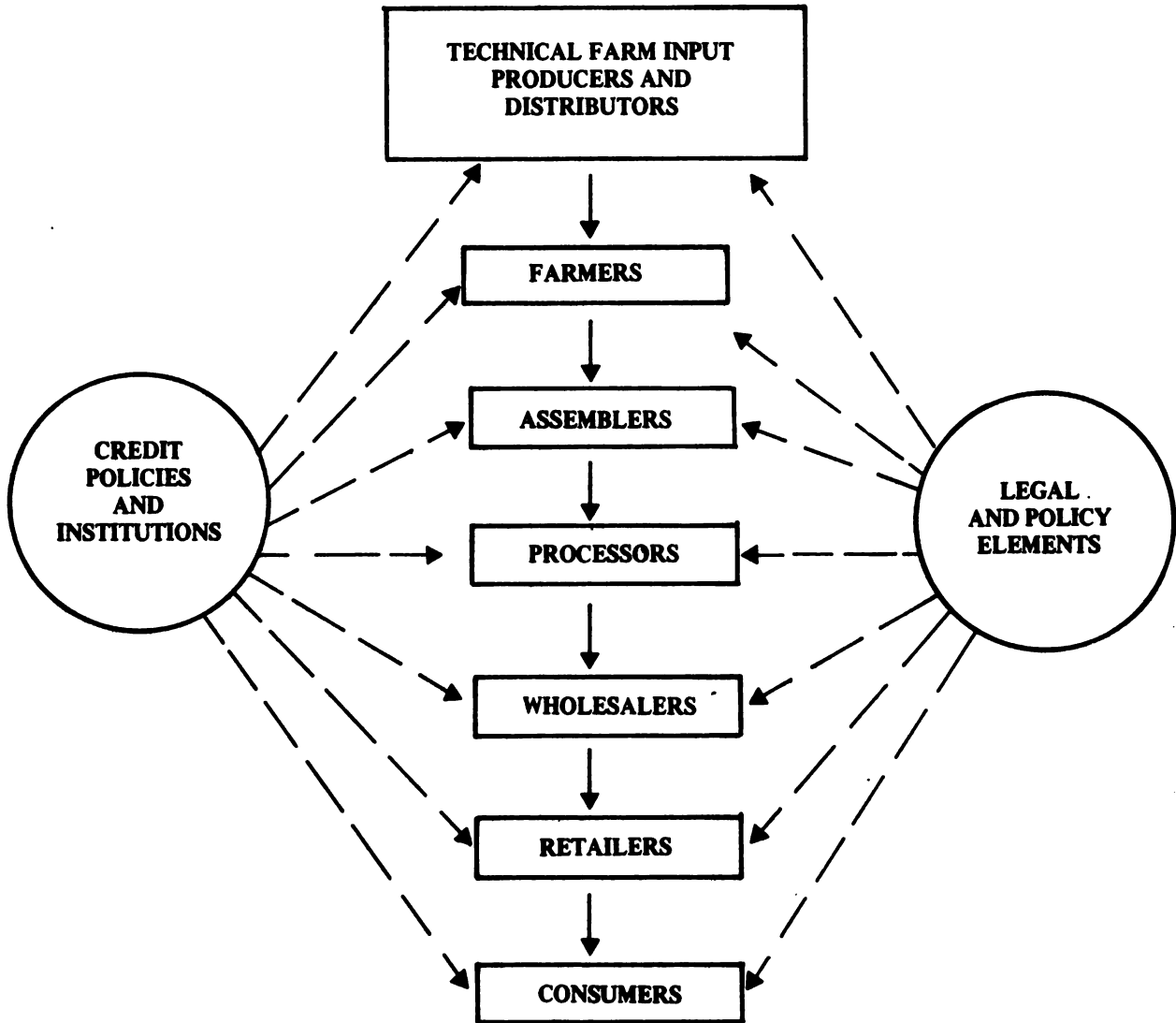
TOWARDS A CONCEPTUAL FRAMEWORK

There is an understandable urgency in dealing with the current crisis in several Latin American countries. While obviously very mindful of the current situation, IICA's plan of action is taking shape within a set of fundamental strategies that require more detailed analytical support to guide specific initiatives for the promotion of agricultural development, and especially for expanding markets.

In this context, I think it would be useful to elaborate on some of the food systems concepts that my Michigan State University colleagues and I have developed and used in several Latin American food marketing projects. Our conceptual approach is grounded in the belief that long-term economic development occurs through a scientifically-based industrialization process. The process involves the creation and adoption of new technologies and new institutional arrangements that lead to greater specialization of labor, increased labor productivity, shifting employment of labor from farm-level food production to non-farm activities, often in small-scale agriculturally related processing and service functions. Over time, there is substantial population migration to towns and cities, shifting patterns of food consumption and a rapid increase in the demand for marketing services, new and

FIGURE 1

Principal Components of a Food System



more convenient to use products, and a relative increase in the demands for livestock products, fruits and vegetables and a decreased demand for basic grains and starchy tubers. The patterns of change proceeds more rapidly when there are significant and sustained increases in per capita income, and this is not likely to occur unless there is a reasonable degree of political and economic stability.

The rapid growth of large urban centers and the general trend to urbanization has been a dominant force in the transformation of Latin American food systems. Large public and private sector investments continue to be made to expand transport, storage, processing, wholesaling and retailing facilities as several of the larger cities grow into huge population concentrations and as urban dwellers become two-thirds or more of the total population in several Latin American countries. This is not to say that this rapid growth of large cities is desirable, but it is what is happening.

The fundamental concepts of a food system provide a framework for describing the changing organization of the system, diagnosing problems and identifying new opportunities for agroindustrial initiatives. It is also useful for formulating strategies for public and private actions to improve overall market performance.

Over a period of years (actually almost three decades), a group of agricultural economics researchers from several universities and the U.S. Department of Agriculture developed a methodology and carried out a coordinated set of studies culminating in a series of publications and a summary book entitled *The Organization and Performance of the U.S. Food System* (Marion and the NC 117 Committee, 1986). More or less concurrently, a group at Michigan State University was developing and adapting the same basic methodologies in a series of food marketing studies in Latin America, including Northeast Brazil, Bolivia, Colombia and Costa Rica. These studies were carried out in collaboration with institutions and professionals in each country and resulted in a series of country-specific publications and a summary report, "Improving Food Marketing Systems in Developing Countries: Experiences From Latin America." (Harrison et al., 1974; Riley, Harrison et al., 1970; Slater, Riley et al., 1969). (A Spanish version of the summary report was published by IICA.)

As shown in Figure 1, our conception of the food system includes all of the basic steps of productive activity required to deliver food to the ultimate consumer, in this case, domestic consumers. Also included are the policy and regulatory elements and the supporting institutional elements providing credit, education, research and information. The coordination of all of these functional activities is achieved largely through market forces, with governments intervening in a variety of ways.

The advantage of viewing market processes in a food-system context is that we are better able to identify constraints and possible opportunities for improving system performance, taking into consideration the interdependencies among the sequential steps in the production-distribution process and the

dynamic interactions that will occur in response to changes in policies, institutional arrangements and technology availability. A fundamental concern is the need to reform existing institutions or create new ones, and to revise public policies.

Agroindustrial enterprises must find their "opportunity niche" in the dynamic, but progressively advancing food system. To find and to exploit opportunity niches requires an in-depth understanding of particular commodity subsectors. For policy purposes, it is also important to develop and maintain a capability to analyze and monitor the development of commodity production-distribution systems. We have extended our food system framework to include methods for describing and analyzing these commodity subsectors, with an emphasis on vertical coordination.

From a policy perspective, the desired attributes of a commodity system can be described as follows:

- a. the matching of supply and demand at each stage in the production-distribution system;
- b. efficiency in carrying out the physical transformation, handling and delivery of commodities, as well as in arranging and carrying out transactions;
- c. progressiveness in developing and adopting more productive technologies, management methods and institutional arrangements; and
- d. equity in returns to subsector participants in relation to value added to the final product, costs and risks incurred. Equity also includes access to markets, information and support services such as credit.

It should be apparent that there are potential conflicts among the performance attributes which must be taken into consideration in designing new policies and programs, e.g., equity goals may sometimes conflict with progressiveness and efficiency goals.

The analysis of subsector performance must be supported by gathering and organizing data and information in three main categories.

Basic Conditions

- Commodity characteristics
- Calendar of production, processing and distribution
- Geographic location of production and consumption
- Consumption patterns
- Price relationships over time and space
- Geographic movement of products
- Physical infrastructure
- Trends, projections and forces of change

Subsector Organization

Stages in the production-distribution process
 Institutional organization and types of participants
 Relative importance of market channels
 Changing structure of the subsector and the forces of change

Coordination Processes

Planning and strategizing
 Transaction procedures
 Information flows
 Government programs, regulations and support services

Although there is a need for accurate descriptions of basic conditions, subsector organization and coordination processes, it should be guided by a purposeful diagnostic perspective. This can reflect the search for problems and opportunities linked to established performance goals. The actual conditions and perceived problems of market participants, such as government officials, farmers, managers and workers engaged in processing, wholesaling and retailing, are important inputs into a subsector study.

An agribusiness commodity system approach to problem solving and decision making for private and public managers has been developed and used by a group at Harvard University. (See fig.2.) They have applied this approach in Central American studies of fruit and vegetable production systems oriented towards exporting to the United States. (Austin, 1974; Goldberg, 1974). Their basic approach has many similarities to our subsector study approach. Both approaches give priority to organizing production systems to meet actual and projected consumer demands. This contrasts with the approach of many production-oriented agriculturalists who see the marketing problem as one of finding markets for their products. Both approaches recognize the biological-agronomic uniqueness of commodity systems, the need for an integrative, multidisciplinary approach to problem solving and planning, and the importance of private sector-public sector cooperation in seeking food system improvements.

The Harvard agribusiness approach emphasizes management as a means to achieving a more viable food system and as a major determinant of economic growth. Hence, a great deal of importance is given to the training of managers. They are noted for their use of case studies in their business school curriculum, a teaching method which has been transferred to other institutions, including INCAE, now located in Costa Rica.

Although there is a great interest and need for Latin American countries to develop agroindustrial capabilities to enter the export market, it obviously requires a great deal of attention to the sequence of interdependent

production and marketing activities if the enterprise is to be successful. Due to the high risks associated with export market development, it is important that we think carefully about the possible linkages between domestic and export market exploitation. Some of the important linkage-type considerations are described below.

Technology Development and Adaptation

Export markets require dependable supplies of uniformly high quality products. However, indigenous crop varieties and cultural practices are typically unable to meet these more stringent market requirements. Also, imported seeds and plant materials may not be well adapted to the new environment. Hence, it requires time to develop the basic seed stocks and related cultural practices required. In the case of fruit trees, it may take several years. During this developmental process, the domestic product markets can benefit from and support this process.

Another consideration is that plant facility design, equipment and operating procedures that may be cost efficient in more developed countries with relatively high labor costs should be adapted to fit the factor cost relationships in the developing country. This also takes some time and can be worked out while exploiting domestic market opportunities.

Product Development

The growing market share of supermarkets and better coordinated wholesale-retail systems provide increased market opportunities for processed foods in all Latin American countries. The current economic crisis is having an adverse impact on the demand for higher-priced processed food, but the growth trend will resume with economic recovery. Even now, there must be opportunities for additional processing and packaging of basic foods for distribution to low-income households. In any event, the experience gained in developing products for expanding and sharply differentiated domestic markets can later be used in exploiting export market opportunities.

Market Segmentation and Economies of Size

It has been empirically demonstrated that there are significant economies of size in food processing, but one must be careful to recognize that size economies vary considerably depending upon the geographic dispersion of raw commodity supplies, the characteristics of the processing operation and the relative costs of labor and capital items. Nevertheless, there are likely to be opportunities for using plant production capacity to serve both domestic and export markets and in this way to achieve a larger total throughput and stat lower average total costs. There is also the possibility of producing similar but slightly differentiated products for the two markets. A higher quality, higher priced product might be channeled to the export market and to a narrow segment of the domestic market. A lower priced, slightly lower quality line of products could go to a broader segment of the domestic market.

The general practice of market segmentation and price discrimination is already widely used in many food processing industries, e.g., coffee in Brazil and Colombia. But, for new ventures into fruit and vegetable processing it could be part of their market strategy.

Human Resource Development

One of the important constraints to the modernization of food systems and the actual development of successful agroindustrial enterprises has been the lack of qualified technicians and managers. I will address this problem again later, but I would stress at this point the importance of a basic domestic educational plan to overcome this constraint while taking advantage of external technical assistance, which can include the benefits that can be gained from having foreign investors in agroindustry.

Diversification and Risk Management

The exploitation of new export market opportunities by agroindustrial firms carries high risks for reasons that have been discussed by previous speakers. Hence, combining the exploitation of export markets with an established position in the domestic market is usually a way to reduce overall risk exposure.

SOME POLICY ISSUES

The crucial importance of macroeconomic policies to the reactivation and future growth of agriculture in Latin American countries has already been given a great deal of attention in this seminar, and rightfully so. Without significant relief from external debt burdens and adjustments in exchange rates and fiscal-monetary policies to reverse past discriminatory policies against agriculture, relatively little real economic growth is likely to be achieved (Garramón et al., 1988). Recognizing this condition, I will proceed to other more specific policy considerations that I believe to be fundamentally important for the medium-to longer term build-up of agroindustrial capabilities to access and exploit market opportunities.

The selection of policy issues and my observations about these issues reflect a view that public policy and government programs should promote and support private sector development not only in farm-level crop and livestock production, but also in the increasingly important areas of processing and distribution.

I will, first of all, call attention to six basic areas where public policies are of central importance in creating an environment that would stimulate medium-to long-term development of agroindustry and a more productive, industrialized food system. Although the policy issues are not sharply drawn, the implications of the direction of policy adjustments should be clear.

Infrastructure

Agroindustry in particular, and the food system more generally, is highly dependent on a transportation network that provides low-cost, dependable access to expanding urban markets. For businesses engaged in exporting, port facilities and air transport must be available. Access roads for moving raw materials from farms to processing plants is a frequent constraint, especially for relatively perishable commodities. Electrical power and water supplies are also critical inputs that are usually provided by public enterprises. Hence, a critical factor in promoting agroindustrial development will be the additional public investment for expanding or improving the availability and dependability of basic infrastructure.

Credit Availability

The central banks and closely linked development banks are often mandated to give preferential credit support to agricultural production and certain types of manufacturing enterprises. Relatively limited credit lines are available to support the processing, marketing and distribution of food commodities. Furthermore, credit terms for loans tend not to be adapted to the seasonable variations in credit needs and the timing of repayments to align with the uneven cash flows that are common in agriculturally-based enterprises. Hence, in many countries, the formal credit system typically rations loans away from private sector marketing functions to other more traditional channels, creating a significant policy issue concerning the actual availability of credit for marketing and agroindustrial development.

Information Systems

I think a strong argument can be made for publicly supported systems that collect and disseminate basic statistics on agricultural production, stocks, imports and exports. Crop and weather condition reports, crop forecasts, price information and commodity situation reports are also valuable assets to private sector enterprise managers and public sector policy analysts. Important policy issues concern the resources required to organize and operate a cost-effective information system. It is also essential to promote and develop collaborative relationships with private sector interests that are both essential sources of basic data and important users of information derived from the data. In the absence of reliable public sector information, there is likely to be greater uncertainty and resulting errors in judgement that may increase costs and discourage investments.

Import Restrictions on Critical Inputs

The extreme scarcity of foreign exchange has led to very strong measures to reduce imports in many countries represented at this conference. The resulting restrictions and the cumbersome procedures for handling import permits creates significant risks and increased costs for agroindustrial firms

depending on foreign sources for specialized equipment, repair parts, packaging materials and even some essential raw materials. Unless there are expedited procedures that relax these import constraints, there will be a declining interest in new agroindustrial investments.

Price Controls

The existence of government-enforced price controls on processed foods at the retail and/or wholesale levels side by side with farm-level raw commodity prices which are permitted to fluctuate can make it very risky and unprofitable for food processors. When price relationships get out of line, the processors may curtail operations and withhold existing stocks from the market in anticipation of upward adjustments in the control price. This creates a chaotic condition in retail markets as supplies temporarily disappear from the grocers' shelves. But, the longer term consequence is that this discourages investments in food processing and adds to the per unit operating costs of the existing system.

Research and Training

Publicly supported agricultural research has focused on farm-level production technology. In most countries, relatively little public effort has been directed to research on food processing and handling technologies. This is an area that needs collaborative participation between private sector and public sector interests, and will be especially important for the development of the food processing industry. Special efforts are needed to link applied research with extension and training activities.

The other priority area concerns a public sector commitment to build the local professional leadership and management capabilities to guide and direct the modernization of food systems. Without this local human resource capability, policy formation, programs and projects tend to flounder and the private sector often suffers from ill-conceived regulations and government interventions. Some Latin American countries, such as Brazil, have made impressive progress in developing university degree programs to better meet the staffing requirements of the private and public food systems sectors. However, much remains to be done if the proposed "reactivation" of agriculture is to be realized. Curricula in food technology, agribusiness management and agricultural economics should be reviewed and strengthened whenever possible.

There are two other areas where public policies may have particular importance in agroindustrial development: one is joint ventures with foreign companies and the other is contract farming.

For a number of years, strong negative attitudes in most Latin American countries regarding joint ventures with multinational enterprises gave rise to very restrictive policies. These seem to have given way to a more open, but carefully negotiated approach, aiming to protect national interests while permitting incentives for foreign investors. Those favoring a more open stance on joint ventures argue that agroindustrial development can be accelerated by access to the foreign company's capital, technology, management skills and established contacts in major export markets. Given the current

economic problems in the Latin American region, policies regarding joint ventures might be given some reconsideration. In some countries, however, it will be very difficult to attract much foreign investment until there is a more favorable investment climate.

Contracting is being used increasingly as a mechanism for coordinating farm-level production of commodities with processors' requirements for a dependable supply of uniform quality raw materials (Minot, 1986). While particularly important for the more perishable commodities such as fruits and vegetables, poultry and milk, it is sometimes used for other commodities as well (e.g., tobacco, tea and rubber). The terms of this type of production contract range from rather simple buy-sell agreements covering quantity, quality and price to the provision of basic inputs, credit and technical assistance to production-management contracts where the farmer essentially receives payment for his labor and the use of his fixed facilities. If the contracts operate effectively, they can achieve substantial risk reductions for both the processors and the farmers. This makes significant cost efficiencies in the use of fixed facilities and equipment possible. It also creates viable opportunities for small farmers to share in the potential benefits from a large-scale vertically coordinated enterprise (Abbott, 1988; Konjing, 1989; Minot, 1986; Morrissy, 1974). But, problems can lead to disputes over contract fulfillment. This is an area where the public sector can provide assistance in several ways. One is to provide extension assistance to both contracting parties in designing workable contracts. Secondly, it can help establish mechanisms for resolving conflicts when they arise. Considerable international experience exists with contract farming systems that can be drawn upon for guidance in adapting to specific situations. I will have some further comments later on interesting applications in Thailand.

OPERATIONALIZING ACTION PROGRAMS

The seriousness of the current economic crisis in Latin America requires special efforts to be made to accelerate export-oriented agroindustrial development. An important activity that is already well under way in several countries is the intensified search for export market opportunities. Special export promotion agencies and task groups involving both public and private sector interest are at work. There is much to be done in assessing local capabilities in relation to market opportunities. Donor agency assistance is being used in Ecuador to promote and support the expansion of non-traditional exports. But it seems that many countries, both developed and less developed, are aggressively seeking to expand non-traditional exports. The competition is intense. The high cost of market penetration along with high risks makes it doubly important that well-prepared feasibility assessments undergird major investment decisions.

In his recent book, *Agricultural Processing for Development*, John Abbott calls our attention to high rates of failure for agricultural processing plants conceived in government development plans or promoted by bilateral aid (Abbott, 1988). He reports on 70 unsuccessful plants that failed, not so much because of engineering design of the plants, but due to mistakes in planning--either market demand for the product or raw material supplies had

been overestimated. This, combined with poor management, resulted in excessive operating costs and an inability to compete with other enterprises supplying the same markets. On the more positive side, Abbott presents brief case study profiles for a number of more successful agricultural processing enterprises, along with some useful information and pragmatic advice on their planning and management. Many of his suggestions closely parallel those in an excellent handbook on **Agroindustrial Project Analysis**, authored by James Austin and published for the Economic Development Institute of the World Bank (Austin, 1981). I call attention to these two books because I want to stress the importance of carefully prepared feasibility studies as a basis for investment decisions by both public and private sector interests. The four main components of the analytical framework for a feasibility assessment are as follows:

- a. **The product market**
 - Consumer analysis
 - Competitive environment
 - The market plan
 - Forecast of sales
- b. **Raw product procurement**
 - Source and potential volume
 - Quality control
 - Timing
 - Costs of production
 - Organization of procurement
- c. **Processing operations**
 - Selection of technology
 - Plant location (s) and design
 - Operational plan
- d. **Financial and Economic Analysis**

Although carefully prepared feasibility studies and project analyses are of supreme importance in any well-planned program for promoting agroindustrial development, there are several other actions that are vital to the development of an effective working relationship between the private sector and the government and among different agencies in government.

There are many examples of initiatives being taken by governments represented at this seminar as they attempt to stimulate exports. However, rather than to take a Latin American example, I will go outside the region and describe briefly what appears to be a very successful export-oriented agroindustrial development program in Thailand. The country has long been a traditional exporter of rice and rubber, but has rapidly expanded exports of fishery products, cassava pellets for poultry feed in the EEC, frozen boneless

poultry meat for Japan and a variety of fresh and processed fruits and vegetables. Thai policy makers have recognized the need to restructure agricultural production and marketing to compete in a rapidly changing world economy.

Agricultural production is being reoriented to respond to identified market opportunities. Emphasis is being given to agroindustries that have a high export potential or add high values to agricultural products. Private entrepreneurs play a major role in planning and carrying out relatively sophisticated enterprises with carefully coordinated organizational arrangement for procurement, processing and product marketing. Extensive use is being made of farm-level production contracting as a means of reducing risks and lowering both production and processing costs (Konjing, 1989; Phasukavanich, 1989). One of their success stories is the C.P. Group (Charoen Phokphand Group), which has been the leading firm in the rapid development of a modern, vertically coordinated poultry industry that has exploited both domestic and export market opportunities.

The C.P. Group successfully introduced the concept of contract farming into Thailand's rural community and demonstrated the use of modern management techniques, which have spread to other commodity lines. The C.P. Group, which started as a small local enterprise, has now evolved into a multinational, multiproduct enterprise with joint ventures in eleven other countries, including the People's Republic of China.

A great deal of credit for the Thai successes in agroindustrial development goes to the government's supportive and facilitative roles in working jointly with the private sector. Some explicit expressions of the government's policy stance towards the private sector were defined in the Fifth National Economic Development Plan (1981-86). A high-level Joint Public-Private Consultative Committee was established in 1981. In 1986, a Four-Party Coordination Committee for Agriculture and Agro-Industry Development was created and a Center for Public-Private Coordination for Agricultural Development was established in the Office of Agricultural Economics, Ministry of Agriculture and Cooperatives. The Four Party Committee and the Center in the Ministry are taking an active role in coordinating the participation of government, private enterprises, financial institutions and farmers. So far, ten projects involving integrated contract-farming components have been approved and fifteen proposals are under consideration (Phasukavanich, 1989).

The Thai approach and their experience can be useful as we contemplate what can be done to promote agroindustrial development in Latin America. The historical, political and social backgrounds differ, but the principles for moving towards a more industrialized agriculture that can both serve domestic consumers and compete in international markets are much the same.

SUMMARY

The challenges being faced under existing conditions in Latin America make the task of promoting agroindustrial development very difficult, but not insurmountable. IICA's Plan of Joint Action is a positive step towards economic recovery with emphasis on the potential contributions of a more "industrialized" agricultural sector. The main points in my paper were as follows:

- a. Strategies for promoting agroindustrial development should be formulated within the context of the medium to long-term patterns of change in domestic food systems.
- b. In many instances, the potential for access to and effective exploitation of export markets can be achieved by first building capabilities to better serve growing domestic market demands. Furthermore, there are often complementary production and marketing relationships between domestic and export markets that can reduce risks and enhance project success.
- c. I have commented on six basic areas where public policies can have a substantial impact on food systems and agroindustrial development. These areas include infrastructure, credit availability, information systems, import restrictions on critical inputs, price controls, and research and training. I also suggested that policies regarding joint ventures and contract production systems need careful reassessment.
- d. Finally, I have recommended that agroindustry and export market development be undergirded by carefully prepared feasibility studies and that private sector initiatives be supported by well-conceived public-private sector institutional arrangements.

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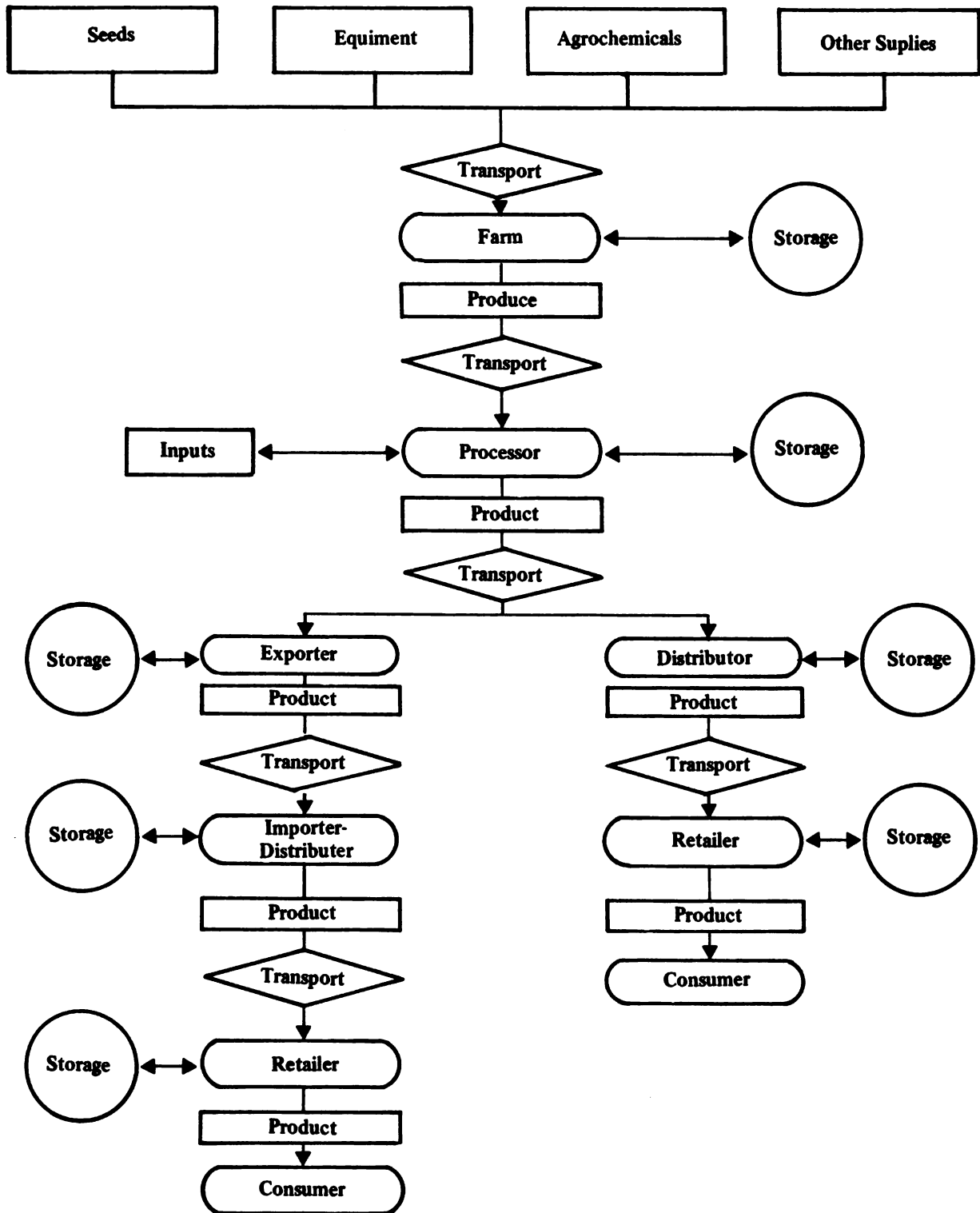
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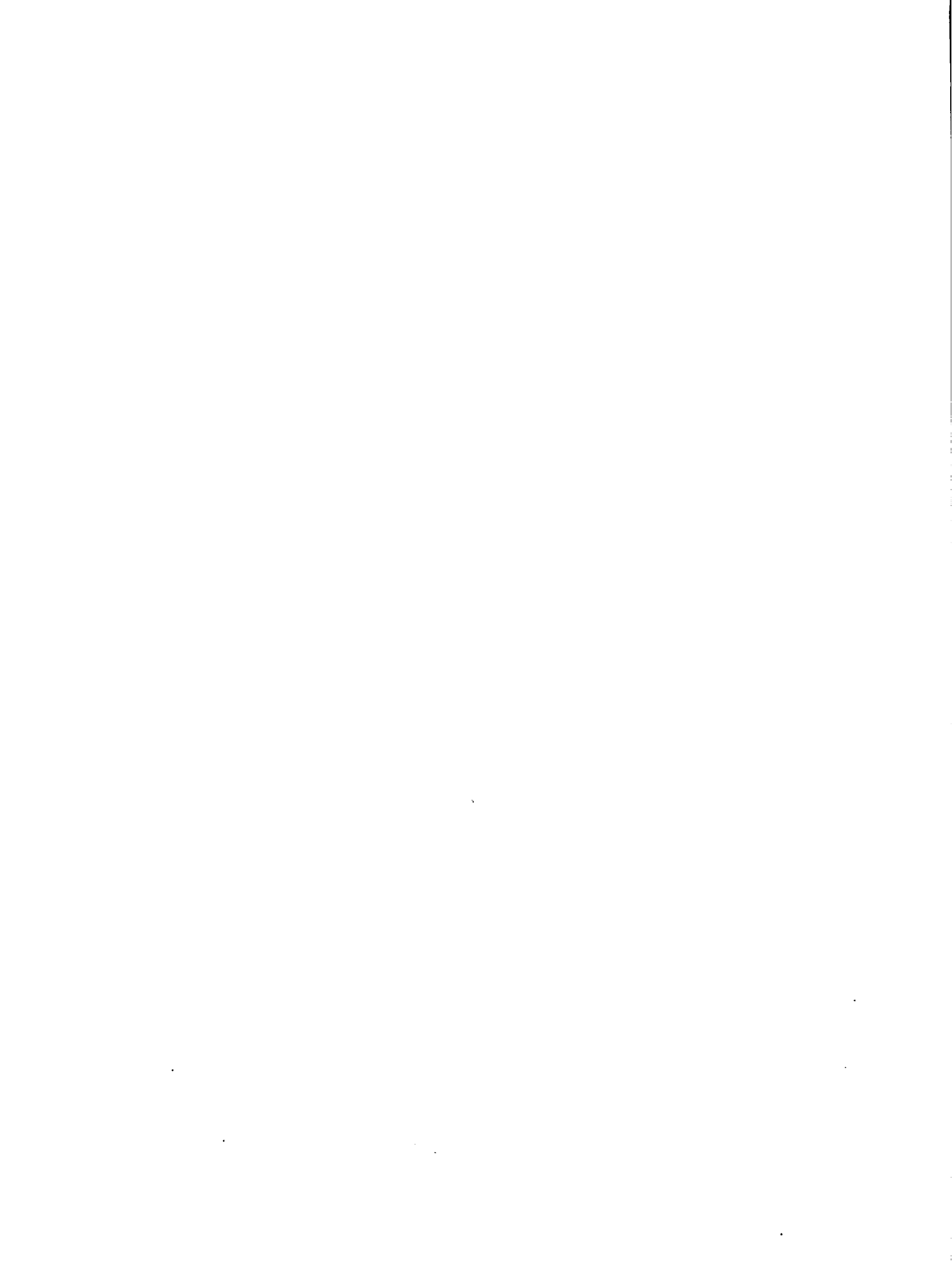
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FIGURE 2
Agro-Industry Flow Chart



Note: Financing inputs occur at each stage.

SOURCE: James Austin, *Agroindustrial Project Analysis*, Johns Hopkins University Press, 1981, p. 16.



III.

**THE ROLE OF TECHNOLOGY AND NEW TECHNOLOGIES
IN AGROINDUSTRIAL DEVELOPMENT**

At the beginning of the session on Topic III, Laurence Tubiana gave an economic overview in which she focused on the relationship between biotechnology and agroindustrial development. She did not present a paper as had been done in the preceding cases, but rather, spoke on a wide range of topics, beginning with the history of biotechnology and its relationship to bioscience. She went on to discuss the peculiarities of the biotechnological revolution and its potential markets. She concluded her introductory remarks by making reference to bioindustry and its applications, industrial strategies, government strategies, and public and private research.

In referring to production models, Tubiana reviewed the following points: the substitution between products and food chains (and the struggle between industrial sectors); the movement of the agroindustrial sector toward the pharmaceutical and chemical sector; the instability of comparative advantages among countries; the concept of "small is beautiful"; and new ways of linking agriculture and agroindustry.

Next, she discussed changes in consumption patterns and biotechnologies, in which she analyzed noticeable trends in the developed countries ("from food to nutrition") and adaptation to consumption models in Latin American. In talking about regulatory mechanisms, she spoke of the obsolescence of current regulatory policies, and the economics of the integration of biotechnology (as she queried, a new protectionism or liberalization?).

The paper by Guy Poulter, Lynne Burbage and Ian Thomas on The role of technology and new technologies in agroindustrial development was then presented and discussed from a technological viewpoint. In the discussions following both Tubiana's and Poulter's presentations, several important topics were addressed: there was criticism of the notion that patents are necessary to stimulate invention and innovation; it was stated that biotechnology complements traditional genetics; associations with small biotechnological enterprises were proposed as a means for the countries of the region to gain access to new techniques; the importance of services in the development of agroindustry was highlighted; and the importance of relative prices in promoting technological development was underscored. Some participants expressed the opinion that biotechnologies will not have a major impact on agroindustry, and the value of traditional technologies was re-evaluated.

There were opposing points of view in the discussion of patents. The opinion was expressed that when something is invented, the environment is changed and the inventor wants all the profits. Strickly speaking, of course, the inventor is entitled to a portion of the profits, but if the extreme argument stands, why not grant a monopoly to anyone who invents something?

The opinion was expressed that not only is there no real contradiction between biotechnology and conventional genetics, but also that whatever contributions biotechnology may make should be incorporated into genetics. As a matter of fact, one still hears of biotechnological potential, and work should concentrate on the more specific biotechnologies. Also from this more conservative stance, it was pointed out that it will be the consumers, not the technologists, who will ultimately decide which way progress will go.

In the same vein, it was pointed out that biotechnology still belongs to the future, except in a few specific cases. In discussing different aspects of the dissemination of biotechnological know-how, the participants emphasized that it is this dissemination, rather than biotechnological research, which is the weakest link at the present time.

Next, Walter Jaffé offered a Latin American viewpoint of this topic. The speaker explained that agroindustry, from a technological point of view, is a traditional, slow-growing and capital intensive industry. He also commented on technological development for agroindustry, new technologies and agroindustry in Latin America and the Caribbean, and the implications for a policy on technological development for agroindustry.

In concluding, Jaffe focused on the elements which, in his opinion, should be considered in a policy on technological development for agroindustry: upgrading existing industries; building the capability to work with state-of-the-art biotechnologies; developing a vital bioindustry; using biotechnologies for rural development, and international cooperation.

THE ROLE OF TECHNOLOGY AND NEW TECHNOLOGIES IN AGROINDUSTRIAL DEVELOPMENT

Guy Poulter *

Lynne Burbage *

Ian Thomas *

INTRODUCTION

Population growth and food supplies

In 1987, the United Nations reported the birth of the world's 5 billionth person. By the year 2000, it is predicted that the world population will have reached 6 billion. South and Central America is one of the largest population growth areas and, as such, will provide one of the largest challenges to food science and technology in terms of the need to deliver safe and reliable food supplies to the growing populations.

As measured by dietary energy supplies, there has been an improvement in overall food availability in developing countries since the world food crisis of the early 1970s. The overall dietary improvement from 2140 to 2350 calories a day per capita reflects that, on the whole, food supplies have more than kept pace with population growth. However, this is not universally the case and in a significant minority of countries supply availability and dietary levels have declined. As a whole, much of the increase in food supplies reflects an increase in cereal production, which grew from 600 million tons in 1963 to about 1500 million tons in 1983. Cereal hectareage per person has decreased from 0.24 to 0.15 hectares, and the huge increase in yield has been achieved by improvements in variety through plant breeding, and high increases in fertilizer use from 5kg per person to 25 kg per person.

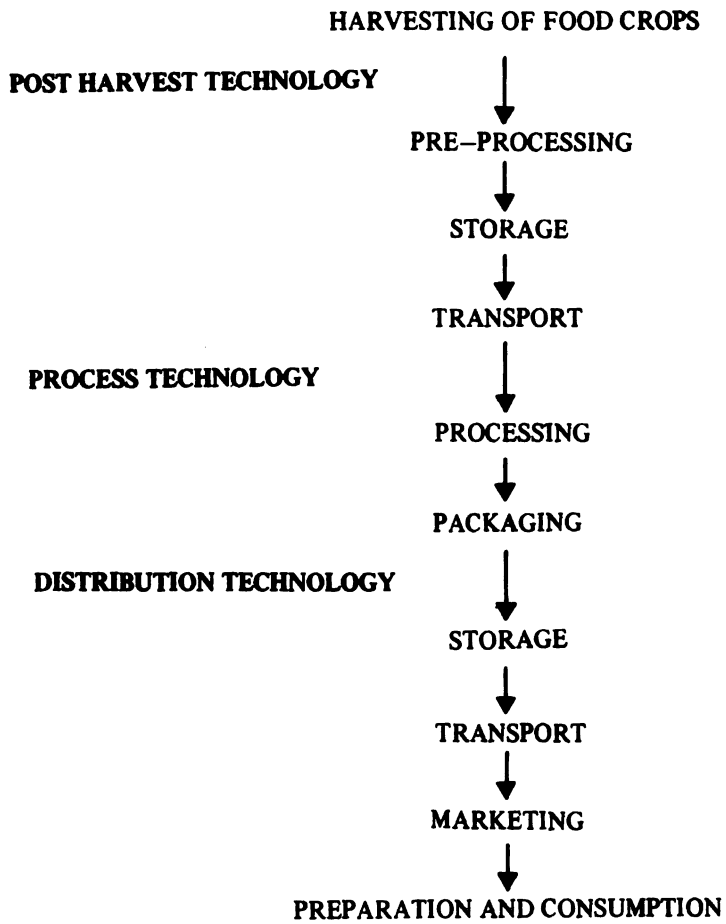
Food Security

As food production has increased, so has the concept of food security become more important. In its simplest form, this can be defined as ensuring a flow of food from producer to consumer that makes it available wherever and whenever it is required. Most foodstuffs are harvested on a seasonal basis and often in areas distant from the major consuming centers, particularly the major urban centers. Foodstuffs in many forms are international commodities which are traded and distributed all around the world. Food security, therefore, has as much to do with storage, processing and distribution as it does with increasing yields. It also concerns marrying consumer preferences and buying power to food availability. For successful agroindustrial development, therefore, it is essential that the whole farmer-to-consumer system be studied, whether the latter is the poor shanty dweller in Mexico

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FIGURE 1

Food Path



City or the international banker in New York, London or Tokyo. Later in this paper we will review new processing technology which can be applied in agro-industrial development in Latin America and the Caribbean. It must be stated from the outset that however sound the processing technology, it will only find successful application if it is utilized as part of an integrated system. Figure 1 shows a typical "food path" from harvesting to consumption and where processing technology fits in. (Bruinsma et al., 1985).

Objetives of Agroindustrial Development

Brief mention should be made here of the need to clearly define the objectives when applying technology to agroindustrial development, in order to avoid conflicts between different target groups. Consideration needs to be given to factors such as whether development is designed to produce a product for export or for the domestic market, and whether this is for mass consumption or a speciality market. It is also necessary to make clear the role of social welfare objectives in relation to commercial profitability. If social welfare objectives are a dominant objective, what are the relative merits of rural development and combatting urban malnutrition? Higher prices for producers can reduce food availability to vulnerable groups.

Agroindustrial development projects rarely fail because the technology is faulty. While it is possible that the technology could have been inappropriate for the system into which it was introduced, it is more likely that the objectives of a failed project were not entirely clear in the first instance. This is perhaps particularly so for government-sponsored projects where social objectives are often applied to nominally commercial enterprises, without the necessary additional funds being provided for social subsidy.

FOOD PROCESSING TECHNOLOGY

Methods of food preservation

In general terms, food products spoil due to either biochemical changes in the products themselves or to growth of bacteria which contaminate them. Preservation methods, therefore, aim to slow down or arrest these reactions. This is commonly achieved by one of three general methods:

- a. lowering of temperature, e.g., chilling or freezing
- b. sterilization, e.g., canning, irradiation, etc., or
- c. modifying the product or its environment, e.g., drying, salting, modified atmosphere, etc.

Traditional processing methods

In traditional agroindustrial processing, sun drying is by far the most important processing method. Some one billion tons per year of cereals are preserved in this way. It is a cheap and efficient means of agroindustrial processing which works well if the climate is hot and dry. If, on the other hand, the climate is humid and cooler, considerable problems can occur which

drastically reduce the acceptability of cereals in both domestic and export markets. The growth of molds, with the associated mycotoxin formation, is one particular problem which is affecting many countries' output of human food and animal feed. The problem of mold growth and mycotoxin formation can be overcome by mechanical or solar drying of cereals, but mechanical driers usually require high energy inputs, and solar driers have limited throughput and efficiency. More energy efficient dryers, some using agricultural waste products such as rice husk or coconut shells (Hollingdale, 1988) are being developed and will certainly play a part in agroindustrial development in the future. Similarly, methods for in situ destruction of mycotoxins using ammonia are being developed for animal feeds and are likely to find application in the longer term. (Jewers, 1988)

Durable products such as cereals, however, are not the only commodities to be processed by drying. For example, some 17 million tons of highly perishable fish are also processed by drying. Aside from durable commodities, the demand for traditional dried products is generally limited to low-income groups and the market is getting smaller as standards of living rise. Fish is a good example of this and Fig. 2 shows how cured (dried) fish consumption has fallen over the last 20 years, with a concomitant rise in consumption of canned and frozen fish.

Conventional processing and technology

Chilling, freezing, canning and other conventional processes of this type will remain the backbone of agroindustrial processing for mass consumption markets for some time to come. The methods are tried and tested and to a great extent much of the basic research on their use has been done. No major breakthroughs are to be expected, and advances are likely to be in the form of less energy-intensive/maintenance-free refrigeration plants or improved containers for canning rather than novel technology. However, for specialized domestic markets and for high-quality export markets, there exists potential for low-volume, high-value processing which could use novel/state-of-the-art technology. It is difficult to generalize, but the needs of these markets would include some or all of the following characterizations:

- high quality
- minimum processing/apparently "fresh" condition
- assured hygienic condition
- exotic charisma
- convenience of use

It is useful to review briefly recent developments in food processing technology. In the short term, it is most likely that they will only be utilized in agroindustrial development for specific high-quality markets. In the longer term, however, they may find more widespread use.

RECENT DEVELOPMENTS IN FOOD PROCESSING

Flexible retortable pouches

Canning is a very important technology for many countries in Latin America. For example, Peru exported over a quarter of a million tons of canned fish a year between 1977 and 1985. This industry still relies to a very great extent on traditional tin plate cans and, more recently, on aluminium cans. For some years now, however, alternatives to rigid cans have been available in the form of flexible retortable pouches. Commonly, such pouches are a three-layer laminate of polyester/foil/cast polypropylene.

The flexible retortable pouch was initially developed in the 1960s by United States packaging companies for use by the U.S. Armed Forces and U.S. Apollo Space Missions. Its commercial introduction to U.S. consumers was slow because of concern by the U.S. FDA over the adhesives used in laminating the pouch. This difficulty was eventually overcome and approval given. They are now being used commercially on a small scale in the United States, with some 60 million pouches being sold in 1986 (Herbert and Bettison 1987). The retort pouch has become most widely accepted in Japan where the rate of production has exceeded 500 million pouches a year. The range of products packaged by this means includes soups, meat products and vegetables. A significant amount of activity has also been undertaken in Europe, but the success rate has not been high. Claimed advantages of retort pouches include faster heat penetration (and thus less heat damage to the product), lower transport costs of the empty pouch and greater consumer acceptance in terms of product presentation and convenience; the product can be "boiled in the bag" for heating and the pouch easily opened. Although many of these attributes are in line with the perceived requirements of the up-market consumer, to date, this technology has been little used in Latin America and the Caribbean. However, local packaging technology is developing rapidly in many countries of the region and suitable pouches can possibly be made locally with considerable savings. For example, a recent mission to Peru funded by ODA/ODNRI identified locally all the inputs and expertise required, and calculated that a one pound retort pouch containing fish could be processed for up to 15% less than a conventional can.

Modified atmosphere packaging

The shelf life of many perishable foods such as meat, eggs, fish, poultry, fruit, vegetables, etc., is limited by changes which, at least in part, occur in the presence of atmospheric oxygen. The normal composition of air is 20% oxygen, 70% nitrogen and 1% carbon dioxide. A modified atmosphere, as the name implies, is one in which the normal composition is changed; usually to reduce the oxygen content and increase the nitrogen and carbon dioxide content. Use of modified atmospheres for shelf life extension is not a new concept in food preservation. The concept was known by 19th century scientists and the basic research was done in the 1920s and 1930s. What is new to this area is the increased distribution of food in more convenient retail units packaged under modified atmospheres. This increase has resulted

from advances in packaging technology and equipment, and the food industry's need for less energy-intensive forms of food preservation as compared to freezing, drying or thermal processing.

Often used in combination with chilling, it has also enabled the food industry to meet the increasing consumer demand for "fresh" long shelf life products. For example, modified atmosphere packaging of fresh beef stored at 4° C can extend the storage life from 4 to 12 days (Smith et al., 1988). The technology is also available for fruit, vegetables and fishery products and is extensively used in Europe and to a lesser extent in North America. It is seen by many as the packaging technology of the 1990s and will almost certainly find wide application for produce from the Latin America and Caribbean region in the coming years.

Irradiation

This is a process which undoubtedly works that has been subject to much serious research by scientific institutes, on the one hand, and considerable adverse publicity by pressure groups on the other. The process itself is very simple in that the product is passed close to a source of irradiation and, depending on the dose received, harmful bacteria are killed and biochemical changes are halted while leaving the food unchanged.

It is another process, therefore, whereby it is possible to extend the "fresh" shelf life on high-quality fragile produce. Strawberries are a good example of where the process has been successfully applied. Although the basic concept was patented in 1930, it was not until after the Second World War that large-scale research programs were carried out in this area. Acceptance of the new process has been slow and there is still an ongoing debate as to whether it is a safe process which should be generally permitted, and if so, how products should be identified and labelled. The Soviet Union was the first country to permit the sale of irradiated food (potatoes), in 1958. The United States permitted irradiation for insect disinfection of wheat and flour in 1963, and by 1972 some 11 countries had permitted the irradiation of one or more foods. It is not currently permitted in the United Kingdom and although opinion was moving in the direction of acceptance, the Chernobyl incident rather set things back. The process is almost certainly safe and the FAO/IAEA/WHO Joint Expert Committee on Irradiated Foods concluded in 1980 that irradiation of any food commodity up to an overall dose of 10K Grays presents no toxicological hazard.

Irradiation plants are expensive to build and to maintain. To run economically, they should be in operation year round. This is not generally possible if, as is often the case, national regulations only permit one or two foodstuffs to be irradiated. Export barriers are a further obstacle and clearances for onion irradiation in the Netherlands, for example, turned out to be useless because none of the neighboring countries allowed importation of the irradiated product.

At present, therefore, irradiation is little used and would not appear to have a significant role in agricultural development in Latin America and the Caribbean in the short term. The outstanding problems revolve around safe use of the irradiating source and irrational fear by the consumer over product safety. It will probably be some time before these are overcome.

Biotechnology

Biotechnology is not all new. It is said, for example, that fermentation of beer dates back to 3000 B.C., and beer, cheese, yoghurt, etc., are part of the everyday diet in almost every part of the world. The term biotechnology can be defined as "the application of scientific and engineering principles to the processing of materials by biological agents to provide goods and services." In arable agriculture, it encompasses the exploitation of biochemical molecular and cellular techniques for germplasm manipulation as an adjunct to crop improvement.

In livestock production, it focuses both on the improvement of genetic stock and on more efficient methods of disease control. There has been considerable and widespread speculation regarding the theoretical and actual potential of biotechnology at the molecular level to manipulate the genetic constitution of plants or animals to generate an entirely new product. Work in this area is advancing at a phenomenally fast rate and although traditional biotechnology processes will continue to be of importance, newer developments in this area have the potential to revolutionize agroindustrial processing in certain areas. New developments in fermentation technologies and enzymology, for instance, are creating new materials and new uses for existing raw materials, both of which could have a significant impact on traditional markets for food products. Some of these developments in fermentation and enzymology may be beneficial to developing countries as new markets are created for their products and exports increased. However, they may also lead to some commodities being displaced as developed countries use the new processes on their own materials. An example of this would be high fructose syrups produced from corn grown in the developed countries competing with sugar from cane grown in developing countries.

Changes in processing techniques resulting from developments in biotechnology may also have significant effects. For example, the use of biosensors such as monoclonal antibodies to detect spoilage organisms or other contaminants could bring about more stringent quality parameters for developing country products. Waste treatment through biodigestion could revolutionize pollution control in, for example, the coffee industry or where ligno-cellulose degradation is a problem.

Other applications of biotechnology can include bio-enrichment of traditional foods by microbial fermentation, for example, protein enriched cassava and production of colours and flavorings from tissue culture. The latter is an area of rapid development that is coming under pressure from consumers calling for so-called natural products. One example of this is the race to produce vanilla by tissue cell culture. If successful, this would affect producer countries such as Madagascar and Indonesia. Although these

countries are not within the geographic region currently under discussion, it is almost certain that other commodities would share this fate. At the present time, however, many of these developments in biotechnology are some way away from being successfully applied in developing countries. This is a very rapidly moving field, and countries in the region must strive to keep up to date with developments both in terms of the benefits biotechnology can bring to agroindustrial development and the potential damage it can do to the markets for their products.

Requirements for new technologies for fisheries development

Since Latin America and Caribbean countries have major fish resources available to them, the Region has a challenging opportunity to obtain full benefit of national utilization. In percentage terms, the present catch is dominated by Peru and Chile and is predominantly utilized for industrial reduction to fish meal and oil. The reason for this is that the coastal waters of these two countries contain concentrated stocks of small pelagic fish of low commercial value which are relatively easy to catch, highly perishable and sometimes unattractive to eat. Further, the local food fish industry is not prepared or equipped to process these fish. In addition, fish has traditionally been considered to be a secondary food product because consumers prefer other foods, especially beef, which has been available at competitive prices.

The situation is changing, however. In recent years, the cost of meat and other foodstuffs has risen while fish meal has encountered stiff competition from other sources of animal feed. Statistics show that in Peru, for example, there has been an increase in fish processed by freezing, chilling or canning for direct human consumption. The problem is that, at present, no technology exists for large-scale processing of small pelagic fish into a product for human consumption. This is an example of where major technological advances are required before successful industrial development can take place.

Outside of these two major fishing nations the pattern is different, as a larger proportion of different types of fish are consumed directly. In Guyana, Trinidad, Barbados, Jamaica, for example, fish is considered to be a prime food product, per capita consumption is high, and processing by conventional chilling and freezing technology is adequate. Similarly, in Ecuador, where shrimps are the second most important export commodity, existing freezing technology is sufficient to allow exploitation of the shrimp farming potential.

It must be stressed, however, that even where appropriate processing technology exists, in many cases it is not being properly used and much more effort needs to be given to extension work.

Tropical fresh fruit-export by sea freight

The increased export earnings for shrimp from the region is mirrored in fresh and processed fruit. The success of the region's banana production is well known. Perhaps less familiar is the expansion in Chilean exports of

apples and table grapes, trebling between 1980 and 1987. The fresh tropical fruit sector is also currently of much interest. Luxury food outlets in the United States, Europe and Japan have been the main market, but promotion through multiple retail outlets is increasing consumption by a broader spectrum of the population. Rising living standards, wider overseas travel, more adventurous food tastes and consumption of fresh fruit for good health are factors suggesting strong future demand. Mangoes, passionfruit, guava and papayas from Brazil, Peru and Colombia are the main export items at present, but the range is ever increasing.

The market has grown despite the high cost of air freighting these highly perishable products. The technological challenge is, therefore, to reduce transport costs by developing procedures for bulk sea shipment of these delicate commodities. For this to occur, considerable research is required on the physiology of fruit during transit, and developments are also required on disease prevention. ODNRI has already completed some work for mangoes in Brazil and Jamaica, and time/temperature relationships are being worked out for fruit at different degrees of maturity. These will be used as a basis for commercial trials from the areas concerned. Much more work is required, however, particularly on other fruit, if the agroindustrial development potential of fresh tropical fruit exports is to be achieved.

CONCLUSION

Technology has a vital role to play in agroindustrial development. New forms of processing technology such as biotechnology are coming onstream, and this can revolutionize the marketing of products from the region in the medium term. In the short term, however, conventional technology will form the basis of most new developments.

Technology alone will not result in successful development, and it is important to ensure that the technology applied is appropriate to the system, in which it is placed; this requires a good understanding of the system including both social and economic factors.

For high value-markets, particularly exports to the United States, Europe and Japan, quality is the overriding factor, and as recent problems in the egg industry in the United Kingdom have shown, quality scares can devastate the market almost overnight.

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2
**THE ROLE OF TECHNOLOGY AND NEW TECHNOLOGIES IN
AGROINDUSTRIAL DEVELOPMENT: A LATIN AMERICAN VIEW**

Walter Jaffé *

INTRODUCTION

Technological development is undoubtedly the most dynamic force in the world economy today. Its importance has grown in recent decades as scientific advances have sped up the pace of technical change. It is essential, therefore, to analyze the role of technology in industrial development, as a basis for designing technological policies for the agroindustrial sector.

This paper will begin by making an outline of agroindustrial technological development in Latin America and the Caribbean, then analyze the new technologies and their impact on the region in general terms. Finally, it will propose a framework for the design of policies aimed at developing production capabilities in the area of the new technologies, particularly biotechnologies. The analysis will center on the latter since they promise to bring about a profound transformation of agroindustry and agriculture, not only from the point of view of products, processes and raw materials, but also of their economic and industrial structure.

AGROINDUSTRIAL TECHNOLOGICAL DEVELOPMENT

There are various definitions of the term agroindustry. The concept generally encompasses all activities that involve the processing of agricultural, forestry and fisheries goods, but in some cases it applies specifically to the industry that manufactures inputs for agricultural production. The growth of this activity has also led to a proposed definition of agroindustry that includes both the production and processing of agricultural goods (Castells, 1988). Agroindustrial analysis is usually limited to food production, which is justified in view of this sector's preponderant position with regard to other sectors that also process agricultural goods, such as forestry, textiles, tobacco and certain segments of the chemical industry, among others. In this paper, agroindustry will be taken to mean basically all industries that process agricultural, forestry or fisheries goods, which is not to say that the validity of other concepts such as the ones mentioned above is not recognized.

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Translated by Nicholas Papworth.

From the technological point of view, agroindustry is a traditional or mature, slow-growth, capital-intensive industry. Since traditional manufactures have a relatively high level of investment in existing technology, they are more reluctant than younger industries to accept technical change. Their profit margins are also lower (Ettlie, 1983). The technology for processing agricultural goods is among the oldest and most traditional. A large part of it consists of small-scale craft industry methods, and even when it is highly mechanized and on a large scale its basis is fundamentally empirical, gained by experience, rather than from theoretical and scientific sources. With the progress in science over the last 150 years, particularly in the fields of chemistry, physics and microbiology, a better understanding of the industry's raw materials, processes and products has gradually been gained, making it possible to control them more effectively and improve their design.

Trends in Agroindustrial Technological Development

Trends in the technological evolution of agroindustry stem from economic, social and cultural needs. The most important factors influencing its development are cost and availability of resources (energy, raw materials, water and labor), cost of waste disposal and pollution control, population trends, governmental policies and regulations, consumer preferences and management practices (Pennema, 1983). Thus, food consumption habits, for example, which reflect availability of raw materials and consumer preferences, which in turn are determined by culture, convenience, social prestige, etc., partly define technological developments in food manufacturing.

Without attempting to make an exhaustive and systematic description of the trends in agroindustrial technological development, which is beyond the scope of this paper, we would like to point to a few features whose importance, in our judgment, should be emphasized so as to be able to anticipate the impact of the new technologies on agroindustry.

Food production, the most important component of agroindustry, has historically been characterized, from the point of view of technological development, by trends to increase the degree of refining, obtain greater diversification and improved preservation of end products, and increase the mechanization, scale and continuity of processes, among other aspects. These trends have led to the use of ingredients and practices that are not always optimal from the nutritional and toxicological points of view.

The trend towards greater refining of food products has more recently led to the isolation of its basic components (proteins, fats, vitamins, etc.) and their reconstitution to satisfy certain organoleptic conditions of preservation, etc., which promises to profoundly revolutionize the industry and even agricultural production. Traditional agro-alimentary chains will be replaced with the production and processing of some basic food components obtained from various crops or from alternative sources. Reconstitution will lead to truly "engineered foods" that will seek to duplicate the characteristics of traditional foods. This trend is conditioned by the growing concern of consumers in toxicological safety and the nutritional quality of foods.

In the case of production activities that can use agricultural raw materials for purposes other than foods (chemicals, textiles, energy, etc.), historically there has been a growing tendency towards using such inputs for various purposes, which was then halted and reversed, first by the use of coal and later with the massive upsurge of petroleum as a source of energy and industrial raw materials. Rising oil prices during the 1970s, coupled with growing price and supply instability, gave renewed impetus to raw materials of agricultural origin; thus, some countries made significant efforts to find substitutes for petroleum for energy purposes (Brazil is the most striking example). In the medium and long terms, the use of agricultural raw materials is likely to increase substantially in the energy, chemical and other industries, owing to the facts that such processes can achieve greater overall energy efficiency, raw materials are more readily available, nonrenewable natural resources are becoming depleted, and the environmental impacts are potentially more controllable. Obtaining basic chemical components from biomass on a mass scale, glucose for example, would allow the development of an alternative to the current petrochemical industry, and, to that end, there are still significant scientific and technological stumbling blocks to be surmounted. The development of fermentation technology, combined with genetic engineering and large-scale cell culture, is already making it possible to produce a growing number of substances through fermentation in the field of pure chemistry.

One of the most important consequences of the trends described is the reinforcement and acceleration of the integration of agriculture and agroindustry. The need for greater degrees of homogeneity of raw materials, strict control over their quality, timely availability and detection of the presence of contaminants, are factors that promote greater coordination and integration between the two sectors, which in some countries is being achieved within the context of larger and more centralized production structures.

Agroindustrial Technology in Latin America and the Caribbean

In making an analysis of agroindustrial technology in the region, a clear distinction must be drawn between the two basic types of existing technologies. On the one hand, there is the technology incorporated into equipment and inputs, which is developed by specialized companies in the metal transforming, chemical and packaging industries, to name the most important. On the other, there is the technology corresponding to products and processes, which is expressed in formulations and conditions for processing, characteristics of raw materials, quality guidelines, etc., and is an activity that takes place in agroindustrial enterprises per se. Both types are closely related, but they differ in some significant aspects; the most important, for the purpose of our analysis, is the way in which these types of technology are disseminated and marketed. The type incorporated into equipment and inputs, which is strongly and effectively protected by law, is marketed aggressively by proprietary companies, whose business is precisely the sale of such products, and, therefore, dissemination is rapid. The technology related to products and processes, for which it is more difficult to provide effective protection through patents, is, on the other hand, jealously guarded by proprietary companies, since this gives them competitive advantages over other

companies in the final or intermediary consumer products market. The patenting of these technologies is generally linked to the use of commercial brands.

Consequently, the technologies incorporated into agroindustrial equipment and inputs in Latin America and the Caribbean are generally fairly advanced, owing to international or regional proprietary companies' interest in selling them. This situation is not necessarily the case for product and process technologies, whose level of progress in the region will depend, even where patents and licenses are used, on the level of technological proficiency reached by the company, that is, its cumulative experience and expertise and its scientific and technological capacity.

In keeping with this line of reasoning, in order to describe the state of agroindustrial technology in the region, it is necessary to analyze separately the state of agroindustrial equipment and inputs manufacture and of agroindustrial enterprises per se. Local production of equipment and inputs, import levels and the existence of state-of-the-art and locally generated technology will be some of the elements used to make such a description in the first case.

The technological level of agroindustry itself can be appraised by means of indicators such as productivity and quality, availability of locally generated technology or technology adapted to local conditions, use of local raw materials, industrialization of indigenous products, research and development activities within the company, exports (the demand for quality and competitiveness in international markets implies the use of appropriate technology) and so on.

Only a small amount of information has been published on agroindustrial technology in Latin America and the Caribbean. Generally speaking, it is clear that most of it is imported, where equipment and inputs are concerned (Arroyo et al., 1985). In many cases, state-of-the-art technology is imported, but imports of used equipment, particularly from the United States, are also fairly important. On the other hand, a significant amount of agroindustrial equipment is produced in the region, for example, equipment for bakeries, thermal treatment, fermentation, milling, refrigeration, etc., mainly intended for use in small and medium-size companies. To that end the capability to produce stainless steel is crucial, and it is only well developed in some of the region's relatively more advanced countries. Since the 1970s, Brazilian, Mexican and Argentinian metal transforming companies have successfully exported to countries with similar or lower relative levels of development, both within the region and on other continents. Those enterprises possess a technology which, although not frontier technology from a worldwide point of view, responds better to the peculiarities and needs of agroindustrial companies in these countries; in this respect they have a competitive advantage over large transnational corporations that dominate the international market in the field. These corporations are active in the region, which is reflected in the rapid dissemination of frontier technology, for example, the UHT process for juice and milk preservation, the use of enzymes in the juice and starch industries, the process of extrusion in the production of animal feeds and cereals, etc. (Castells, 1988).

Agroindustry in the region is characterized by the existence of a significant sector of small and medium-size companies, particularly in food production, with a technological level that is practically that of craft industries; many of them are located in rural areas. This sector absorbs the largest portion of overall employment in agroindustry. It presents major productivity and quality problems, partly attributable to the lack of adequate technology.

There is a sector of large-scale companies, with modern technology, many of which are transnational. This sector, in general, dominates production in the industrial fields where it operates. Despite the availability of more or less modern technologies, its technological level is low, if we bear in mind its productivity and quality problems; its concentration on products for high-income consumers; its limited local research and development, and consequently, the limited amount of locally generated technology (notable exceptions are the Brazilian alcohol industry and the Argentinian refrigeration industry); the region's limited exports of processed agricultural products (exceptions: the Brazilian citrus industry, meats and some canned goods); the limited industrialization of traditional local products (an exception is the industrialization of corn for human consumption in Mexico, Venezuela and Colombia), among other indicators (UNIDO, 1986; Castells, 1988).

As has been seen, agroindustry in the region has a technology which, in general terms, is not the most appropriate and has not been adequately mastered. The technological gap in relation to the developed countries is large and probably growing, in view of the economic problems which have beset the region in recent years and which have caused investment in new equipment and technologies to be reduced.

The Dynamics of Agroindustrial Technological Development

The most important reasons for companies in general, and agroindustrial companies as well, to make innovations, are related to their competitive position. Thus, for example, a research project on food manufacture in Colombia shows that innovations in both products and processes were made in response to pressures to gain a larger market share, to customers' opinions and in third place only, to increase profits (Lopez, 1987). In general, companies in this mature industry, which is not very dynamic from the technological point of view, have basically defensive technological strategies, that is, they react when faced with market or technological developments outside the company, which is consistent with the fact that the majority of innovations in food production originate with suppliers of equipment, inputs and services. Mueller determined in the U.S. that 55% of 264 food processing innovations during the period 1969-1976 originated in companies that produce food manufacturing machines, companies that supply maintenance, sanitary services and designs, and companies that make instruments or control systems. Only 13% of innovations occurred in companies

that process foods and food ingredients (Mueller et al., 1979). The most important source of technology for the Colombian companies was also the suppliers of equipment and materials, followed next by company personnel not incorporated into formal groups and in third place, personnel grouped in the companies' own research centers or units (Lopez, 1987).

One consequence of what we have just analyzed is the relatively unimportant role of research and development in agroindustry. In the United States, it is estimated that the food industry spends less than 0.5% of its income on research and development, which places it among the industries that spend the least in that sphere. That level is barely one-fourth of the national average for the manufacturing industry as a whole (Fennema, 1983). The scant amount of research and development carried out by this industry has been described as generating pseudo-innovations, that is, distinguishing products from those of the competition, which brings neither advantages nor substantial improvements to the technology (Arroyo et al., 1985).

In Latin America too, very little local research is carried out in this field; moreover, its links with independent academic or industrial research centers are very weak and in most cases nonexistent (Castells, 1988; Lopez, 1987).

In view of the above, it can be said that the behavior of agroindustry is no different, from the technological point of view, from the industrial sector in general in Latin America. That is, it is based on technology which is usually imported, and which is gradually and informally adapted to local conditions until eventually a certain level of expertise is reached, which in some cases makes possible a process of additional or minor innovations whereby certain modifications are made to the original technology (Katz, 1976; Teitel, 1981). It is, therefore, important to center the policy and the strategy for agroindustrial technological development on enterprises and in the economic and legal context that has a bearing on its behavior.

Research and development in the agroindustrial field, in other words, the science, technology and engineering of foods, fermentation, pulp and paper, wood, etc., have a long tradition in the region; in some countries it dates back to the 1920s. It is found above all in universities, but also, practically all the countries have research centers dedicated specifically to this field. The Mexican Technological Research Institute (IMIT), the Central American Industrial Technology Research Institute (ICAITI) in Guatemala, CIEPE in Venezuela, the Technological Research Institute (IIT) in Colombia, the Technological Research Institute (IIT) in Ecuador, the Institute of Food Technology (ITAL) in Brazil, the Technological Institute (INTEC) in Chile, and some institutes attached to the Industrial Technology Institute (INTI) in Argentina, are a few noteworthy examples. Most of these centers are government sponsored; a few are private (of the foundation type), regional and university sponsored. Their predominant philosophy is based on the model of the center for contract research and industrial services proposed by the United Nations Industrial Development Organization (UNIDO). Despite this, in general terms, the relationship between these centers and industry is still relatively weak, particularly as regards the development of new products and processes. This is reflected in the precarious financial situation of many of

these institutions, the result of a strategy to generate their own resources, which has not been as successful as had been expected, and in the reduction of government sponsorship in the last few years of generalized fiscal crisis in the region. This combination of factors has weakened this important research infrastructure in recent years.

The agricultural research carried out in the region, mainly in the public sector, in national agricultural research systems and universities, does not generally focus sharply on problems connected with agroindustrial processing, despite the fact that a high percentage of agricultural raw materials is processed industrially. On the whole, these organizations do not have the mechanisms or structures necessary to link agroindustry to agricultural research, which is essential in view of the growing integration of agriculture with agroindustry.

Few agroindustrial technologies generated in the region have had broad impact and widespread use. Many results of promising research have failed to surmount the barrier between laboratory and factory, owing to the high cost of the pilot-plant and engineering development phases, to a lack of interest on the part of industry and to an unfavorable economic climate for technological innovation. The few successes have been achieved within the framework of ambitious government-initiative programs that unite the efforts of the public and private sectors, as shown by the PROALCOHOL program in Brazil.

Agroindustrial technological development in Latin America and the Caribbean is, in short, lacking in dynamism and has a low economic and social impact owing to its high level of dependence on other countries and its own weak technological and scientific base. This is a significant stumbling block to the economic reactivation of agriculture and industry in the region and to the more general aspirations of economic and social development.

THE NEW TECHNOLOGIES AND AGROINDUSTRY IN LATIN AMERICA AND THE CARIBBEAN

Agroindustrial technology throughout the world is undergoing a continuous process of change and improvement; in the last few years, new methods and equipment have been developed for processing, storage, preservation and packaging. Particularly important are the technologies involving membranes, filtering and concentration, such as ultrafiltering, reverse osmosis and microfiltering; UHT thermal processing of liquids; the use of irradiation and gases for preservation, and flexible packaging. Most of these technologies were developed in other industries and applied to agroindustry; they are part of a growing process of technical change that is upgrading established processes and product lines.

Parallel with these developments, a series of technologies is emerging as the result of progress in scientific fields such as molecular biology and solid-state physics; they are generically referred to as "new technologies," due to their intrinsic characteristics. They are having a profound effect on

a wide range of production activities by substantially modifying the parameters and conditions of processes and products. The analysis that follows will concentrate on these technologies, particularly biotechnologies, in view of the strategic importance an appropriate policy in this field can have for development opportunities in Latin America and the Caribbean.

General Impact of the New Technologies

The new technologies, that is, microelectronics, data processing, new materials and biotechnology, have undoubtedly made a break with conventional technological development because of their intrinsic characteristics, which ensure their widespread dissemination and use in many industries and other economic, social and military sectors. Their impact on the means of production, the industrial structure, countries' relative economic position in the world, international trade, and so forth is also unprecedented. This constitutes what some authors have described as the new techno-economic paradigm, which would form the basis of a new cycle of world economic expansion (Perez, 1986).

These new technologies, in general terms, improve efficiency and raise productivity in agricultural and industrial processes, as well as services, by saving energy and materials, reducing the time required for processes and decreasing scrap and waste. Some of them are information technologies, in the sense that they make it possible to handle and process either large volumes of information (microelectronics, data processing and telecommunications) or a small amount of well-defined information on, for example the effects on biochemical or ecological systems (biotechnology) (Kenney, 1987). It is, thus, possible to have both a high degree of coordination and interaction in complex organizational or production systems, and a notable increase in the effectiveness of processes to intervene in and manipulate biological and ecological systems.

The new technologies have a synergistic and maximizing effect on the rate of science and technology's development, since they increase the efficiency and effectiveness of research and development processes in many fields and disciplines. Thus, for example, computers have become an indispensable instrument of scientific research in general, and biotechnology promises to revolutionize conventional agricultural research and development processes such as plant and animal genetic improvement, phytopathology, animal pathology, etc.

The generation and development of these technologies has taken place basically in the industrialized countries, where the world's scientific and technological capacities are concentrated. They occur within a context of economic and military competition for markets and spheres of influence between companies and countries. The relative success of a company or a country in relation to others produces adjustments in their influence and relative position, which have caused substantial changes in the international scene as well as in countries' domestic economic structures.

The developing countries are situated within this setting, and their economic and social aspirations depend increasingly on their ability and capacity to participate actively to some extent in these worldwide developments, especially in the field of technology. In other words, the possibility of redefining current economic and political relations that are unfavorable to them is subject to their internal development of more efficient and effective social, political and production systems. That condition, at least in the sphere of production, depends, in turn, on their mastery of the technologies that unquestionably determine and will determine levels of quality and productivity in world markets. If this does not occur, there is the possibility that the biotechnology boom, for example, will further aggravate the profound disparities that exist between the developing and the developed countries (Sasson, 1984).

Faced with the inexorable advance of these technologies in the developed countries, the developing countries must mobilize their resources and capabilities so as not to become mere passive receivers. This could worsen their economic and social situation owing to the high cost of simply transferring these technologies, not only in purely financial terms, but also because they may be unsuitable for local needs and conditions. The speed and broad range of biotechnological advances makes such actions highly urgent, since the opportunities afforded the developing countries to take advantage of them are quickly lost (Dembo et al., 1987). The direction of biotechnological development in the developed countries, on the other hand, does not necessarily correspond to the needs and conditions of the developing countries. Its first applications in agriculture, for example, reinforced a model of production highly dependent on the use of energy and chemical inputs, in terms of maximization of yield by surface area; this model is extremely risky and vulnerable, and is also capital-intensive and ecologically unsound (Kalter, 1985). The development of biotechnologies to provide inputs, and of the ecological conditions of the developing countries is a responsibility that these countries must assume directly.

All the new technologies, to a greater or lesser extent, are of importance to agroindustry, but there is no doubt that biotechnologies are the most important, because they have the potential to profoundly revolutionize the essential components of this industrial sector: raw materials, processes and products. We will, therefore, analyze in greater depth trends in their development and their impact on Latin America and the Caribbean.

Definition of Biotechnology

The term biotechnology has been in use for approximately ten years to denote the application and marketing of a group of technologies based on the genetic manipulation of living organisms. This capability is viewed as a new biological revolution with wide-ranging economic and social repercussions. Growing public interest in the subject has led to a gradual broadening of this definition which, for many authors and organizations, includes technologies and products derived from more conventional processes, such as chemical mutagenesis or irradiation, fermentation techniques, the use of enzymes, etc. The Office of Technological Evaluation of the United States Congress states:

"Biotechnology, in its broadest sense, includes any technique in which living organisms (or parts thereof) are used to manufacture or modify products, improve plants or animals or create microorganisms for specific uses."*

The new biotechnology differs from the conventional kind fundamentally in the speed and precision that can be achieved with genetic or other type of manipulation. This is a direct consequence of the spectacular progress that has been made in the last few years in molecular biology and its application to biological systems and processes. Biotechnology, then, is not a single entity, but rather an enabling technology which has wide-ranging applications in various spheres of industry, agriculture and commerce. At the heart of biotechnology are the genetic engineering processes. They cover a continuum of scientific complexity and precision: from molecular and cellular genetic engineering to that affecting the whole organism. The process related to the whole organism (traditional reproduction) is a random process, since from the union of a complete set of genes from two beings the desired phenotype is selected. Cellular and molecular technologies, on the other hand, offer opportunities for achieving unprecedented precision and specificity, because they make it possible to transfer small quantities of genetic information in a controlled manner and even obtain information corresponding to a single gene.

This is definitely true "engineering" in the sense that it makes it possible, once the molecular and cellular mechanics of life are known, to design products and processes such as proteins and peptides, and to use biological production systems such as cells or microorganisms, for production on a large scale.

Biotechnological Development Trends

Modern biotechnology, that is, genetic engineering, originated in the research laboratories of U.S. and European universities from a few vital discoveries such as the possibility of reversing the flow of genetic information from RNA to DNA, the possibility of selectively cutting DNA, the possibility of cell fusion, of transferring genetic information from one organism to another, etc. The realization on the part of the scientists responsible for these advances that they had productive and commercial potential led to the formation of companies in the U.S. to exploit these discoveries commercially; in general, these are small companies that count on the aid of risk-capital financing mechanisms. Many of these companies were set up in the second half of the last decade, and the expectations raised in the media on the potential of biotechnology made it possible for some of these companies to successfully obtain financing from capital markets. But the considerable difficulty encountered in obtaining marketable products, which had not initially been foreseen, translated into longer periods of research and development and created financial problems, which led to a period of consolidation and restructuring of this sector. This was combined with an awakening of interest in this new technological field, principally in the

* Translator rendition.

major chemical, pharmaceutical and energy companies, and they began to enter this field along three complementary, and in many cases simultaneous, lines: development of internal research and development capabilities, acquisition of advanced biotechnology companies, and association with universities. The large corporations also began to absorb seed-production companies in order to have marketing channels available for some of the results of biotechnology as it relates to plants. (Dembo et al., 1987).

The interest of multinational corporations in biotechnology was based on the possibility of developing commercial applications for such scientific advances, which became a reality as a result of certain legal decisions, mainly in the U.S., which made it possible to patent those developments, and consequently, to reap the economic benefits of the considerable investments required in research and development. This has meant a tendency towards the privatization of scientific know-how in the field of molecular biology, which has given rise to concern among those interested in scientific progress and international development. There is the fear, for example, that this tendency could block the developing countries' access to this scientific field and seriously hinder their chances of participating in the exploitation of biotechnology (Kenney, 1987).

Although the new biotechnologies began in the academic milieu, the great interest they generated, owing to their tremendous potential, led to the establishment of governmental support policies, some implicit but the majority explicit, including programs to finance basic research, joint research between countries, reinforcement of legal protection for innovations, and training of human resources, among others. The governments of Japan and most of the European countries have been especially active in this regard, seeking to reduce the advantage that the U.S. initially had in the field of genetic engineering.

The more traditional biotechnologies, that is, industrial microbiology and fermentation technologies, have interested major Japanese corporations since the 1960s (Sasson, 1984). This has strengthened Japan's world leadership in the production of antibiotics and amino acids, which places it in the enviable position of being able to exploit rapidly the opportunities presented by the new biotechnologies (Scheidegger, 1988).

The result of these developments is reflected in the investments made in biotechnology, which have grown exponentially to the current figure of around US\$5,000,000,000 in the OECD countries (Kenney, 1987). Undoubtedly, then, biotechnological development worldwide has been assumed by governments and transnational corporations working in close association with one another, which has raised strong barriers to entry by other competitors, at least in the areas with the greatest commercial potential.

General Impact on the Region

The application of biotechnology to agriculture and agroindustry will, in general terms, notably increase production and productivity in those sectors of the economy. In the case of agriculture, the main focus of research and development strategies is on increasing yields by area rather

than on lowering production costs. The socio economic consequences of these increases will be first, to strengthen long-term trends towards lower prices for agricultural products and foods; and second, to speed up the move toward concentration of resources, centralization of agricultural production, and integration of agriculture and agroindustry, with the concomitant strengthening of large companies vis-a-vis medium-size and small agricultural and agroindustrial enterprises (Kalter, 1985). This panorama, envisaged for the U.S., could repeat itself in Latin American and Caribbean countries unless policies explicitly designed to avoid this are put into effect, since large-scale producers and companies have more access to the new technologies.

The expected increases in productivity and production will take place in a context of production surpluses in many developed countries and fierce competition in the international market, which has generally depressed agricultural and food prices. This means that biotechnology will aggravate this situation in the medium and long terms, which will have significant consequences for many agroexporting countries. Furthermore, the fact that the new technology makes it possible to produce agricultural raw materials in factories (production of flavorings through plant-tissue culture, for example) or to exchange one raw material for another (the use of starches for the production of sweeteners), can displace exports from the countries of the region. In the long run, absolute comparative advantages could be lost in many agricultural and agroindustrial sectors (Sasson, 1984 and 1988; Dembo et al., 1987; Kalter, 1985).

The need for Latin American countries to have access to the new products and processes could also lead to an increase in imports of agricultural and agroindustrial inputs, such as technology, with the consequences this will have on the balance of payments, on technological dependence and on the adaptation of technology to local conditions.

Such potential or actual negative impacts should not cloud the possible benefits of biotechnologies for developing countries' agriculture and agroindustry. They offer the opportunity to raise production and productivity and thus meet growing needs for food, energy and raw materials by developing varieties for marginal or extreme production conditions, reducing the need for inputs without affecting production, improving nutritional quality, increasing the efficiency of processing operations, using new or underused raw materials, etc. But this presupposes the existence of a certain capability for research and development, production and marketing, and planning and coordination of policies and strategies, which exists only in a weak and incipient way in a few of the region's most advanced countries.

Applications of Biotechnology in Agroindustry

With the object of presenting a general overview of actual or potential applications of biotechnologies in agroindustry, there follows a brief review and discussion of the principal technologies included in this group.

Genetic engineering

The transfer of genetic information from one organism to another permits their modification and the obtainment of improved characteristics of those same organisms or their metabolites. This technology has been applied to many problems relevant to agroindustry, and some of these applications are already being exploited commercially. The most interesting cases include the modification of yeasts in alcohol fermentation and the modification of organisms producing enzymes (glucoamylases, for example), etc. This technology will be applied mostly in industries that make use of microorganisms, such as the fermentation and dairy industries (Kirsop, 1985; U.S. Food and Drug Administration, 1988; Hayenga, 1988).

On the other hand, the application of genetic engineering to plant and animal improvement will permit closer integration of primary production and processing, since it will be possible to obtain the characteristics of the raw materials required in processing operations in a planned and efficient manner.

Tissue and cell culture

Plant or animal cell and tissue culture can be used for plant propagation and for the production of secondary metabolites, that is, substances that these cells produce naturally, such as flavors, fragrances, oils, fats, proteins, etc. Work is being carried out on the development of cell culture leading to the production of pyrethrins, cocoa butter and vanilla, to mention a few relatively advanced areas. This will make it possible to produce these substances in factories, free from the risks of production in the field (Ellis, 1986). Clonal plant propagation to eliminate diseases or increase the efficiency of reproduction is the basis of a flourishing industry in many countries, including some countries in the region, and will have a significant impact in the near future on many crops.

Protein engineering

This permits the planned modification of proteins in order to obtain new characteristics or improved properties. Its greatest potential for application is in obtaining enzymes for more stable and efficient processes of biocatalysis. It has also been proposed to obtain changes in food textures, which will make it possible to develop new products.

Enzyme and cell immobilization

This technology is based on fixing enzymes or cells to supports of various types with the object of extending the useful life of these biocatalyzers and broadening their physical and chemical operating conditions. It is applied on a large scale in processes such as the obtainment of fructose syrups; in the future, it will make it possible to overcome problems that have stood in the way of a greater use of enzymes in certain processes.

Monoclonal antibodies

Monoclonal antibodies are produced from a cell clone and, consequently, present a high degree of homogeneity. This permits their use for diagnostic and therapeutic ends and for the separation and purification of substances. Their most important commercial use in agroindustry, as reagents with a high specificity and selectivity, has been in diagnostic kits used in quality and toxicological control in the food industry. A number of American and European firms have recently begun to market kits of this type.

New fermentation processes

The increase in the density of microorganisms and their yield, the result of advances in their genetic modification and in new reagents and ways to control processes, will permit many new substances of interest to agroindustry to be obtained through fermentation processes (Hayenga, 1988). Provided problems related to process control and scaling can be overcome, solid-state fermentation processes could become the basis of important new industries for obtaining proteins and other substances. These are of particular interest for the development of small-scale, labor-intensive rural agroindustries in developing countries (Carrizales and Jaffe, 1986).

The collective impact of these technologies on agroindustry will be considerable. The fermentation industry will become considerably more important, since many substances, raw materials or ingredients for agroindustry will be produced by means of these technologies. The possibility of using new raw materials will generate major new industries. In particular, the large-scale use of lignocellulosic materials, starches and sugars for the production of glucose, proteins, alcohols, etc., made possible by the use of microorganisms modified by genetic engineering and by the development of new fermentation processes, promises to bring about a true revolution: this is due to the possibility of its forming the basis of a new sucrochemical alternative to the currently dominant petrochemistry. This trend is already becoming apparent in Japan, for example, where it is estimated that by the end of the 1980s, 10% of all chemical products will be produced by microorganisms, and this will increase during the 1990s to 30% of all products of petrochemical origin (Sasson, 1984).

IMPLICATIONS FOR AN AGROINDUSTRIAL TECHNOLOGICAL DEVELOPMENT POLICY

An agroindustrial development policy capable of meeting the needs of local markets, stimulating the development of agriculture and other related industries, exporting and becoming a dynamic element in the region's economic and social development, should be based on a correct concept of technology. The latter includes particular products and processes, is established in companies and is specific, tacit and cumulative in its development, which means that it cannot be completely codified in documents, patents, manuals and diagrams (Pavitt, 1987). This is true for technology in general, but is especially pertinent to agroindustry, which, as has already been pointed out, still has a relatively limited scientific basis.

General Guidelines

Accordingly, a policy of agroindustrial technological development should center on enterprises as the basic agents of technological development and, more specifically, on the process of generation, acquisition and mastering of technologies by companies. Its objective should be the creation of a suitable economic climate to stimulate companies' technological development and make investment in technology attractive or necessary. Market competition, whether domestic or international, is one of the most effective stimuli for these ends. A distinction should be drawn between companies of a certain scale and rural small-scale industries or agroindustries, which would require special policies adapted to their financial and managerial capabilities.

To date scientific and technological development policies in Latin America have placed much more emphasis on the development and consolidation of research capabilities, generally in universities and the public sector, than on the development of the technological capabilities of enterprises; more recently, only a few countries such as Brazil and Mexico have made efforts in this direction. This should in no way signify a weakening of academic research, which plays a vital role in training human resources for the technological development of companies, as well as in the development of informal communications networks that group together scientists, technologists and engineers in universities, research centers and companies operating in specific fields and which play a decisive role in technological innovation (Pavitt, 1987).

The training of high-level human resources is one of the fundamental requirements of scientific and technological development, and is the responsibility of the academic sector. An appropriate orientation for such training necessitates the existence of mechanisms linking universities and the productive sector, an area in which there is not much experience in the region.

As we have pointed out, a distinction should be drawn between the situation of traditional agroindustries and the emergence of a new agroindustry based on biotechnology. Traditional agroindustries in the region have fairly basic technological requirements. In general, they lack administrative and managerial capabilities for the appropriate management of technology, that is, to select, acquire, master and eventually modify it. This is reflected particularly in weaknesses in the areas of process engineering, equipment and electromechanics. Thus, a technological policy for this discipline should place emphasis on administration and engineering, as determined in a study of agroindustrial technological development priorities carried out in Mexico (Waissbluth and de Gortari, 1987). Biotechnologies can substantially improve processes and products in this sector; to that end, its technological management capabilities must first be developed.

In the second case, we are witnessing recent worldwide technological and industrial advances that cannot be ignored by Latin American and Caribbean countries. These advances make it imperative to implement policies and strategies geared to the development of capabilities that will, at the very least, make it possible for these trends to be understood and followed up, for

the technologies to be eventually transferred and adapted to local conditions, and for the technologies and applications required by regional and national development to be promoted. A fundamental role will be played by both formal and informal horizontal cooperation mechanisms, owing to their high efficiency and low cost.

Agroindustrial technological development, as has been pointed out, takes place within companies. But if it is to be successful, it also requires participation by other agents, who must assume important roles. It is the responsibility of government to design and implement policy, as well as to coordinate it and follow up on it. This role is vitally important, particularly in the case of biotechnologies. International experience suggests that an indispensable requirement for a successful biotechnological development strategy is wide-ranging, audacious government support (Scheidegger, 1988).

With regard to Latin America, governments should take the initiative in creating productive biotechnological capabilities in cases where there are no national private companies with the capacity to do so. The industrial sectors that have assumed large-scale commercial development of biotechnologies in the developed countries are the pharmaceutical and chemical industries and to a lesser degree, the energy industry. The pharmaceutical industry in the region is heavily dominated by transnational corporations. In contrast, the chemical and energy industries are generally public enterprises or joint-capital companies made up of public capital and local and transnational private capital; many of which are successful in commercial and technological terms. The development of relatively advanced industrial technological capabilities in the region, which form the basis of the most important exports of manufactures, has generally been the initiative and responsibility of governments. Examples of this type of companies, are the Brazilian aeronautical and arms industries and the petrochemical, steel and aluminum industries in Brazil, Argentina, Mexico and Venezuela, among others. Therefore, a policy for the development of biotechnologies as an important industrial alternative for the region should be based on close collaboration between public and private production and entrepreneurial capabilities and initiatives.

The general tendency in the developed countries has been for biotechnology to be assumed by major transnational corporations, which imposes on the region the need to develop large-scale enterprises with sufficient resources to compete satisfactorily in the international market place. But experience also suggests that the scope and rapid development of this field leaves room for the participation of many highly specialized, very flexible, small and medium-size companies, which have been the most innovative. There is, therefore, a need for differentiated policies, aimed at large as well as small and medium-size state-of-the art frontier biotechnology companies, which seek the development and the harmonious and complementary consolidation of both types of companies in the region.

The other important agent is the research sector, whose fundamental role as the generator of new technologies and the trainer of the human resources required has already been discussed. The weakness of this sector in Latin

America and the Caribbean, and the enormous effort being made around the world in biotechnological research and development, demand the most efficient possible use of the scarce resources available. The way to achieve this is to concentrate resources in a few areas of priority research at the regional level, aimed at supporting private and public production efforts. This underscores the need for regionally coordinated national scientific and technological development policies linked to industrial and agricultural development policies and strategies which take into account both intersectoral relations and vertical links between industry, agriculture and services.

Prominent in the research sector are the national agricultural research institutes, which exist in practically all the countries of the region and are in many cases the most important concentration of scientific and technological expertise and experience available. Their activities generally focus almost exclusively on primary production, which points up the need to develop their technical capabilities and linkage mechanisms to permit better coordination and integration of the needs and conditions of both primary production and industrial processing.

What is proposed is a substantial increase in countries' overall expenditure on science and technology, in order to make it possible to consolidate the existing scientific communities and increase their productivity, while at the same time developing the capabilities to create and apply technologies productively.

Elements for an Agroindustrial Technological Development Policy

An agroindustrial technological development policy in the context of the new biotechnologies can be structured, on the basis of its most specific objectives, by incorporating some or all of the following elements, in accordance with each country's specific situation:

Upgrading existing industry

As has already been pointed out, Latin American agroindustry is generally weak from the technological point of view. In order that it may fulfill the role demanded of it by economic and social development needs, exploit export opportunities and make a contribution to development, it must be converted into an industry which is technologically more dynamic.

The first priority in this regard is the development of companies' technological management capabilities, which, in general, are weak in the region. It has been clearly determined that companies' internal organization and management are the key variable in explaining the innovative performance of the food industry, as Ettlíe found in the U.S. (Ettlíe, 1983). To develop and strengthen those capabilities, tax incentives are offered for technological management activities and the creation of a basic support infrastructure at the national or sectoral level, such as scientific and technological information services and standardization and metrology services.

The emergence and consolidation of a sector of innovative companies developing state-of-the-art technology is crucial to any strategy that seeks to develop agroindustry and exploit the new technologies. The most direct way to achieve this is to create incentives for innovative companies, which generally means that the State assumes part of the costs involved in the innovations. What is offered, therefore, is strategies such as risk-capital financing programs, direct research financing, human resource training, tax incentives for company research and development, use of the State's purchasing power, etc. There have been interesting experiences in this regard in Brazil, Argentina and Mexico, which should be disseminated and promoted.

Many of the new products and processes generated by biotechnology can be incorporated into traditional agroindustrial processes, thereby raising their quality or productivity. Examples of this would be the use of diagnostic kits for quality control purposes in the food industry and the use of improved strains in the fermentation, dairy and meat industries, etc. The rapid incorporation of innovations into the productive process implies having information mechanisms to identify the new technologies, facilitating imports of those innovations, rapidly and expeditiously registering and regulating them from the sanitary and health points of view, and intensifying their dissemination by means of programs for technical training and updating, etc. To ensure the competitiveness of the region's agroindustry and exploit the advantages these innovations offer for raising productivity and quality, it is essential to maintain a policy of openness to the new technologies incorporated into equipment and products, even though they come from abroad, as long as no local productive capacity exists in this field.

Research which requires an agroindustrial technological development strategy in Latin America and the Caribbean should be clearly focused on developing or adapting technology; in this regard, it will be concentrated on the areas of process and product engineering. This requires that problems be classified in order of priority, and that there be mechanisms to ensure that such priorities are reflected in the research and development activities of universities and research centers, which should be carried out in close collaboration with companies. This directed research should neither interfere nor compete for funds with nondirected academic research.

Creation of state-of-the-art technology capabilities

The basic capability for exploiting the potential of biotechnology in production is to be found in the companies that produce equipment, inputs and products, known as the bioscience industry. The capacity to produce monoclonal antibodies, generate genetically engineered microorganisms, plants and animals, manufacture fermentation equipment, cultivate cells on a large scale, propagate plants through cloning, manufacture key inputs and reagents such as restriction enzymes, hormones, culture media, etc., all on a commercial scale, is crucial for any country aiming to participate actively in this new technological revolution. A country that does not possess this type of industry must develop aggressive and audacious programs to develop one, using the full arsenal of fiscal measures, foreign investment, market reserves, export promotion, etc., at its disposal for industrial development.

Capabilities in the sphere of the new biotechnology should be developed in clearly defined and carefully selected sectors and areas, based on existing prior experience, on any comparative and competitive advantages that may exist, on the existence of capabilities in the region and on national strategic or political interests. The fastest and possibly the cheapest way to develop these capabilities is the transfer of basic production or research technologies. This can be achieved by adopting various strategies such as research contracts with companies or universities, association with companies possessing the technology to develop local production facilities, patenting or purchasing the desired or required technology, etc. The key to the success of a policy of this nature lies in the ability of local companies, whether public or private, to identify the technology required and negotiate from a strong position with whoever possesses it. This generally involves active governmental support, which can create the legal, financial and regulatory conditions appropriate to technology transfers that are positive for a country.

The emergence of biotechnology has brought about profound changes in policies of legal protection for technological innovations, since the protected categories now include living beings and biological materials that could not previously be patented, such as microorganisms, plants and animals. So far, these changes have been limited to some of the developed countries, which are pressuring strongly for them to be generally adopted. The advisability of adjusting national legislation to these trends will depend on many factors, among the most important being the existence or absence of local capabilities and technologies, interest in technology transfers and attracting foreign investments, and existing industrial development strategies. Clearly, one of the requirements for attracting foreign investment in the field of bioindustry is the existence of adequate legal protection for technology.

Development of a bioindustry of consequence

The future strategic importance of bioprocess industries producing foods, energy and raw materials through fermentation technology justifies preferential treatment in industrial development policies. They will in fact become the new basic industries, replacing the traditional ones such as steel, petrochemicals, electricity, etc., which can be transferred to other forms of ownership in view of their level of development and consolidation in the region's relatively more developed countries. The magnitude of the investment required in both physical infrastructure and capital goods, the long periods of training to master the technology and the research and development necessary, demand ambitious long-term programs that the private sector would find difficult to assume on its own.

These programs would aim to develop productive scientific and technological capabilities in the field of industrial microbiology and biochemical engineering in order to achieve a broad use of biomass, for example, lignocellulosic materials, starches and sugars for the production of strategic products such as unicellular proteins, chemicals, liquid fuels and basic pharmaceutical products (Luiselli, 1987; Quintero, 1988; Viniegra-Gonzalez, 1984).

Biotechnologies for rural agroindustry

The significance of rural problems in the majority of the countries of Latin America and the Caribbean justifies the implementation of policies directed specifically towards the development of biotechnologies applicable on a small scale and having a direct impact on the problems of small farmers. Particularly important in this regard are the technologies that produce inputs for agricultural production, such as clonal propagation of plants that are important to the small-farm economy and biological control of plant diseases, as well as biomass processing technologies for food or energy production on a small scale and with minimum capital requirements. This is not the predominant orientation of technological development in the world, and it should, therefore, be assumed by the countries of the region within the framework of programs that integrate the academic sector and national agricultural research institutes with public and private agencies devoted to rural development. Special care should be taken to establish close relations with extension services in order to ensure the development of technologies that are actually adopted in rural communities. One of the priorities in this regard is to reduce the scale of microbiological conversion processes, particularly in tropical regions (Viniegra-Gonzalez, 1984).

International cooperation

The marked weakness of the countries of the region in the field of biotechnology and the rapid advances taking place in this area worldwide, coupled with the economic difficulties being experienced in the majority of the Latin American countries, makes it necessary to join efforts and resources through international, and especially regional, cooperation. In this regard, considerable experience has been accumulated in the region in the scientific and technological sphere. But such cooperation should go much further, with the aim of including coordinated development of production capabilities in bioindustries, for which purpose the various regional and subregional integration mechanisms exist.

Technology has always played a decisive role in economic and social development. That role is being accentuated by the speed of technical change in the world. This poses a fundamental challenge for the region because of the opportunities that are arising from the new technologies in many fields, but in particular in agriculture and agroindustry, which are of strategic importance for the majority of countries. The region's positive experience as regards the technological development of agriculture in past decades indicates that it is possible to take advantage of these opportunities and, thus, make a significant contribution to the attainment of generalized economic and social development aspirations.

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IV.

AGROINDUSTRIAL DEVELOPMENT IN LATIN AMERICA AND THE CARIBBEAN:

CURRENT STATE AND OUTLOOK FOR THE FUTURE

The discussion of Topic IV began with the presentation of Eduardo Jacobs' paper, **Agroindustrial Development in the Strategy for Agricultural Reactivation: Perspectives and Requirements**. It was based on the idea that agroindustry is an important subsector of industry in Latin America (perhaps the most important). It is a subsector that is going through unprecedented crisis, but nevertheless, there was consensus as to the important role it is destined to play. Indeed, it is reasonable to think that agroindustry can be the starting point of overall economic reactivation in the region.

However, this is not a topic without its share of problems. The analysis revealed that all the signs at the international level point to a weakening, not a strengthening, of agroindustry in Latin America. The role of transnational enterprises in the agroindustrial subsector, especially the more modern ones, must be taken into consideration. Agroindustrial enterprises are organized to focus on the domestic market. There have been successful experiences in the case of fresh produce (unprocessed), even though this line is not recommended for the long term. In any event, the products rejected during this process are used in processed products, and agroindustry should consider fresh products as an input.

With regard to technological development, it was pointed out that before the onset of the crisis, the State provided support and the industrial sector promoted the use of technology. Today, the industrial sector purchases technology. In this regard, it was underscored that efforts made now will affect levels of competitiveness twenty years from now.

Institutional issues are of special importance since this new effort at agroindustrial development should be conducted without subsidies or excessive State support. It will also be necessary to identify clearly the dynamic entrepreneurs that will serve as the cornerstone for developing agroindustry. In this context, the agroindustrial chain should boost the agricultural sector.

There was reference to the fact that after three decades of failure under an interventionist policy, a different protagonist is being proposed. In the opinion of some, production (price) policies and assistance policies cannot be mixed. The chain needed by the fresh produce market has already been mentioned. During the seminar, Poulter, Jara and Riley spoke about the systemic approach, which must be kept in mind.

Along these lines, reference was made to the time when, in Brazil, the decision had to be made about whether to sell soybeans processed or unprocessed; in other words, with or without value added. The decision was made to continue exporting in accordance with the customers' demands. Something similar happened in Chile. A mistaken decision made a priori as to whether or not to export fresh products can have a negative effect. The participants were reminded that technology from different countries is used in Chile. The proposal was made to avoid superfluous theoretical approaches and to analyze the problem from the perspective of income elasticity of demand. Emphasis was also placed on the enormous potential of, and, at the same time, the extreme fragility of Latin American exports of fresh products, in view of the heavy protectionism prevalent in Europe.

Further on, it was claimed that fresh fruit is not a raw material because it has considerable value added. In response, Eduardo Jacobs stated that in his document and presentation he had not intended to imply that agroindustrial development should not include the fresh products that have managed to penetrate the international market. He added that if technological development is not promoted vigorously, the situation in the countries will become highly fragile. The idea is not to make these situations even more precarious, but rather to strengthen them. Lastly, he pointed out that it is more important to reach agreement on positive steps to take in the future than to focus on the differences.

Carlos Benito, in his paper, *Agroindustry as a source of rural development: Its potential in Latin America and the Caribbean*, reviewed major problems related to rural development, in other words, those related to the reduction or alleviation of rural poverty. Benito's presentation focused on two major ideas: the causes of rural poverty and possible long-term solutions, and how to formulate proposals related to the real situation of Latin America. He explained that the type of economic development in vogue over the last three decades was based on the premise that the yield on investments in physical capital (equipment and infrastructure) was greater than that on investments in human capital.

He added that, faced with continuing rural poverty, and the worsening of same as a result of the crisis, the small farmers and the disadvantaged in the cities have begun to develop informal sectors and temporary rural-urban migration, not only within countries, but also between countries. "Let's let the small farmers help themselves," he said. The technology of mass production was the model used to industrialize the U.S. and was followed in a large part of the Americas. In light of this situation, and associated with the principle that "small is beautiful," we find the technology of flexible production, which requires more highly skilled labor. He proposed a two-point strategy: the creation of employment in rural areas, and dealing with the issue of rural-urban migration.

Among subjects to be researched, Benito suggested the following: agroindustry with flexible production systems; organization of small-scale agroindustrial producers for selling to foreign markets; rural agroindustry through a contract system with large-scale enterprises; food processing by individual rural households; mobilization of groups of volunteers for the development of rural agroindustry; rural schools and rural agroindustrial development; and policies and programs to deal with temporary rural-urban migration.

During the ensuing discussion, it was pointed out that food must continue to be produced for Latin America. Rural agroindustries can help in the battle against rural poverty; it is feasible and necessary to raise the technological ceiling of small farmers. It was recognized that this undertaking, though difficult, cannot be delayed.

The introduction of agroindustries in the rural areas will help relieve food-related problems. CIAT, CIP, CITA (with its rural agroindustrial models), INCAP, the Cuatro Pinos Cooperative in Guatemala, and other organizations have

had success in this area. However, if there is to be continuity, there must be coordination. The Appropriate Technology Network for Rural Agroindustrial Development (RETADAR) and the Rural Agroindustry Development Program (PRODAR) have contributed to such coordination.

Since it was not brought up during the presentation, comments were also made on agrarian reform. It has taken on new significance in light of Colombia's strategy to eliminate rural poverty. In this regard, it was mentioned that the social stability of Bolivia today is in large part the result of the 1953 agrarian reform, which provided land to more than half a million small farmers.

From a more cautious point of view, it was stated that, in some way, simple technology runs the risk of provoking a conservative reaction, and that the governments view such experiences with hesitance. It would be wise to find a strategy which includes both small and medium-scale agroindustries.

The case of Chile was brought up, where the labor shortage in some regions means that workers must be brought in from the cities. There was concern over the fact that Benito's paper equates the formal sector in the city with that in the rural areas. The opinion was expressed that, instead, the informal sectors should be formalized, and the State should play a fundamental role in this task. The speaker agreed that the State does have a role to play, and that the proposal contained in his paper is based on equity and not efficiency.

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**AGROINDUSTRIAL DEVELOPMENT IN THE STRATEGY FOR AGRICULTURAL
REACTIVATION: PERSPECTIVES AND REQUIREMENTS**

Eduardo Jacobs*

INTRODUCTION

A characteristic feature of industrial development in Latin America has been the general nature of its objectives, which has produced few specific policies. Beginning in the 1950s, industrialization was looked upon as an end in itself; it was the path to the economic development of the region. In line with that kind of all-embracing outlook, a series of very wide-ranging policies was adopted to give impetus to "industry." In practically all the countries of the region, commercial, fiscal and financial policy instruments were combined in order to stimulate domestic production of industrial goods. The objective was clear: industrial import substitution. The cost of such a process and the time it would take to achieve internationally acceptable levels of competitiveness were issues that never entered the debate.

That model of industrialization through import substitution did permit a certain level of growth in the economies of the region. Development levels among the countries of the area were highly heterogeneous, but all of them involved industrialization through indiscriminate import substitution, where no prior evaluation was made as regards what type of industry was strategically viable in each of the countries. A cross-sectional analysis of the industrial structure in most of the countries of the area reveals striking similarities as to sectors in which progress has been made, to varying degrees obviously. The similarity of the patterns of industrialization, closely associated with the similarity of the "policy packages" put into effect, is one of the factors that help explain the simultaneous onslaught of the economic crisis currently besetting the region.

In view of the gravity and persistence of the crisis, and the difficulty in outlining alternative proposals for surmounting it, a major debate has begun on the role that each of the sectors of the economy should play in a new pattern of economic development. Thus, an interesting space has been created for discussing development policies that are much more specific than those implemented in the past. This new space lies somewhere between two extreme and essentially erroneous positions. The first of these suggests that renewed impetus be given to the old blueprint of industrial development through import

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substitution. According to those who maintain that view, as soon as external financing difficulties brought on by the debt crisis have been overcome, it will be possible to boost and intensify industrial development, just as occurred in the past 30 years.

The second of these extreme positions advocates drastically "dismantling" industry in the region, and intensifying the development of raw materials, particularly those in which the countries of the region have proved to be efficient and competitive.

Both of these extreme positions are mistaken for various reasons. The first, because it does not take into account that adjustments in the domestic market in recent years have modified effective domestic demand to such an extent that it would be very difficult to consider activating the industrial sector on that basis. Nor does it take sufficiently into account that the States in the region, or at least a good many of them, are undergoing a financial crisis of a structural nature that makes it impossible to revamp the old policy scheme of subsidies and external protection. Finally, it fails to consider the fact that since the economic crisis began, in many of the countries of the region, the sectors producing raw materials have adopted a different political position and do not, for a variety of reasons, accept that their surpluses be transferred to the rest of the economy, as occurred in the past. Bearing these three factors in mind, it is hard to consider the possibility of revamping the old industrial development model.

The second of these so-called "extreme" positions also oversimplifies the complex reality of the region's economies. Industrial development is a reality in the majority of the countries of the area; this sector generates a substantial portion of overall employment and makes no less an important contribution to the national product. On the other hand, purely agricultural growth does not have the same pull effect on the rest of the economy as does the industrial sector. There are no known experiences of countries that have attained acceptable levels of economic development without a vigorous industrial sector. Nor are there known cases of countries that have achieved vigorous industrial growth without specific policies for the manufacturing sector, and for the latter's linkage to the agricultural sector. This is the key to the proposal being presented in this paper.

Agroindustrial development should be established as a separate strategy. While recognizing the limitations imposed by the crisis, it should seek the most efficient ways to use the comparative advantages of the agricultural sector to build up comparative advantages in the industrial sector. As will be analyzed further on, this strategy cannot consider the possibility of "redistributing" or reallocating surpluses by splitting them up between the agricultural and industrial sectors, a resource widely employed in past decades. The crisis has seriously adjusted swing margins in the various production sectors, demanding greater creativity from policy makers; new ways to redistribute the surpluses generated will have to be found. Once growth in the economies of Latin America and the Caribbean is back on track, there will be increasingly greater freedom to implement policies. For the moment, however, we will have to proceed with limited plans.

There is broad consensus on three situations that exist in the Latin American region: an extended crisis in the model of accumulation; an unevenly and incompletely developed manufacturing sector ; and an agricultural sector with certain dynamism and comparative advantages at the international level. There is not much agreement, and this is reflected in the extreme positions that one normally hears when "how" to come out of the present situation is discussed, on the way in which those three situations should be combined when proposing a policy for surmounting the crisis. IICA has worked on an alternative policy proposal, which stands somewhere between the extreme positions referred to above. The proposal is based on the supposition that a new regional development strategy must rest firmly on policies of a specific nature, with well-defined objectives and schedules for implementation. IICA has suggested making agroindustrial development the thrust of a proposal to activate production in the region. Its objectives also include improving the quality of life. The fact that the new proposal has selected a specific sector as the hub of its strategy is a step forward with respect to the old development policy paradigm, which neither set sectoral priorities, nor stressed the need to coordinate agricultural development with industrial development. As this paper intends to show, progress in agroindustrial development will only be possible if productivity in the industrial sector parallels that of the agricultural sector.

In viewing an agroindustrial development strategy as one of the basic hubs of a proposal to activate production and also promote equitable income distribution, we have excluded several ideas that need to be defined, for the sake of clarity.

First, we think of agroindustry as a generator of value added in exports of raw materials. The argument is as follows: if the countries of the region have comparative advantages in exports of non-manufactured goods, some degree of industrial processing of those goods will increase the value of exports while stabilizing their prices. Thus, for example, in Argentina's highest political circles we hear statements such as: "we should can the cows to export them." This type of agroindustrial perspective was encouraged primarily by the 1985/86 crisis in agricultural prices, which clearly showed the fragility of the foreign-trade balance under these circumstances. Similarly, countries that have traditionally exported fresh tropical produce are looking into the possibility of exporting that same produce, but following a certain degree of processing.

Secondly, agricultural development makes it possible for technology to be transferred to the agricultural sector. There are many examples in Latin America and the Caribbean which show the potential of the agricultural raw materials processing industry to generate and extend technological development into the primary sector. Thirdly, the problems connected with agricultural inputs also come to the fore when agricultural development opportunities are discussed. To a greater or lesser extent, all the countries of the region have undergone agricultural modernization, involving a very important component of industrialized inputs which introduced technical changes (e.g., agricultural machinery, insecticides, improved seeds, etc.).

In many cases, the industrial inputs for agriculture were imported from the industrialized countries, creating an interesting "niche" for import substitution at a time when foreign currency shortages made for high import prices. This substitution process, however, would have to be integrated into a complex that produces goods that can be negotiated abroad, which demands that international competitiveness of the goals remain stable.

Finally, reference will be made to a different perspective, in which the agroindustrial sector is reassessed as the hub of a production strategy that fosters equitable income distribution. Rural agroindustry is envisaged as an integrating factor between the agricultural and processing sectors, favoring the development of the small-farm economy, and influencing food supply. In this case, agroindustry links the problems of rural development and food supply by activating small-farm production.

All these thoughts have been taken into account, to a greater or lesser extent, in the current debate on the strategic role that agroindustries can play in the region's development. No initial restriction raises any doubts about the viability of the proposals put forward; nor is there any reason to suppose that the region's economies will promote any of these developments through the regular operations of their markets. Agroindustrial policy, is therefore, the key to this problem. There appears to be consensus in a significant number of the countries of the region as regards giving impetus to agroindustrial policies on the basis of some of the perspectives mentioned. The success of the strategy will depend largely on the design and implementation of those policies. This paper presents a set of guidelines that could be used as the conceptual basis of an agroindustrial development strategy. In this regard, it is necessary to make a very important observation. Rural agroindustry plays a key role in an agroindustrial development strategy that, while creating the conditions for boosting production, at the same time mitigates the effects of the income distribution crisis. The strategy that IICA has devised is based firmly on this concept, which aims to create new conditions for production activities in the rural areas. Because of the importance of the topic, it is dealt with in a separate document, which is presented as Annex 2 of this paper. In any event, the policy considerations of both are included in a comprehensive proposal that views agroindustry as the hub around which production can be activated.

It is also necessary to point out that this paper was written without specific reference material on Central America and the Caribbean, with the exception of Mexico. Efforts have been made to compensate for this lack of material by discussing the work with specialists from those regions. Accordingly, the reflections made here seek to cover Latin America and the Caribbean as a whole, despite the evident imbalances as regards sources of information; a problem that will be overcome in a future version of this paper.

Although the objective of this document is to propose guidelines for an agroindustrial development policy, a brief review of the current situation of agroindustry in the region must be made. The section that follows contains an

analysis of some of the basic features of agroindustry in Latin America and the Caribbean, while the third section goes on to deal with guidelines for the strategy.

AGROINDUSTRIES IN LATIN AMERICA AND THE CARIBBEAN

Agroindustries make up the most important segment in the region's manufacturing industry. According to the information contained in Table 1, in 1981, almost 26% of industrial production came from agroindustries. It should be borne in mind that the figures contained in the abovementioned table do not include industries that supply agricultural inputs and equipment; these activities, as will be seen further on, have experienced sustained expansion. In the group of activities under consideration (foods, beverages, tobacco, leather, wood and paper), the most important subgroup is foods, which accounted for approximately 21% of the region's agroindustrial total in 1981.

Those figures have been diminishing over the past two decades. In Table 1, it can be seen that agroindustry's share of manufacturing value added was 31.8% in 1960, dropping to 25.8% by 1981. This reduction in the sector's relative share is a common feature in economies as they begin to diversify their production structure by intensifying industrial development. The size of those relative shares, however, even in the most advanced countries in the region, is much greater than in the industrialized countries. Thus, in Latin America and the Caribbean, the drop in agroindustries' relative share of manufactured value added would have reached a minimum level, which would show the difficulty of intensifying and diversifying the process of industrial development in practically all countries in the region. This situation can be seen more clearly by analyzing the most recent statistics, which reflect the crisis currently besetting most of the area's economies. Sufficiently detailed information is not available.

Neither the levels of agroindustrial production in overall manufacturing activities nor those of industrialization are homogeneous. In Table 2, it can be seen that Brazil registers 18.3% and the Dominican Republic 67.6% as the percentage shares of agroindustrial value added in manufacturing value added, while a significant number of countries have percentages that vary between 30% and 40%.

The second section of Table 2 shows very interesting agroindustrial production patterns. Countries such as Brazil and Mexico drastically reduced the share of agroindustrial value added in manufacturing value added, and, at the same time, increased their share in regional agroindustrial value added. This movement can be explained by the fact that both Brazil and Mexico experienced a period of accelerated growth between 1960 and 1980, which was much higher than the average for the region. Agroindustries, for their part, cushioned the economic cycle, and thus grew less than the average for the economy during the boom, also declining less during the recession. This performance can be clearly seen in Table 3, particularly under the heading Foods, Beverages and Tobacco, which grew less than the total manufacturing GDP, during a time of expansion, and declined less in the 1981 recession. The anticyclical nature of agroindustrial development within the context of the expansion boom in both countries explains the simultaneous drop in the share

Table 1. Latin America^a Share of the Major Branches of Agroindustry in the value added of the Manufacturing industry (In percentages).

	1960	1965	1970	1975	1978	1979	1980	1981
Food, beverages and tobacco	26.7	24.4	23.0	21.5	21.1	20.7	20.3	21.0
Leather	0.7	0.8	0.8	0.6	0.6	0.5	0.5	0.5
Wood	2.3	1.8	1.8	1.7	1.8	1.8	1.7	1.8
Paper	2.1	2.6	2.6	2.3	2.4	2.4	2.4	2.5
Total Agroindustry ^b	31.8	29.6	28.2	26.1	25.9	25.4	24.9	25.8
Total manufacturing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Prepared by the ECLAC/UNIDO Joint Industrial Development Division, on the basis of official figures. (Taken from Villalba, R. *Visión general del desarrollo agro-industrial latinoamericano*, 1986).

a 16 countries: Argentina, Brazil, Colombia, Costa Rica, Chile, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Paraguay, Peru and Venezuela.

b Includes food, beverages, tobacco, leather, wood, cork, paper and paper products.

Table 2. Value added of Agroindustrial Sector, by Country.

	As percentage of the value added of manufacturing sector			As percentage of regional agroindustrial value added		
	1960	1970	1980	1960	1970	1980
Argentina	31.9	29.5	28.4	20.5	19.0	13.8
Brazil	26.2	22.8	18.3	22.8	22.3	27.3
Mexico	33.2	27.5	23.6	20.8	23.8	24.7
Colombia	34.8	36.2	39.2	6.3	6.8	8.1
Chile	34.1	34.5	38.6	5.9	5.8	4.7
Peru	52.6	45.1	36.9	7.8	6.8	5.0
Uruguay	34.6	41.7	36.6	2.9	2.4	1.9
Venezuela	31.9	29.7	32.0	4.4	4.6	5.2
Ecuador	56.7	44.8	32.2	1.9	1.6	1.9
Dominican Republic	85.6	76.2	67.6	0.6	0.7	0.7
Panama	63.9	61.3	50.3	1.8	1.8	1.9
Central American Common Market	63.6	52.1	52.1	4.2	4.4	4.8
Total (16 countries)				100.0	100.0	100.0

Source: Prepared by the ECLAC/FAO Joint Agricultural Division, on the basis of official information. (Taken from Villalba, 1986).

Table 3. Latin America:^a Growth of the Major Branches of Agroindustry and the Manufacturing Sector (Cumulative annual growth rates)^b

	1960-1965	1965-1970	1970-1975	1975-1980	1979	1980	1981
Food, beverages and tobacco	4.5	6.2	4.8	4.5	6.0	2.3	-1.7
Leather	3.2	13.9	1.1	0.5	5.2	-6.1	-3.0
Wood	4.5	4.2	4.8	7.1	9.7	4.1	-5.5
Paper	10.2	8.3	3.3	7.2	7.5	5.2	-2.8
Total Agroindustries ^c	4.9	6.4	4.5	4.8	6.4	2.5	-2.3
Total manufacturing	6.4	7.5	6.1	5.8	8.1	4.4	-4.8

Source: Prepared on the basis of data from Table 1.

a 16 countries: Argentina, Brazil, Colombia, Costa Rica, Chile, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Paraguay, Peru and Venezuela.

b Calculated based on constant 1970 values.

c Includes only those agroindustries listed in the Table.

of national manufacturing value added - because it grew less than other sectors - and the increase in its share at the regional level, since it grew more than the rest of the agroindustries in the region.

At the other extreme, are countries such as Argentina and Uruguay, whose growth was less than the average during that period, and in which the share of agroindustries in manufacturing value added varied only slightly. Both countries simultaneously reduced their share in regional agroindustrial value added since their agroindustries grew at a level far below the average.

For a number of reasons, agroindustries have greater staying power when the economy is in crisis. Such performance, which can be explained by the low income elasticity of many of its products, as well as by its ability to share reduced profit margins with the agricultural sector, takes on great importance in times of crisis such as those currently being experienced by the region. In a medium-term outlook characterized essentially by global restrictions, this feature of agroindustry is particularly important in justifying its central role in a strategy of equitable growth of production.

Agroindustries in Foreign Trade

During the early stages of Latin American economic development, agroindustries played a fundamental role, with their production essentially oriented toward the international market. There are countless examples: coffee, cacao and sugar are but a few of the agroindustries that developed throughout the region since the beginning of the century. Subsequently, when economic development began to center on import substitution, agroindustries focused their attention on domestic demand, which was growing steadily as domestic markets expanded. This second wave of agroindustrialization was primarily aimed at the domestic market and not surprisingly, therefore, mirrored the pattern of industry as a whole with regard to the type of linkage being sought with international markets.

As a result of juxtaposition of agroindustrialization processes, at present, a high percentage of agroindustrial production is destined for the domestic market in most of the countries. The bulk of the agroindustrial exports produced in many of the countries of the region is still concentrated in the sectors installed during the first waves of development. These sectors, however, largely remained "isolated" from the rest of the economy and neither promoted their activities nor diversified to other areas of production where they could have put their export experience to good use.

Despite the fact that agroindustries have not shown a dynamic export performance (in this regard, they resembled the rest of the industrial sector), their activities as a whole make up a very significant portion of total exports. In most of the countries, agroindustries export a higher portion of their output than do other industrial sectors. The figures in Table 4, showing the situation of four countries in the region, speak for themselves, but must be viewed within the context of the low export ratios prevalent in the majority of countries.

Table 4. Export and Import Coefficient of Food-Related Agroindustry.

	CHILE				BRAZIL			
	1980		1985		1980		1985	
	Export. Coeff.	Import. Coeff.	Export. Coeff.	Import. Coeff.	Export. Coeff.	Import. Coeff.	Export. Coeff.	Import. Coeff.
Total industry	26.08	26.45	29.40	25.81	8.13	6.95	12.9	4.37
Food-relat. agroindust.	15.74	16.87	25.44	8.88	19.55	4.77	19.35	1.48

	ARGENTINA				ECUADOR			
	1980		1985		1980		1985	
	Export. Coeff.	Import. Coeff.	Export. Coeff.	Import. Coeff.	Export. Coeff.	Import. Coeff.	Export. Coeff.	Import. Coeff.
Total industry	6.96	12.14	11.46	7.46	17.84	41.96	7.78	27.49
Food-relat. indust.	14.88	1.76	20.67	0.58	32.62	8.60	10.11	6.66

Definition of manufacturing (broad).

Export Coefficient. $X = X/GPV$ (gross production value).

Import Coefficient. $M = M/GPV$

Source: Preliminary figures from the Joint ECLAC/UNIDO Division.

This greater participation by agroindustrial exports with respect to the rest of the industrial sectors is the result of a number of converging factors. The first is the existence of a series of agroindustrial export "enclaves," referred to above, and the second is a natural process of developing and building up comparative advantages. The course of this process responded, in a sense, to a set of macroeconomic policy signals that favored domestically oriented production. Finally, what could also have influenced the greater participation of agroindustrial exports is the consolidation within the sector of large domestic corporations which took advantage of the facilities and incentives that governments established in the mid-1970s to promote industrial exports.

As to agroindustrial imports, it can generally be said that their level is very low, with the possible exception of the Caribbean countries. In cases where food products are purchased abroad, they are imported in a raw state and processed in the country. Imports of machinery and equipment for the food industry, as well as industrial inputs for agriculture, are significant and have an important place in imports of manufactured products as a whole.

Finally, it is essential to consider the highly restrictive nature of the industrialized countries' markets, which have placed all kinds of tariff and non-tariff barriers in the way of agroindustrial products. The complexity of those barriers have increased proportionately with the degree to which products are processed, presenting an absolute disincentive to our countries' progress toward industrially more complex forms of production. If, in addition to this factor, which has played a basic role in restraining the development of export-oriented agroindustry, we consider the crisis in the international markets, we find an especially negative environment for the development of agroindustries, although the problem is no worse for any other industrial product that the region wishes to export to the industrial countries.

In Uruguay, food agroindustries in 1978 earned 24% of gross industrial earnings, while their share of industrial exports stood at 32%. The export coefficient of food agroindustries changed significantly: from 19% in 1979 to 30% in 1985. Food industry imports, for their part, did not exceed 6% of industrial exports (Reig, 1985).

In the case of Paraguay, food agroindustry accounts for 36% of industrial production, while agroindustrial exports constitute 42% of total exports (Ayala, 1986).

In Argentina, the food, beverage and tobacco agroindustries in 1984 accounted for 24% of production in manufacturing, while in the same year agroindustrial exports represented 68% of industrial exports and 43% of total exports (Gargiullo, 1988).

Agroindustries and Production Dynamics

Agroindustries comprise an essentially anticyclical group of activities. In periods of expansion they grow more slowly than other industrial sectors, and during recessions they decline less than the average. This behavior can be explained basically by the type of goods they produce.

A characteristic feature of the growth of agroindustrial activities is their buffer effect on industrial cycles. This type of food product has low income elasticity as compared with the average for manufactured goods as a whole. In general, it can be said that capital goods tend to sharpen the cycle, while foods and agroindustrial goods tend to soften it.

In Mexico, average growth for the manufacturing industry during the period of expansion from 1975 to 1980 was 40%, while agroindustries grew 29% during the same period. The period of recession from 1982 to 1984 shows exactly the reverse; manufacturing fell at a negative rate of 5% and agroindustries at only 0.9% (Levet, 1986).

As long the growth of agroindustrial activities is essentially determined by food products, and production of the latter is basically oriented toward the domestic market, the capacity of agroindustries to serve as the thrust behind economic growth will be considerably diminished. This statement merits further comment. One of the significant activating effects of the production of finished products, which agroindustries produce in the majority of cases, has to do with the demand for capital goods and equipment. The multiplier effects of investment are decisive in explaining the pull effect of industrial production. Agroindustrial production in many of the countries of Latin America and the Caribbean "transfers" those multiplier effects abroad by importing the machinery and equipment required by the food industry. Thus, many of the potentially activating effects of agroindustries are diluted. Moreover, as long as a significant percentage of agroindustrial production centers on domestic demand, the sector itself cannot aspire to growth greater than that of the domestic market, and more serious still, cannot aspire to lead that growth. From that perspective, the search for international markets is indispensable.

Agroindustry and Participation of Foreign Companies

Foreign investment in the region's agroindustries is considerable; that participation, however, does not differ greatly from its participation in industry as a whole. The phenomenon of transnationalization affects agroindustries not only because of direct participation, which is highly significant in a considerable number of products, but also because of the strategic configuration of the region's "target diet" and because of its role as middleman in agroindustries.

This topic has been widely discussed in the last few years in various Latin American countries (see an interesting survey of that literature by Lahera, 1986). As stated in the introduction to this document, an analysis of the transnationalization of the food system was one of the topics that

attracted the attention of specialists in the field of agroindustry. Without exaggerating, it can be said that an analysis of the transnationalization of agroindustries in the region was carried out before an analysis was made of agroindustries themselves. Partly on account of this, some aspects of the subject are not altogether clear. In particular, two aspects connected in different ways with foreign companies are worth pointing out. On the one hand, there is a notable transnationalization of food consumption habits in middle and upper-middle sectors of society in Latin America and the Caribbean; on the other, there is also considerable direct participation by foreign companies in agroindustrial production (Fainzylberg, 1983).

The phenomenon of transnationalization of diet is of much greater consequence than the presence of foreign companies. To the extent they can, Latin American societies tend to imitate consumption habits in the United States. These habits affect the composition of goods significantly, but from the point of view of this paper, the adoption of U.S. eating habits by our societies is a highly significant issue.

United States eating habits must be taken into account for understanding the bias being taken in diets in Latin American countries. This is particularly so as regards the growing consumer demand for red meat in Latin American economies. In this respect, it is illustrative to analyze what happened with regard to the demand for meat when the Cruzado Plan was launched in Brazil: repressed demand for meats was so great that in a few months Brazil went from being one of the world's chief meat exporters to being one of the principal importers.

Diet in Latin American countries is one of the basic indicators for understanding the make up of its agroindustries, and the transnationalization of diet has tended to produce a fairly similar agroindustrial development pattern in all the countries of the region. That homogenization of "target diets" in Latin America has created certain structural barriers in terms of access by the population, since most of these countries do not have the physical resources to cover the energy costs of that diet, if it were desirable to extend it to the whole population (Schejtman, 1983).

The other key issue in analyzing the participation of foreign companies in Latin American agroindustries is those companies' control over strategic agroindustrial complexes such as poultry and vegetable oils in a number of important countries in the region. The studies on this topic were oriented by R. Vigorito from ILET (Mexico), with national studies such as Muller (1980) and Gonzalez Vigil et al., (1981). In such cases, foreign companies control key aspects of those complexes. In the case of poultry meat, control is exercised through ownership of the animals' genetic lines. Participation by foreign companies in these agroindustries is crucial, first, because these activities are especially important to the diet of the population and second, because of the astonishing growth rate of same.

In addition to foreign companies' control of agroindustrial complexes of a strategic nature, there is also another type of participation by foreign companies in fast-growing agroindustrial products which make up what could be called "modern" or highly differentiated products. Such is the case with all

types of instant coffees, packaged cookies, preserves, chewing gums, breakfast cereals, etc. These products are essentially associated with advertising and, in general, are growing much faster than the average for agroindustries. In most of the countries, this type of product tends to be the principal point of contact of the low-income population with agroindustrial foods.

Mexico is one of the countries where the transnationalization of agroindustries has been most widespread. With regard to participation by transnational corporations in the production of highly "differentiated" foods, in 1975, foreign companies controlled 93% of instant coffee and tea production, 88% of chewing gum production and 75% of production of snack foods, etc. (Arroyo et al., 1975).

Where exports are concerned, the role of foreign companies in agroindustries does not differ substantially from their role in other industries. Foreign companies entered most countries in the region with the aim of supplying domestic markets. All the countries wanted their own industries; they were all seeking import substitution, and foreign companies designed their strategies to suit the overall requirements of each country. In the early 1960s, great store was set on industrial production per se; international markets were not one of the objectives of industrial production. This helps to explain why foreign companies orient the bulk of their production toward the domestic market, and why their participation in exports is so insignificant.

In the most recent successful Latin American export experiences (e.g. Brazil and Chile), foreign companies did participate in the marketing phase, but not those companies that play an important role in the countries' installed agroindustries.

Agroindustry Disconnected from Primary Production

The food diet that became widespread in Latin America defined the features of agroindustry, in some cases almost beyond the capacity to supply raw materials. Agroindustries that process wheat and beef are two examples of disconnection in the agriculture-industry linkage. In these cases, agroindustrial activation is not always possible and does not necessarily involve agricultural activation.

One of the region's main food products is wheat flour bread. Wheat has become more and more a part of the diet, but there has been no comensurate growth in primary production of wheat. This gap, which is inevitable in countries that do not have the ecological conditions for producing wheat, has been overcome in some countries by means of Program PL 480, which continues to operate in Central America and Bolivia. In the remainder of the countries, especially the Andean countries where wheat production is difficult, the situation is complicated by a greatly expanded and highly inelastic domestic demand; conversely, supply is very restricted and sometimes even nonexistent. The negative influence of these cases on the trade balance is obvious. Agroindustrial dynamism, for its part, filters out to the exterior through imports.

Between 1945 and 1950, Peru was importing 150,000 tons of wheat. At the beginning of the 1980s, it was importing 900,000 tons of the same product. The wheat produced in Peru is less than 1% of the wheat processed in flour mills (Fernandez-Baca et al., 1983).

In 1970, Ecuador imported 70,000 tons of wheat, a figure which rose to 291,000 tons in 1982. In 1970, per capita wheat consumption was 49 lb. a year; in 1980, this figure rose to 83 lb. (Chiriboga, 1985).

In the majority of countries, the beef agroindustry also shows considerable disconnection from the primary sector. In this case, however, the source of that disconnection is the spread of a target diet that does not correspond to the population's real possibilities of access, in view of product supply. Beef agroindustry basically targets middle and middle-high income sectors and the chain of production in many of the countries has been organized according to that pattern. This diet, with its strong focus on red meats, can only be sustained with a development pattern that excludes certain sectors of society. The increase in real incomes in the region has not been expressed in greater per capita meat consumption, since production has been unable to keep pace with those higher incomes. In almost all the experiences studied, a strong presence of financial intermediaries has been observed: wholesale cattle suppliers in Chile, butchers in Argentina, middlemen in Mexico, etc.

As in the case of wheat, the effects of agroindustrial dynamism filter out to the exterior. In this case, agroindustry has an enormous potential demand, repressed by low incomes. This agroindustry has not been able to activate beef supply, nor has it influenced demand in such a way as to adapt it to some other type of supply. Disconnection is expressed by a relatively static situation in which beef consumption is limited considerably by prices. The meat agroindustry tends to "imitate" the behavior patterns of its counterparts in the industrialized countries; its production is concentrated on a small segment of the population with high incomes.

Agroindustry and dynamic export nucleuses

In recent years, there have been a number of successful agroindustrial experiences related to dynamic production and penetration of international markets. In general, these are specific experiences which, although highly important, cannot be viewed as part of a general trend in agroindustry.

When reference is made to the potential offered by agroindustry for Latin American agricultural production, traditionally this has referred to specific successful cases, which have been export-oriented and have sparked vigorous processes of agriculture-industry linkage, while at the same time sharply boosting production.

Hypothetically, it can be argued that this type of dynamic export nucleus has occurred in every country in the region. In some cases, these export booms are not the result of a logical process of growth away from natural

advantages and toward acquired advantages, but rather to changes in international demand which have tended to confirm the "mining" or "extraction" pattern (Llach, 1988).

Llach's comment refers specifically to the case of vegetable oil exports in Argentina. In just a few years, this agroindustry has produced the country's chief export, but there is no sign of any associated developments that could be linked to the vegetable oil nucleus. A more thorough analysis should be made of other experiences of modern export nuclei that could fall into that same category.

In other cases, however, dynamic export nuclei are closely associated with foreign companies which are involved at the marketing stage, but which have exerted a tremendous influence on local production. This category could include, at least partly, the case of Chile and that of the orange production complex in Brazil.

There are other cases, however, in which the dynamic export nuclei are made up of domestic companies that have converted part of their activities, aiming them at the international market. In these situations, the exporting companies coexist with sectors in crisis and with other companies that are barely surviving the crisis in their domestic markets (the case of Argentina has been dealt with extensively by Jacobs et al., 1988; little documentation exists on the case of Brazil, but information was obtained from experts in the field; for Chile, the study by Furche et al., 1987 was used).

Agroindustry and the Processes of Conversion of Production

Since the early 1980s, the economies of the majority of the countries of the region have been immersed in intensive processes of conversion. What is commonly known as macroeconomic adjustment refers exclusively to the fact that economies have been forced to transfer their financial surpluses abroad, reversing the traditional direction of international foreign-currency flows. Within the framework of this "adjustment," significant changes are taking place in the structure of industrial production, and that process affects agroindustries.

Economic literature on Latin America in the last few years has basically concerned itself with two topics: foreign debt and the macroeconomic adjustments being carried out by countries to comply with commitments arising from the debt. It so happens, however, that the adjustment referred to has redefined a group of variables that are crucial to the operations of the industrial sector. First, there is the exchange rate. In most of the countries, there has been a steady rise in the rate of exchange, which is no longer subject to the traditional fluctuations of the stop-and-go policies of the 1960s. Then, the external market was viewed as a possible objective, since exchange rate stability made it possible to plan operations with some certainty. Second, real wages have dropped considerably and have not recovered, at least in most of the countries. Industrial labor in Latin America today is very cheap by international standards; and even cheaper if we consider the levels of training achieved in the region's principal industrial zones. Low real wages are a second vital factor in the conversion of

production in the region: on the one hand, because wages are a decisive component in industrial production, and on the other, because real wages' movement has strongly conditioned the expansion of the region's domestic markets.

Together with the exchange rate and real wages, the financial crisis is another decisive factor in the process of conversion of production. Traditionally, Latin American industry had access to various subsidies, through either taxes or credits. In recent years, both forms of subsidies have been in decline; moreover, the public sector's purchases from domestic industry have been considerably restricted.

These modifications in the rules of the game of the region's economies unleashed a crisis in industry which can easily be seen from an analysis of developments in the manufacturing GDP during the first five years of the 1980s. There was also a parallel process, much less apparent at the global level, of emergence of new companies or of upgrading of old companies that realized that in order to survive the crisis they would have to grow more than their competitors and eventually gain access to foreign markets.

This type of "positive" or "forward-looking" reaction was analyzed under the previous heading when dynamic agroindustrial exporting nuclei were discussed. However, the conversion of agroindustries has generated not only positive and "forward-looking" reactions, but also a number of situations in the region where conversion is a challenge to which a practicable response has not yet been found.

An example of an agroindustrial sector facing the need for conversion is the sugar industry in many of the countries of the region. In general, this agroindustry has come to be a problem for the State, which had taken charge of an non-viable production system. The levels and types of State intervention vary from country to country, but in most cases governments fix sugarcane and sugar prices and authorize the export of surpluses. In almost all the cases, such intervention implies a high financial cost for the State, without any apparent change in production.

In terms of prospects, it is difficult to imagine a future that does not involve major conversions in countries with sugar agroindustries in crisis. The conversion of an agroindustry as important as sugar requires an enormous mobilization of financial resources which are currently unavailable in the region, making the situation even more difficult.

International markets, for their part, are in a continuous process of change, and the rules of the game keep changing for our economies. In general, there is no clear trend that lets us see a little beyond the series of difficulties and restrictions and the intensification of competition in different markets for agroindustrial products. These conditions, however, are sufficiently disturbing when combined with very moderate growth projections in industrialized economies, that they must be mentioned when the need for agroindustrial conversion is discussed. In general, Latin American agroindustry, which is heavily oriented toward the domestic market, has not assimilated the new challenges that the international market has posed.

The Public Sector in Agroindustry

Despite their importance, agroindustries have not been assigned to any specific area of government in most countries in Latin America and the Caribbean. Agroindustry appears to be situated in an area which "belongs to no one or, by belonging to all, also belongs to no one."

In Latin America, responsibilities have been divided among the bodies that design and execute economic policy along sectoral lines (industry, agriculture, transport, etc.) and agroindustry has been considered as just one more industrial sector. Therefore, in no case have the specific areas referred to in this paper been dealt with. Nor have ministries of agriculture included agroindustry as part of their field of competence, despite the obvious fact that many agricultural products would not be sold were it not for agroindustries.

If we analyze the chain of production in an agroindustry such as poultry meat, for example, we can see how different departments within ministries of agriculture are involved in poultry raising, but not in the processing stage, where the ministry of industry becomes responsible. Subsequently, at the distribution and consumption stage, ministry of health authorities control product quality. This approach, which can be called sectoral "segmentation," is fairly typical of the distribution of areas of action between ministries of industry and agriculture. There are very few known examples of shared responsibilities that take into account the complexity of the situation in the countries.

Such problems with jurisdiction were not an obstacle for most industries, nor for the agricultural sector, as most of its production was sold as fresh produce or exported without processing. Difficulties began to arise in planning agroindustrial policies aimed at recovering the potential of linkages between agriculture and industry.

There is a very illustrative point in this regard. At the national level, most of the countries have neither policies nor instruments for action specifically designed for agroindustries. Nevertheless, at the provincial and regional level, some interesting initiatives have emerged, which, even if not yet in effect, have at least been proposed. The explanation for this differential behavior may lie in the "rigidity" of ministerial jurisdiction at the national level. At the provincial or regional level, the authority of a governor greatly limits "jurisdictional" conflicts.

In any event, whether agroindustry should come under the agencies connected with agriculture is still under discussion. IICA's response aims to strengthen the presence of the agricultural sector and of the agencies involved in agroindustrial development; not in order to "dominate" the field, but rather to promote all actions and initiatives aimed at encouraging agroindustries as a means to strengthening the agricultural sector.

GUIDELINES FOR THE DESIGN OF AGROINDUSTRIAL POLICIES

This is a somewhat atypical chapter in the sense that it does not set forth a list of policies, but rather tries to suggest a new approach to the topic of policies. Latin America has changed. What is more, we are still in full process of change, and in this context, it is necessary for us to design and implement new policies to mitigate or eliminate the effects of the crisis on society. This section deals with agroindustrial enterprise agents and the search for new policy instruments to encourage the development of an agroindustrial model which, while activating the region's agroindustrial production, leads to more equitable forms of income distribution. Therefore, in the first section, it is important to point out briefly the limitations imposed by the economic crisis. In the second section, we analyze the question of agroindustrial entrepreneurs; this involves a discussion of how to link them to the different policy measures. In the third, the issue of markets for agroindustrial products is discussed, and in the last section there are comments on the institutional framework needed to implement new policy instruments such as those suggested here.

Limitations Imposed by the Economic Crisis

In recent years, Latin American governments have realized that the economic crisis is of a structural nature and involves its pattern of development, which is questionable even if the restrictions imposed today by the foreign debt were overcome. This diagnosis is valid in most of the countries of the area. The most telling manifestations of the crisis are:

Loss of production dynamics. In the last few years, per capita production in the region has fallen off in some years and has remained stable in others. The process of capital accumulation has deteriorated considerably, which is expressed in the drastic drop in the net investment/output ratio in most of the countries of the region.

Drastic deterioration in the living standards of sectors with the lowest incomes and a marked widening of the income gap between "poor" and "rich" in the region. If the region had income distribution problems in times of expansion, now, in the context of a recession, those problems have worsened considerably.

Widespread financial crisis, intensified to a large extent by the foreign debt crisis, since in the majority of countries the State is responsible to creditors for foreign debt. This financial crisis has also diminished the State's ability to extend basic services to the poorer sectors of society.

The crisis in the region has been approached with very homogeneous measures in most of the countries: fiscal adjustment and external adjustment aimed at solving the fiscal deficit, thereby increasing foreign exchange surpluses to permit payment of the foreign debt, or at least interest on the debt. Almost eight years after the onset of the crisis, the results are notoriously poor. The countries made the adjustment to a lesser or greater degree, reoriented a large part of their output for export, reduced their imports, and lowered the fiscal deficit. Nonetheless, their foreign

commitments increased instead of diminishing, the domestic market shrank and the economies became seriously destabilized (with high inflation rates and falling investments).

Paradoxically, the debate in the region on economic policy continues to be dominated by those who think that the "adjustment proposal" is correct and that it is a question of steadfastly continuing with it until results are achieved. The fact that this type of "proposal" dominates the debate has important implications for the discussion of alternative policies. In the first phase, this is because the legitimacy of State intervention in the economy is being increasingly questioned. Today, for example, the policy of subsidies is one of the paradigms of what "countries should not do" although it is well known that at certain times subsidies can play an important role in promoting the development of a specific activity. The free market system is the mechanism that the region should resort to; any form of State intervention would be interfering with its freedom of operation. In that regard, there is strong resistance to State initiatives to design and implement policies. This is in addition to the fact that in some countries the State's operating capacity has deteriorated considerably because of the dismantling of much of its technical infrastructure.

Second, the predominant view of "orthodox adjustment" has led to a need to generate external surpluses to such an extent that public agencies pay attention to little more than exportable goods. According to the orthodox approach, production oriented toward the domestic market is not an objective to be proposed.

Third, the topic of equitable income distribution is no longer dealt with in most studies on orthodox adjustment, which make up the vast majority of analyses under discussion today.

In proposing an agroindustrial development policy, it is essential, from the outset, to take into account the restrictions imposed by the context, as regards prevailing thinking, public opinion and the political approach to what is proposed. Such considerations are included further on in this paper; this is an effort to anticipate some of the reactions the suggested policies could provoke.

The Agroindustrial Entrepreneur: Hub of the Development Strategy

The purpose of this section is to describe a series of important entrepreneurial agents to be used as the basis for creating a set of basic instruments that contribute to agroindustrial development.

Nuclei of Agroindustrial Activation

The adjustment process taking place in the region's economies has involved significant reductions in the size of production apparatuses in broad sectors of industry. Such a process, however, is not linear. In the majority of cases, faced with changing conditions in the economy (increases in the

exchange rate, liberalization of the economy, drops in real wages and reduction of the domestic market, promotion of exports and other features of orthodox adjustment), existing companies with less capacity for change began to be displaced by new companies already playing by the new rules of the game.

This phenomenon of conversion has occurred in many agroindustrial sectors. New companies that have emerged have production in line with today's market, state-of-the-art technology, and highly favorable investment financing schemes, basically oriented toward foreign trade, but with only part of their output earmarked for the domestic market.

These companies are in many cases dispersed throughout the region and sector, and they constitute what we call nuclei of agroindustrial activation. The first task in designing an agroindustrial activation strategy is to identify those nuclei. In some cases, they will be new companies, in others, longstanding companies which have been able to adapt to the changes in the rules of the game.

Once these dynamic companies have been identified, the growth potential of their sector of activity must be analyzed. In order to design a policy for encouraging the development of a specific agroindustrial nucleus, a prior evaluation must be made of domestic and international market potential. In this effort, the opinion of entrepreneurs will be of fundamental importance. Where it is found that markets do not restrict the sector's expansion, it will be necessary to analyze what type of instruments should be implemented to activate the growth of the agroindustrial nucleus.

Such policies may be of a financial, commercial or fiscal nature or of a type commonly used in the country in question. In any event, three fundamental factors should be taken into account. First, the competitiveness of the production lines that are to be stimulated; the restrictions referred to above are too demanding to justify the stimulation of sectors that cannot compete internationally. In cases where there is a process under way with the potential to become competitive, a timeframe for this should be clearly specified.

Secondly, the pull effect on local primary production should be activated. There are many experiences where agroindustrial growth did not transmit that pull effect to agricultural production; thus, the potential of agroindustrial development with appropriate linkage to basic production was limited.

Finally, the incorporation of technology into the industrial sector should be promoted, but in such a way that technical progress is also spread to the agricultural sector. There are known experiences in Latin America where the agroindustrial sector injected technology into agriculture, resulting in sustained growth of the productivity of the final product and at each step in its production.

Potentially Dynamic Companies Facing Difficulties in Converting

Another segment of entrepreneurs that can serve as a basis for an important set of agroindustrial development policies is those who are in activities/sectors with good market opportunities, but which face difficulties in taking full advantage of them. Generally, the most common cause is financial difficulties. The considerable increase in interest rates, and their instability when combined with unstable markets, left many companies unable to function profitably. Therefore, it is important to identify companies in potentially dynamic sectors, but which face difficulties in activating their production. In such cases, instruments should be designed that assist in the companies' conversion, and policies aimed at expanding and increasing actions of this nature should be implemented.

Transnational Corporations

In Latin America, policies related to the operation of foreign companies generally place emphasis on control, supervision of their activities, and the establishment of systems of quotas for the delivering of profits, etc. Those policies were not altogether successful in controlling these companies' activities, nor in assessing the advantages of the activities of these companies, by sectors of activity.

Foreign companies play a very important role in the region's agroindustries, particularly the food agroindustries. It would be worthwhile to explore the possibility of developing specific policies for these companies in order to bring about changes in some aspects of their internal operations. In particular, it would be advisable to negotiate with them that a percentage of their production be exported and, thus, make use of their international networks. At the same time, it would be very interesting in some cases to propose joint ventures with agricultural or industrial producers, involving the installation of new forms of technology.

What is not possible is to propose an agroindustrial development strategy without defining a specific set of instruments for a segment as important, in quantitative and qualitative terms, as that of foreign companies. As has been seen, these companies represent at least one-third of the region's agroindustrial production and control much higher portions of the more "modern" or differentiated production lines, which also are the most dynamic in terms of domestic consumption.

Creation of New Agroindustrial Enterprises

One of the most oft-repeated comments in analyzing the region's agroindustrial conditions is in connection with the shortage of agroindustrial entrepreneurs. Evidently, the countries of the region suffer from many shortcomings, and even more in the context of the crisis, but the lack of entrepreneurs and enterprises is an absolutely crucial structural deficiency.

The creation of new enterprises is a topic that merits maximum attention, even in industrialized economies such as those of Italy or France. Those countries have designed systems which systematize small-scale investment and

development projects and which outline the characteristics of the entrepreneur who might undertake the project. In addition, "incubators" have been established for developing small companies. These are organizations that provide assistance in administrative, legal and technological matters to the "new entrepreneurs" throughout the establishment and consolidation phases.

The financial resources for this type of undertaking normally take the form of risk capital. There are good opportunities for obtaining this type of credit in the international market, basically from aid agencies.

"Recruitment" of potential entrepreneurs should be encouraged at the postgraduate university level, in technological development institutions connected with agriculture and agroindustry, and at the public sector level in general.

Markets for Agroindustrial Products

A preliminary analysis of international markets gives rise to some important reflections: first, the marketing volumes of a vast range of products are so enormous that for most of countries in the region it would not be difficult to detect "niches", or opportunities for placing products. Second, those "niches", or opportunities, vary considerably as to the profitability they offer; it should be borne in mind that it is possible to place products, but prices do change. Third, the restrictions placed on processed goods decrease as the degree of processing decreases; it is not easy to penetrate with processed products the markets of industrialized countries. In other words, it is difficult to progress beyond unprocessed products, because international markets place obstacles in the way of processed goods. This does not mean it is impossible to do so; but it is necessary to plan strategies to penetrate and gain a foothold in very competitive markets with restrictions on the more highly processed goods.

In this context of changing international economic circumstances, in which markets change not only according to conditions of supply and demand, but also to discretionary movements in the countries' trade policies, the Latin American region should propose a specific policy for those markets.

First, it is important for systematized international information to be available so that producers can follow price cycles, permitting the potential entrepreneur to obtain information on price trends. This information should focus on countries that promote agroindustrial development strategies. To that end, it is necessary to establish information systems geared to the business sector, since the aim is to influence that particular sector. The information should also be used by the public sector, with the object of constantly incorporating the new developments taking place in international markets into the sector's efforts to promote agroindustries. In order to compile this international information, the countries should develop "marketing intelligence" mechanisms, available today in major international consultancy firms or their branches in Latin America. Another possibility that should be analyzed is the creation of Latin American market information

networks to place the most up-to-date information, not only on prices, but also on new trends, tastes, contracts, and policies implemented by importing countries, etc., at the disposal of certain groups of countries.

A second important topic is joint ventures among the countries of the region. Not long ago, Brazil, Uruguay and Argentina signed an integration agreement in an attempt to go beyond experiences such as ALALC or ALADI, which have met with little success. Evidently, those experiences have been somewhat more successful at the Central American and the Caribbean levels, but the successful aspects of those accords should be added, and the guidelines for the agroindustrial development strategy be woven around them.

Finally, a topic that should not be ignored in the discussion on markets is that of the demand created by the State through minimum or basic nutrition plans. Various countries in the region have these kinds of programs, in which the State periodically acquires large quantities of foodstuffs from the agroindustrial sector. The demand this creates in the sector could be effective in inducing certain developments in the food production sector. As far as we are aware, this type of subsidized food distribution policy has not been used to induce specific kinds of behavior in the area of production.

In proposing these basic market guidelines for agroindustrial outputs, it is evident that a strategy for activating agroindustries should center on the specific agents, the entrepreneurs, but with strong public sector support with regard to systematized information on markets and their changing conditions. Otherwise, it would be difficult to consider increasing the number of agroindustrial entrepreneurs connected to the international market, not only as net exporters, but also as efficient importers of technological inputs or machinery.

The Institutional Framework for the Agroindustrial Activation Strategy

Agroindustries in most of the countries of the region find themselves in a "no man's land" as regards responsibility on the part of the ministries of industry and agriculture. It would be unrealistic to propose institutional reforms as a prerequisite for implementing a strategy of agroindustrial activation in the region.

For the purpose of discussion, it is suggested that each country should entrust coordination of the strategy to the institutional sphere that affords maximum efficiency and flexibility in the development of necessary actions. Coordination of the strategy for agroindustrial activation should seek the most appropriate ways to make use of policy instruments currently aimed at more general objectives, but which could be refocused toward agroindustries. Such would be the case with policies for technological development, export incentives, promotion of organization, regional development, tax exemptions, etc. Correct systematization of the instruments currently in force in the majority of the countries could lead to the surprising conclusion that with very few additional financial resources, important actions can be taken in the field of agroindustry. This will only require an enormous dose of creativity, efficiency and organization.

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APPENDIX 1

THE INTERNATIONAL AGROINDUSTRIAL PRODUCTS MARKET. GLOBAL INDICATORS

This Annex provides only a brief introduction to the topic of the international agroindustrial products market. In 1985, trade in agroindustrial products, excluding coffee and cacao, amounted to US\$254 billion, which represented 13% of world trade. The market value of a total of 53 groups of non-tropical agroindustrial products was eight times that of exports of cereals and oilseeds.

To give an idea of magnitude, total exports of Latin American manufactures in 1982 was US\$18 billion. It is estimated that of this total, 40% consisted of agroindustrial products (agroindustries' share of the value added is 26% and it is acknowledged that their share of exports is greater), a figure of US\$7.2 billion. This means that Latin America's share of total exports of agroindustrial products was approximately 2.8%, while its share of industrial value added of agroindustries at the international level in 1982 was 8%. Thus, Latin America has a much lower share of agroindustrial exports than of agroindustrial production. This is also true for the industrial sector as a whole, but it illustrates on the one hand the domestic focus of agroindustries, and on the other, the potential that can be tapped at the international level.

It is obvious that markets are not perfect and market penetration is not an easy matter. It would be erroneous to think that only the raw materials markets are subject to intervention on the part of the central countries. In 1985, the European Economic Community, Japan and the United States absorbed 70% of the total of agroindustrial products exported by market-economy countries. This trade is highly concentrated in a small group of large corporations which are the largest producers of foodstuffs in the world, and which base their growth dynamics on their capacity to constantly renew their supply of products, while also enjoying certain advantages over other companies that aim to compete for their markets. As we mentioned earlier, restrictive measures become stricter the greater the degree of processing. For example, in the case of coffee and cacao, barriers become progressively more difficult to surmount when these products are subjected to some kind of processing.

International markets are not easy for the "new arrivals"; it is necessary, therefore, to take every precaution when trying to capture them. An important aspect to consider is the dynamics of international markets: the more dynamic a market, the greater the opportunities for entry for a small marginal bidder, as is the case with the Latin American countries. Thus, for

example, the following 10 groups of products have experienced the highest growth since 1970: nonalcoholic beverages, prepared foods, leather products, processed oils, footwear, manufactured tobacco, chocolates, unprocessed fish, crustaceans and mollusks, wood products and prepared cereals. Imports of the following products dropped during the period 1970-1985: animal wools and hides; dried, salted or smoked meats; sugar and honey; crude timber; prepared and canned meats; cotton; and animal oils and fats.

The dynamics of those sectors have been changing over time and will continue to change in line with shifting tastes and with the strategies of the dominant companies in those markets. In any event, when analyzing market potential for a marginal producer, emphasis should be placed on sales strategy and the distribution of the product. Dynamism helps to facilitate entry into the industrialized countries, but other mechanisms to facilitate that entry should also be investigated, in order to overcome existing barriers and difficulties. The table that follows shows global import figures by groups of products. These figures give an idea of magnitude with respect to how the international market "is expressed."

With regard to ways to sell agroindustrial products, which is the same as speaking of ways to enter the markets of the industrialized countries, every country uses different mechanisms, with more or less State support, such as special exchange rates involving concealed subsidies, an international sales structure, etc. Association with foreign companies has also been widely suggested as an interesting mechanism for gaining entry into international markets.

To summarize these preliminary considerations regarding international markets, it can be said that the latter offer excellent opportunities for exports from Latin America; however, entering them is not a simple matter and requires a well-defined strategy. The marginal nature of the potential supply that Latin America can place on the international market facilitates this task somewhat, but it is not enough merely to produce efficiently. Foreign companies, many of which operate in Latin America, control a very significant percentage of world trade in agroindustrial products; this in a partly "captive" market. Therefore, some export strategies, for example those of Chile, have hinged on the installed capacity in the developed countries of foreign companies or of local distributors, - for entering those markets. Finally, it should be pointed out that it is the agroindustrial products which have undergone the most processing, such as prepared foods, that make up the bulk of the agroindustrial products market. Furthermore, since these markets are highly integrated and controlled by very large corporations, the barriers to entry are considerable. If Latin America wishes to reach those markets it will have to do so with a very well-defined strategy of association or of open competition with those corporations.

APPENDIX 2

This Annex contains comments on topics which are not dealt with in sufficient detail in the document.

Conversion

The term "industrial conversion" refers to changes made in the production sector as a result of structural changes in markets. Traditionally, when some sectors of industry disappeared or drastically reduced their participation in the production structure, this was not called conversion: it was called crisis.

In recent decades, however, these processes began to affect developed economies, and so-called conversion programs were then adopted, the object of which was to reduce the social and economic costs of shrinking markets and their impact on industry. Thus, for example, proposals were made to restructure the shipbuilding or the steel industry.

In Latin America, industrial development has in some cases generated sectors that are no longer economically viable today. Conversion of those sectors would involve allocating resources to them so as to alter their market position. In order to make this possible, prior conditions must be met:

- i. Diagnosis of sectors that do not have the capacity to adapt to changes in current market conditions.
- ii. Identification of a possible course for conversion: changes in production techniques that could imply significant cost reductions; changes in product features; changes in the organization of production or in the orientation of production flows (internal/external).
- iii. Definition of policies to make such changes possible.
- iv. Analysis of the amount of financial resources involved in this task and their expected overall impact.

In some countries of the region the conviction exists that certain agroindustrial sectors should be converted; such is the case with sugar production in a number of countries. In order to make this possible, in order to seriously think of converting stagnant agroindustries, elements such as those suggested here would have to be available. Otherwise, two equally disturbing risks exist: first, the squandering of significant volumes of investment which could possibly, with a few additional investments, be put back into productive operations; second, the squandering of very scarce financial resources by subsidizing inefficient operations in industries that are no longer viable economically.

Instruments for Industrial Reactivation and Conversion

Latin American industrialization was firmly based on a wide-ranging system of subsidies including tax exemptions, external tariff protection, subsidized credits, etc. These instruments for promoting development were rarely discriminatory in their support to the different sectors. Nor did they have specific time frames. The instruments became the "facts" of regional industrialization.

This scheme to support industrial development permitted the sustained growth of the region's industry, but did not create the conditions necessary for the sector to sustain growth by itself. At present, such support for industrial development is being questioned because of the financial costs involved and the lack of success that those sectors have had in penetrating the international market.

The inadequacy of the abovementioned support scheme, and the current economic restrictions, considerably narrow the margin for policy making. This point should definitely be taken into account when designing agroindustrial policies.

In addition to those difficulties, agroindustry never had its own specific policies. Agroindustries have been affected in some cases by agricultural policies, while in others it was industrial policy that had the decisive influence.

There being no specific agroindustrial policies, and at a time of widespread economic crisis which limits the margins for policy making, there is a need to create new instruments to support agroindustry. Those new instruments must be very specific. The repercussions of the crisis had different effects on different sectors, which shows the importance of relying on instruments that deal with sectoral specificities. The new instruments should be tightly controlled and have very well-defined time limits for application.

Policy specificity and follow-up and control tend to improve and make policy application more efficient, but do not change their fundamental role as instruments of promotion; the latter can be applied in the fiscal, financial, and tariff spheres, etc., but do not permit the implementation of a reactivation strategy that seeks to bring about structural change.

In order to establish a strategic agroindustrial development policy, the new instruments should attack a few key points. They should consider, for example:

- i. Forms of association and enterprise that take into account the complexity of international markets. It is very difficult for Latin America to export manufactured agricultural products. The barriers for agroindustrial products are substantially greater than in the case of raw materials, which is a serious obstacle to export-led growth in the agroindustrial sector. In this type of development, "institutional

forms" could involve joint ventures in other forms of association with foreign capital which guarantee the entry of food products with a certain level of processing into the marketing phase.

- ii. Technological strategies that consider the fact that the agroindustrial sector tends to "copy" or directly "buy" product or process technology, and that this limits the strategic possibilities for the sector to generate self-sustained growth.
- iii. Competitive financial instruments that allow the agroindustrial sector to reach international markets in competitive conditions as compared with other countries. In this regard, working capital costs, which frequently come into play in the later stages of processing, must be borne in mind.
- iv. Institutional changes that make it possible to make the agricultural and agroindustrial product chain more competitive and transparent. Currently there are significant bottlenecks, for example, at the first stage of industrial processing, which enormously limit opportunities for growth at later stages of manufacturing. Such bottlenecks can be overcome with some kind of incentive for investments that broaden the supply of those products, with a view to exporting.

Participation by Multinational Corporations

Multinational corporations control a very important segment of the agroindustrial sector in the region. Much of "modern" agroindustrial production has been developed by them. It would be difficult to expect a structural change in agroindustries without involving the multinational corporations, which are the leaders in international markets and in the technological issue at the level of products and processes. In this regard, it is important to discuss possible strategies for structural change with those companies.

Definition of Areas for Investment

In the crisis currently besetting Latin America and the Caribbean, regional and sectoral specificities are extremely important when defining areas for investment. There is, however, a group of decisive areas for investment that can be included under a global strategy for agroindustrial growth in the region. Two key areas can be singled out: technological development, and strategies for marketing and penetrating developed countries markets. These aspects represent very important external incentives for many sectors.

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**AGROINDUSTRY AS A SOURCE OF RURAL DEVELOPMENT:
ITS POTENTIAL IN LATIN AMERICA AND THE CARIBBEAN**

Carlos A. Benito *

✓
INTRODUCTION

The purpose of this essay is to explore the relationship between agroindustrial development and rural development in Latin America and the Caribbean (LAC). More specifically, it seeks to answer the question: How can agroindustrial development contribute to increasing employment opportunities in rural areas and, thereby, the real income of small-farm families?

Rural poverty in LAC can be explained by structural factors; any reflection on policies and programs to relieve it (in the short term) or reduce it (in the long term) should take into account policies and programs in addition to agroindustrial development. However, the IICA proposal to promote a new type of development, based on agricultural reactivation and capable, through linkages, of spurring agroindustrial development, offers a realistic approach to dealing with rural poverty (IICA, 1987). There are theoretical and empirical reasons for asserting that further development of agroindustries in LAC is economically feasible and politically viable. This is especially true after the collapse of the type of development prevalent up to the 1970s, and even more so due to the thrust of policies and programs implemented as a result of adjustment loans.

Although the causes of rural poverty and the means to reduce or alleviate it are specific for each region, it is useful from an intellectual standpoint to identify unifying principles. This essay has been shaped around two principal ideas: one related to the inefficiency of the development model that used to prevail in LAC; the other, to the need to take into account the role of small-scale farmers and disadvantaged workers in encouraging greater rural development:

The premise (not necessarily stated) behind the type of economic development prevalent during the last three decades held that the yield on investment in physical capital (equipment and infrastructure) was higher than the yield on investment in human capital. This premise should be revised in light of historical experience and economic analysis.

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Faced with the persistence of rural poverty and its deepening as a result of the financial crisis, small-scale farmers and the urban poor have begun to respond by developing an informal sector and temporary rural-urban migration.

The kind of development that provides growth with equity and freedom, and which is also sustainable is only possible through further development of human abilities and not simply that of the machines and equipment they use. In more practical terms, this would lead us to reflect on the merits of flexible production technologies, on the allocation efficiency of informal or underground economies, on temporary migration as an alternative in mobilizing resources for rural development and the relief of poverty, and on the capability of grassroots groups and voluntary private organizations to design and carry out rural development projects or activities.

In order to identify and establish, from an economic standpoint, the conditions for agroindustrial development that contribute to reducing rural poverty over the long term, our paper will first provide an outline of the rural development programs implemented so far and a brief evaluation of their effectiveness. The second section describes the type of development which gives rise to rural poverty and in which such programs are implemented in LAC, in particular the limitations of mass-production technology and of rent-seeking economies. Thirdly, we outline the response of small-farmers themselves to rural poverty: by increasing temporary migration and developing the informal economy. This is followed by an analysis of the merits and feasibility of flexible production technologies and the possible function of small and medium-sized companies in boosting growth and job creation. Subsequently, we analyze the criteria that are necessary for agroindustrial development to contribute to rural development. These ideas are illustrated by cases in which agroindustry has contributed to rural development in LAC. Finally, we conclude with an agenda for research.

THE URGENCY OF RURAL DEVELOPMENT

A majority of the population of LAC (around 60%) continues to live in rural areas, and approximately 60% of that rural population lives in conditions of absolute poverty (de Janvry et al., 1988). In addition to this phenomenon, large population groups live in poverty in urban centers, chiefly the result of rural-urban migration. Two major factors explain this rural and urban poverty: rapid population growth, particularly of the rural population, and limited access to economic opportunities. Notable among the latter are the small-farmer's limited access to land, credit and markets; rural populations with low levels of nutrition, health, formal education and

training; limited political power and consequently a low share of the benefits of public investment, and a weak negotiating position when faced with distorted price management. 1

Rural development strategies in LAC have sought to improve the well-being of the poorest groups of small farmers (de Janvry et al., 1988). In the majority of cases, the programs for those strategies were designed for the predominant type of development, that is, without attempting directly to change the social distribution of production assets such as land and human capital. Given such restrictions, which are perceived as being of a political nature, two major sources of rural development were identified: raising agricultural productivity on the lands worked by small farmers, and increasing employment opportunities outside of same. These are the two major sources of income for a typical small farm family: net agricultural income produced on the smallholding controlled by the farmer, and wages earned by family members working for other enterprises or family farms, whether they be of an agricultural, industrial or services-related nature.

Among the various rural development programs (RDP) designed and implemented during the 1970s were the integrated rural development programs (IRDP). In addition to trying to develop the two sources already mentioned - agricultural productivity and employment - in some cases the IRDPs provided social services such as potable water, health, food and housing. This third component, sometimes described as a basic needs strategy, was limited in reality to a social well-being or poverty relief component.

The most effective component of the majority of IRDPs has been the one designed to raise agricultural productivity, whether by technology transfer to increase yields (green revolution) or by the development of infrastructure (such as small-scale irrigation projects). The instruments normally used were agricultural extension services and credit adapted to small-scale farmers

1 The structure and functioning of rural economies have been fully described and widely analyzed during the past three decades (de Janvry, 1981). They range from the structuralist analyses and imperatives of the Alliance for Progress, which ushered in the agrarian reforms of the 1950s and 1960s (focusing on the social redistribution of land by political means), followed by research and programs designed to increase agricultural productivity (such as the green revolution and investment in irrigation), and programs to improve and increase the production capacity and employment levels of the poorest small-farmer groups (such as rural development programs, whether minimum or integrated packages).

(with the aim of raising productivity) 2 and public investment (in order to develop infrastructure). In the majority of cases, the sources of financing were external, particularly the World Bank, IFAD, IDB and various donors from Canada and Western Europe. Similarly, promotion of those projects tended to be of external rather than internal origin and corresponded to a short period during which "growth with equity" was an accepted criterion for project selection. The rural development programs financed by the World Bank during the 1970s can be considered an early form of structural adjustment with social well-being objectives; conditionality was incorporated in the type and location of projects and activities. 3

After the crisis of the 1980s, financial institutions such as the World Bank and IDB and national agencies such as USAID placed less emphasis on their support for IRDPs and reoriented their operations in LAC towards adjustment financing (immediate balance-of-payments disbursements conditioned to subsequent economic policy changes). 4

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- 2 A classic example of this approach is Mexico's Puebla Plan, implemented under the auspices of the CIMMYT; it represents the minimum-package type of rural development. This model has been duplicated fairly successfully in other regions of Mexico and in many Third World countries under the auspices of international agricultural research centers and national agricultural extension services.
 - 3 An example of this approach is the PRODERO project designed by the OAS for Honduras. This project included not only the objective of social well-being or poverty relief (which was to dominate the majority of IRDPs), but also, and more especially, development of the production base of specific small-farmer groups. One of the principal means for the attainment of that objective was to situate projects and activities in strategic locations. During the time of its implementation, PRODERO encountered the type of resistance and evasion now faced by the conditions of structural adjustment loans. This resistance and evasion are not isolated phenomena, but indicators of structural conditions (wealth and income distribution patterns, for example) which point to the need to investigate the countries' constitutional order.
 - 4 Adjustment financing is promoted by the IBRD, the IMF and, in certain countries, by USAID. It involves rapid disbursement of loans or donations subject to the condition that adjustments be made to policies and programs, at both the macro- and microeconomic levels, with the aim of maximizing surpluses in the balance-of-payments current account. The main motivation in the case of LAC is to aid in refinancing the foreign debt. It is worth pointing out that on a rhetorical plane, reference is made to the objective of economic growth; however, a detailed analysis of the instruments used, and the fact that such loans are not made to finance investments, indicates that the direct impact is on the balance of payments.

The agricultural productivity component of IRDPs is in fact one aspect of the agricultural strategy for rural development (Mellor and Johnstone, 1984, p. 533). Despite the relative success of agricultural projects for small-scale farmers, the greatest impact has been in terms of agricultural productivity, but with a negligible impact on increases in employment opportunities in rural areas. Increases in agricultural production achieved in this way have not succeeded in bringing about substantial improvements in the well-being of small farmers. Among the principal reasons for this are the small size of their holdings, unfavorable food price policies and the high growth rate of rural populations.

Among the options that have been mentioned for creating non-agricultural employment sources in rural areas are rural industrialization (World Bank, 1978; Mellor, 1976 and 1986) and public employment programs. One of the few experiences with industrial development in rural areas in Third World countries occurred in India, but it focused on the development of small-scale enterprises. No conclusive evaluations have been made of the effectiveness of that experience; the few that are available mention its poor capacity for creating employment (Little, 1987). In the case of India, mention is also made of the effectiveness of public employment programs where the labor force is used to construct infrastructure (Narayana et al., 1988). There have been isolated experiences in LAC that show the potential of agroindustry, craft workshops and work-for-food programs as sources of employment and income for small farmers with or without land (De Janvry et al., 1988). Nonetheless, from a global standpoint, the effective impact on employment and income for the majority of small farmers has not been significant in LAC. The reasons for this, mainly related to the types of development predominant in LAC, will be examined in the section that follows.

LIMITS OF MASS INDUSTRIALIZATION

The principal industrialization processes in LAC were launched in the 1940s to meet domestic market demand, in the context of the State-regulated economy; they tended to involve transfers of mass-production technology. This industrialization, in countries such as Argentina, Mexico, Brazil and Chile, in order to substitute imports, reflected politically induced "structural changes" which at that time were also designed to correct balance-of-payments disequilibria resulting from the 1930s world depression and the World War that followed. This adjustment reflected long-term objectives and was ideologically justified by the economic theories of those calling for economic independence. ⁵ This model and the "independence-type" rhetoric were rapidly adapted by the governing elites that favored rent-seeking economies over market economies (Krueger, 1974; Rodriguez, 1988). Under a rent-seeking

5 Among the most elaborate conceptual frameworks was the Latin American structuralist school, with its center-periphery theory of international trade: the proposition on the long-standing downward trend in the terms of trade of primary products with respect to secondary products, combined with wide cyclical price variations.

economy, public investment, macroeconomic policy and relative prices are instruments controlled by the government to assure the economic viability of certain types of enterprises or to follow a predetermined pattern of social income distribution. 6 The transfer of mass-production technology was dictated by the technological model prevalent in First and Second World countries. These are technologies designed to make standardized products with specialized equipment; equipment designed for specific products and processes combined with the use of skilled or semi-skilled labor (Sabel, 1987).

Although not all the countries of LAC embarked on their industrialization process for the same reasons, and even though some of them, such as Brazil, Mexico and Colombia, then channeled part of their industrial production to exports, while some others maintained an agro-exporting economy, this occurred within the same context of rent-seeking economies and transfers of mass-production technology.

The development model adopted by the majority of the countries of LAC implied unbalanced growth (Hirshman, 1958), and highly inequitable wealth and income distribution (de Janvry, 1981). The adjustment that began in the international economic order toward the end of the 1970s and the subsequent financial crisis (the foreign debt problem) that affected LAC, put an end to two decades of continuous growth and presented the need to revise the predominant development models. Part of the impetus for that revision was provided for with the "adjustment" and "stabilization" loans promoted by the IBRD and the IMF, respectively. Nevertheless, the structural adjustments demanded by those institutions, at both the macro- and microeconomic levels, were motivated primarily by balance-of-payments requirements (to solve short-term financial imbalances), and did not specify an alternative development model. In fact, such adjustments take place within the same framework of a rent-seeking economy where economic institutions are easily "adjustable."

THE SMALL FARMERS' RESPONSE TO RURAL POVERTY

Constrained by the structures that supported the above mentioned type of development in LAC and by their longstanding poverty, now aggravated by the crisis in that model and subsequent adjustments, small farmers have responded to rural poverty in their own way. Among their responses are increasing temporary rural-urban migration and the rapid development of an informal

6 At the microeconomic level, an entrepreneur protected by a government can maintain high returns with low risks by investing in "institutional changes" such as preferential exchange rates, import tariffs, low-cost food policies to keep wages low, subsidized credit, tax exemptions, government sales contracts, etc. In contrast, an entrepreneur in a market economy must deal with relative prices that reflect the relative shortage of resources and consumer preferences; his returns (normal and with low risks or high but with high risks) are obtained through investment in "technological innovations" and allocation efficiency.

economy in small towns and villages, as well as in the marginal zones of large cities. These two phenomena, which have traditionally been considered problems in rent-seeking economies, are, nevertheless, indicators of the economic potential of small farm economies and indicate two realistic bases for redesigning rural development and poverty relief strategies.

Faced with the limited opportunities of smallholdings and other enterprises in rural areas, the rural work force has responded with permanent or temporary migration to other towns, cities and countries. In this regard, the flow of unskilled rural labor to the United States, "el Norte," is significant, particularly from Mexico, Central America and the Caribbean. The simple economic logic of the vast difference between expected wages and the financial cost and risk to personal safety has motivated a mass migration, frequently of an illegal nature.⁷ Migration has given rise to a significant flow of funds sent home to the rural areas of origin (Mines and Massey, 1985). Remittances from emigrants has, thus, become a third major source of income for rural families, together with net agricultural income and wages earned outside the smallholding.⁸ In accordance with their own economic logic, rural families consume part of those remittances and invest part of them in housing construction, land purchase or improvement, or education of children and youth. The division of such spending between consumption and investment, and between investment in physical and human capital, depends on various factors, among which are culture (preferences) and relative prices.

7 There are numerous anthropological and economic case studies which confirm that small farmers allocate their resources in response to economic opportunities. The slow response ("traditional" behavior) identified by cultural anthropologists has diminished relative to exposure to information (dissemination by means of transistor radios and the return of migrants to towns), the lower cost of (or greater accessibility to) transport, and the development of irregular contract enterprises (e.g., the so-called "coyotes"). Faced with institutionally limited access to land and credit and with no local employment opportunities, a part of the unskilled work force has relocated to other cities or countries. Immigration as investment in human capital occurs when the current value of the expected wage flow in the city of destination (net value of the expected wage flow in the place of residence) is greater than the cost of transport (gross of the personal risks of illegal immigration and psychological cost of adjusting to a different culture). Social and armed conflicts in some regions or countries have created a cost for staying in the place of residence, which, in the perception of certain groups of small farmers, implies a reduction in the expected wage flow in that place.

8 This is in fact not a new phenomenon, nor is it exclusive to LAC. It was common practice among Mediterranean and northern European populations in the 1950s and 1960s. It also occurred as a result of immigration to Europe from Arab countries in the 1960s and 1970s.

This response to rural poverty - exporting labor services to other regions or countries - has led authors and social workers to consider it another potential path to rural development (Grindle, 1988). Programs are under way in the United States whereby, in addition to protecting the labor and civil rights of rural immigrants, efforts are made to raise their awareness and encourage them to use their savings in such a way as to create production capacity in their villages or towns of origin.⁹

Industrialization for import substitution in the majority of the countries of LAC was based on transfers of mass-production technologies. No attempt was made to build on the crafts and trades that already existed among their peoples; selected instead was the technology of modern, specialized equipment that could be operated by unskilled labor under the supervision of a small group of highly trained personnel.

Excluded by the State sector (through low public investment for rural development and distorted relative prices), with limited employment opportunities in the modern private sector, and subjected to their own population growth¹⁰, larger groups of rural and urban poor have increasingly developed their own economy outside the bounds of legal institutions (Annis and Hakim, 1988). A pathetic example is the economy of the newer neighborhoods in Lima, Peru. Large population masses that have migrated from rural areas or from other smaller cities provide their own services and produce goods that they "export" to the modern sectors, free of governmental regulations and evading taxes. The same phenomenon can be seen in the majority of the countries of LAC; for example, people affected by the Mexico City earthquake and those affected by the hurricane and floods on the coast are organizing their own reconstruction projects, since the government's contribution is limited due to the financial crisis.

9 A major part of these legal assistance, economic aid and education activities is carried out by a number of grassroots religious and political groups, or simply charities. Programs are also being developed to channel, document and evaluate these efforts, such as those of the California Institute for Rural Studies, based in Davis, California. There is no evidence as yet of the effectiveness of these projects or activities to educate rural workers at points of destination with a view to their return to points of origin.

10 The high growth rate of rural populations can be explained by technological factors such as the reduction in mortality rates, by cultural factors such as deficient family-planning information, as well as by economic factors. In regard to the latter, the difficulties encountered in reducing the population growth rate can largely be explained by the low value of men and women's time. This low value is an expression of the low level of investment in human capital. When the value of human work rises, raising and educating children becomes more costly, on the one hand, and new ways of life are made possible, on the other. These economic factors contribute to reducing the birth rate.

The rapid development of those informal economies shows the high earning capacity of human capital: in particular, the high allocation efficiency and high productivity of the trades of underprivileged populations. 11 This enables us to identify two sources for the relief, and perhaps the reduction, of poverty: elimination of the institutions of rent-seeking economies, which prevent existing human capital from generating their potential flow of real income; expansion of opportunities to invest in human capital, to increase the number of persons who already have trades and abilities that can be placed. To support this hypothesis, we can point to the experience of Italy, where the informal economy played an important role in the development of small-and medium-sized companies in the Third Italy.

TECHNOLOGICAL POSSIBILITIES

On the basis of the prevailing trend toward democratization in LAC, we see that a new type of development will have to include economic growth compatible with equitable income distribution and freedom of choice. In this regard, it is necessary to make the transition from a rent-seeking economy to an economy of decentralized resource allocation, such as the market, and also to investigate the possibility of transferring suitable, smaller scale and more flexible technologies.

The debate on technologies suited to smaller scale production systems is not new; 12 it was revived during the 1970s with the publication of the book by E.F. Schumacher, *Small is Beautiful* (Schumacher, 1978). The proposal for using "intermediate" economies, which are smaller scale, lower cost, easier to learn and more ecologically sound, was received with enthusiasm by the ecological movement and social movements interested in the welfare of rural

11 The hypothesis that peasants allocate their resources efficiently is not new; it was formulated and statistically proven by Chayanov in the USSR during the period prior to the collectivization of agriculture, and was formulated with respect to the Third World by T.W. Schultz in his classic book *Transforming Traditional Agriculture*. His examples, however, referred to peasants or small-scale merchants who operated in relatively slack economies. The novelty in the case of LAC is the response of rural workers and underprivileged urban groups to structural conditions and to the adjustments being made for solving the financial crisis.

12 In the case of the agricultural sector, the tendency toward replacing small family farms with large agribusinesses in the United States, and the collectivization of agriculture in the Soviet Union, were justified by the same empirical proposal that economies of scale exist in agricultural production. The forced collectivization in the Soviet Union during the Stalin era occurred after a lively theoretical debate in which agricultural economist A.V. Chayanov brilliantly defended the economic and social merits of small family farms. It took Russia half a century to recognize the merits of that hypothesis and begin its own structural adjustment: perestroika.

workers. Nevertheless, these ideas were also received with certain skepticism by other groups: small is beautiful, they said, but is small possible? The old argument was unearthed about the efficiency (and existence) of economies of scale that justified monopolistic capitalism in the First World and the collective farms and the State as producer in the Second World.

There is sufficient evidence today of the possibility of developing efficient small-scale companies using highly modern methods. A good example of this is the so-called Third Italy, which includes the regions of Ancona, Bologna, Florence and Venice. Enterprises there use flexible specialized technology for the production of specialized goods, with universal equipment: equipment with universal functions combined with the use of skilled labor (Sabel, 1987; Cortellese, 1988).

The sphere in which flexible specialization technologies can be adopted goes beyond that of small-scale companies; they can also be adopted by large companies with decentralized production organizations. The use of this type of technology depends on reliable social relations and programmable teams: supervisors depend on their subordinates to make decisions connected with production in the face of changing markets. An example of this is teamwork in large factories.

In LAC, there are also examples that show the possibilities and the merits of flexible specialization technologies. In the final section of this paper we describe the experience of a small agroindustrial enterprise in Costa Rica. Moreover, as Sabel points out, certain aspects of flexible specialization were necessarily used in mass-production factories in LAC: uneven growth in LAC prevented or made costly imports of spare parts for installed equipment or for the development of complementary service industries. Unsolved technological needs, coupled with the fact that many of these plants were not operating at full capacity, gave rise to the development of internal workshops for repairs, machining of parts and adaptation of lines of production.

The development and use of smaller scale production processes is, therefore, technically and economically feasible. However, their development involves substituting physical capital for human capital: using of more highly skilled labor capable of responding to market needs, rapidly adapting their equipment to produce new products or altering the proportions of the factors used. This characteristic (human capital intensity) points to one of the conditions for promoting industrialization for rural development.

AGROINDUSTRY AS A SOURCE OF RURAL DEVELOPMENT

Because of the origin of its raw materials and the nature of its production processes, agroindustry can be located in rural areas based on considerations of efficiency and not only of equity. This makes it a source of rural development which is not only socially desirable, but also economically viable. Consequently, in order to be able to identify specific agroindustrial projects that will contribute to rural development, a rural

development strategy should be established and such a strategy should be based on the realities of LAC and the accumulated experience of rural development projects (de Janvry et al., 1988).

We are considering here a rural development strategy along two lines: creation of employment capacity and development of urban services in rural areas, and creation of employment for temporary immigrants and improvement of their working conditions in urban centers. Under this scheme, remittances from immigrants and the training they receive in cities will serve as mechanisms to mobilize resources toward rural areas.

In this strategy, the development of small-scale agroindustrial enterprises in rural areas, on the one hand, and the development of medium-sized agroindustrial enterprises in urban or rural centers, on the other, have the potential to act as factors to boost growth and employment. In both cases, priority would be given to transfers of flexible specialization technologies. The first case would involve setting up rural enterprises that utilize family labor and hire local labor. In the second, agroindustrial enterprises would be organized to provide sources of employment to rural populations through temporary migration. In this stylized conception of rural development, there is room for other combinations that have already been tried; for example, the development of medium-scale agroindustrial enterprises that subcontract their supply of agricultural and dairy products from small-scale farmers.

The concept of small-scale agroindustrial enterprise is used here in a broad sense, ranging from the development of the capacity to process foods by small-farm families for their own family use, through processing and sale for a local market, to small agroindustrial enterprises of a commercial nature; also, the sphere of rural agroindustry includes the processing of foods, production of textiles and leathers, forestry activities and the production of services for agriculture. 13

To make a strategy such as the one we have mentioned more effective, in addition to actions at the national level, joint actions should be contemplated among the countries of LAC and between LAC, the United States and Canada.

13 In their proposals for rural development in LAC, de Janvry et al. classify programs into the following categories: rural farm development, agrarian reform and settlements, development of cottage activities in subfamily farms, and creation of employment in rural areas. Our analysis refers to job creation programs, but takes into consideration cottage activities, since the unifying element of our essay is agroindustry.

Actions in the Countries

- a. Human capital investment programs for rural inhabitants. The objective would be the development of resourcefulness.
- b. Programs for transfers of flexible specialization technology.
- c. Marketing programs (for end products) and contracting programs (for intermediate products).
- d. Programs for urban decentralization and development of cities in rural areas.

Joint Actions between Countries

- a. Migration policies and programs for rural workers.
- b. Training programs for immigrant rural workers.
- c. Housing programs for immigrant rural workers.

Human capital investment programs would have a broader objective than agroindustrial development and would include development of small-scale enterprises and training of labor for other industries and services having local or national demand. This would make it possible for agroindustrial enterprises in rural areas to be technically viable.

Contracting programs would enable small-and medium-sized enterprises to be integrated into an agroindustrial production network, and marketing programs would make it possible for companies to market their products on local, national or foreign final markets. These programs represent investments in organization to make rural agroindustries economically viable.

Temporary migration policies and programs are necessary to assure the mobility of labor, especially between countries within LAC and outside the region. Such policies and programs not only open up new sources of employment to rural workers, but also increase the competitiveness of agroindustrial enterprises located in regions offering higher wages, and eliminate periods of labor shortage. Immigration not only gives access to employment, but also, if well-managed, permits on-the-job training. The possibility of extending it to agroindustry and other sectors of production should be investigated. Legalization of temporary immigration between countries reduces the cost of investment for workers and the cost of control for immigration authorities.

Training programs for immigrants in the countries (or regions) of destination have development objectives: on the one hand, to try to raise the savings rate of immigrant workers and thus facilitate their return to their towns of origin. On the other, they learn to improve skills as human capital by teaching them trades and management capacity which can be used upon their return to their towns of origin.

Housing programs in countries of destination have the objective of social well-being and personal safety. Environmental conditions (as a component of present consumption) have an influence on the self-esteem and stability of families of immigrant workers, and thus on their capacity to work, save and invest.

Programs for cities in rural areas have the objective of sustained rural development. Such cities represent a way of developing the network of services needed for production and marketing (on the supply side) and also a type of sociocultural experience (on the consumption side).

Without these cities in rural areas, net income from "exports" of products or labor to the major urban centers tend to be used up or invested in those centers, which reinforces rural poverty 14.

Temporary immigration as a source of mobilization of resources for rural development is also an alternative for countries with large territories and populations such as Brazil and Mexico.

A program such as the one proposed involves high levels of investment. Nevertheless, the shortage of economic resources in every society imposes limitations on the number of projects that can be financed, and requires that they be placed in order of priority. Priorities can be justified in terms of equity, in terms of efficiency or in terms of the freedom of the individual. History has demonstrated the high returns on investments in human capital. Investment in human capital is not only efficient, it is also the best means of equitably redistributing a nation's wealth and guaranteeing individuals freedom of choice. Empowering the individual is the only known path to ongoing material advancement progress, to guaranteeing social peace and to making democracy effective.

With regard to financing for this type of project, we would like to underscore the growing ability of grassroots groups and voluntary organizations operating in LAC to mobilize resources (Annis and Hakim, 1988; de Soto, 1987). The experience of the Third Italy shows the contribution of private intermediary institutions such as churches, political parties and neighborhood associations in setting up companies. The experiences of Far Eastern countries such as Hong Kong, Singapore and Taiwan show the importance of chambers of commerce in contracts between United States firms and small

14 It should be stressed that rural populations in LAC still depend on trades and crafts, on economic organizations (e.g. markets) and on sociocultural activities (e.g. patron saint's day celebrations) which were established along with the cities founded by the Spanish settlers. The model of Spanish colonization, for example, was based on the founding of cities. These foundings followed clearly established norms for physical planning, organization of the public sector, security and justice, development of cultural life and organization of the economy.

local companies and workshops. The experience of the United States illustrates the function of voluntary groups, whether political, religious or simply altruistic, in providing conditions of legality and social well-being to immigrant workers.

Private sector participation is important not only because of its allocation efficiency, but also in mobilizing resources to finance rural development: its participants donate hours of high-cost human work in know-how and good will. Good will is one of the scarcest resources; nonetheless, it is one of the least replaceable inputs in organizing equitable institutions.

In any case, public sector participation will continue to be important since rural development and immigration are in the public interest. Also, sources of external financing, whether in the form of loans or donations, will continue to be significant in view of the financial limitations of the public sector in LAC.

TWO CASES OF RURAL AGROINDUSTRY WITH FLEXIBLE PRODUCTION TECHNOLOGY

There are numerous examples in LAC of small agroindustrial companies located in rural areas which are already using flexible production technology. In view of limitations of space, we will mention only two cases to illustrate the potential of flexible production systems in agroindustry. The first case also shows the importance of human capital in rural development.

Costa Rica:

A Small-Scale Food Processing Company

The company El Angel, located in Isla Bonita, near the Poas Volcano in Costa Rica, is an example of the role played by trained and motivated human resources in developing simultaneous production of a variety of foods and juices, using flexible production technology. This company, which functions internally as a co-partnership cooperative, also illustrates the capacity to create sources of employment and provide social services to a grassroots group whose entrepreneurial activity is guided by the criteria of financial feasibility and social responsibility in the allocation of resources. That is, two forms of human capital, training and good will, as sources of rural development.

The company operates four major technical production lines: vegetable or fruit pulps, fruit and vegetable slices, dairy products, and preserves. Each production line produces various foods and juices, according to Costa Rica's domestic and foreign market conditions. For example, the pulp line produces preserves, concentrates and pastes from guava, pineapple, strawberry, blackberry, green orange, maracuyá, tomato or other foods required by the market. The slices line processes pineapple and palm-hearts. The dairy products line produces custard cream, condensed milk, cajeta (sweet scalded milk) and candies. Custard cream is produced in different consistencies, depending on whether it is for final consumption or for industrial use;

similarly, condensed milk is produced in different flavors (strawberry, coconut, vanilla). Tomato paste is used to make ketchup. The company has also tried other products, adapting the equipment available to produce pickles and pancake syrups.

Most of the production is sold within the country; the rest is exported, especially to Panama, Puerto Rico and Guatemala. Within Costa Rica, around 50% of the production is sold for final consumption and around 50% for industrial use.

Aside from the partners, the company employs some 30 local workers, both male and female, who, in addition to their wages, are trained in food processing. About 95% of the raw materials is purchased from the area's agricultural and dairy producers. Most repairs are carried out by the company's own workshop.

In addition to production and marketing activities, the company's partners have carried out a considerable amount of social work and actions of a political nature to obtain government services for the area. One of their first activities was an adult literacy program, followed by the establishment of a medical and dental dispensary, and a housing construction program. They also provided leadership or administrative support for neighborhood activities aimed at supplying the area with potable water, electricity, telephone lines and paving for the main road. Furthermore, they provide agronomical assistance to the region's small-scale producers.

The company's development has followed a strategy of adaptation and learn-as-you-go. The first phase of development included the acquisition of lands and agricultural activities such as coffee growing. A loan was subsequently obtained from the Central American Bank for Economic Integration, which was used for the construction of a large structure covering an area of 2000 sq. meters. This made it possible to overcome the negative conditions of continual high rainfall and to gradually develop workshops and lines of production under cover of the structure. Since it is an area of mountain slopes with few flat spaces, the area covered what really amounts to various levels or floors. These levels were used to advantage for transport by gravity within production lines and to subdivide working areas.

The main production equipment has been purchased gradually, with the exception of a few small machines built in the company's own workshops. The partners adapt or interconnect them according to market demand.

The company did not set out with a specific market objective, but followed the strategy of adaptation and learn-as-you-go; thus, options were examined as they arose. At first, it was considered that the company should dedicate itself to export production. But in view of the high cost of labor

in Costa Rica 15 (and thus, of agricultural raw materials), especially in relation to Brazil (the main competitor), and of the fact that at present the area can only supply relatively small volumes of raw materials, production was reoriented toward the domestic market. This required highly diversified food production. Given the above strategy, in the future, the company could readapt production for export with a smaller number of products, for example, when local supply of agricultural inputs increases and cost per unit decreases owing to increased productivity, and when the company has further developed its sales network abroad 16.

Dominican Republic:

Dual-Purpose Cattle Breeding as a Flexible Production System

Demand for dairy products in the Dominican Republic, particularly milk and cheese, has grown constantly. However, local supply has not kept up with this demand, and imports of powdered milk have increased. The balance-of-payments problems faced by the country, particularly as a result of falling sugar and tobacco exports, have again brought up the need to produce more milk locally. The merits of a milk program will depend not only on its contribution to the balance-of-payments current account (freeing foreign currency for other uses), but also on its economic feasibility (efficiency) and its positive impact on rural development (equity).

15 At present (March 1989), the monthly cost of a rural worker in Costa Rica stands at around US\$45.00 (includes wages and social benefits). This amount is almost double that of Brazil, Bolivia and Peru. Taking as a reference Asia -a region whose conditions determine world costs of unskilled labor- the monthly wage of a rural worker in India is approximately US\$15.00. Added to the wages of the workers employed by El Angel (direct earnings plus government-provided social benefits) is the cost of the social benefits and the training supplied directly by the company. These are the conditions in a social democracy that requires companies to allocate their resources according to shared social objectives. It should be noted, however, in the case of companies where the partners are motivated by a sense of participation, that the benefits provided to workers in the form of services and training are perceived as something that the partners profits from, and not as costs.

16 From a microeconomic point of view, we find a case of elasticity of substitution in production practically by unit, and, therefore, of an infinitely elastic supply (with constant cost per unit), but with maximum production restriction dictated by the inputs market. In view of excess foreign demand for Costa Rica, an increase in exports is possible with minimal restriction if the supply of inputs is increased, their cost is brought down and the costs of transactions abroad are reduced. This would require an increase in agricultural productivity and management training for export.

An analysis of a milk program for the Dominican Republic presents us with two major possibilities as regards production systems: developing a system of specialized dairy farms or modernizing the dual-purpose cattle raising system. In fact, a system of specialized dairy farms was tried some ten years ago, within the framework of a rent-seeking economy, but it failed for a number of technical and economic reasons.

The dual-purpose production system is the one introduced by the Spaniards during the colonization of the country. It is called dual-purpose because the herd can be used for milk and/or meat production. The use selected orients management of the herd (in the short term) and the crossbreeding of varieties (in the medium and long terms). The basis for this system is mixed breeds crossbred with other varieties such as Holstein, Brown Swiss and Zebu. Mixed breeds are well-adapted to the climatic conditions of tropical and subtropical climates. Generally, under this system, milk cows are milked only once a day with the calf at the cow's side. The system is dependent on pastures, and in a secondary way, on concentrates. In the case of the Dominican Republic, use of veterinary inputs is minimal, as is the use of bathing, milking and milk-cooling methods. This system is used by a large group of small-and medium-scale farmers.

The system of specialized dairy farms is devoted to milk production only and is based exclusively on dairy varieties such as Holstein, which are necessarily imported from temperate climates. In this system, the cows are milked twice a day without the calf; calves are sold at the age of a few weeks. The system depends on concentrates and forage. Parasite control and the use of medicine and veterinary services are more intensive than in the dual-purpose system. Fodder and milking installations are more sophisticated, and when pastures are used, they are subdivided. Investment in this type of production system is relatively high; the existing companies are of a commercial nature, with a high level of capitalization.

A recent study of the dairy industry ¹⁷ put forward the possibility of promoting its modernization; it concluded that a dual-purpose system is more efficient than specialized ranches. The explanation for this is a combination of technical and economic factors; under tropical and subtropical climatic conditions, crossbred animals are more resistant than European varieties. In dual-purpose cattle breeding, the supply of milk depends on three proportional relationships: the price of milk with respect to meat, the price of milk with respect to the cost of inputs, and the price of local milk with respect to the price of imported powdered milk. ¹⁸ It involves a more flexible production

17 This study was carried out by Land O'Lakes International Development, for USAID. The author of this paper prepared a model to estimate milk supplied and demand under a dual-purpose system.

18 The price elasticity of milk supply (in the short term) in a dual-purpose system is greater than in a system of specialized dairy farms.

system where sudden price or cost variations can be absorbed through final product and input substitution. Such variations, however, would cause bankruptcy in a specialized system.

The greatest obstacles to dairy development in the Dominican Republic are the unfavorable price policies and the dairy industry's low productivity. Margins for raising productivity in a dual-purpose system in the Dominican Republic are very high. The country could become self-sufficient in milk production if the system of price controls were removed, if tariffs on imported powdered milk were applied in an amount equivalent to milk subsidies in countries of origin and if a dairy development program were implemented. Such a program should include credit to small and medium-scale producers for the development of milking yards and cooling equipment, for technical assistance to improve cattle handling and milking procedures, and for the organization of milk collection systems.

The implementation of a program such as the one described above would imply a temporary drop in the levels of well-being of a group of poor urban consumers, due to increased milk prices. That social cost would disappear over the longer term as supply increased (and prices fell), through higher productivity. In the short term, the aggravation of poverty can be avoided by direct transfers of dairy products to the affected groups. The Dominican Republic has the necessary administrative infrastructure for implementing food programs, for example INESPRE.

A RESEARCH AGENDA

Any analysis that seeks to understand the causes of rural poverty and propose ways to reduce or relieve it runs the risk of appearing pretentious. This is so because the function of a social researcher is to show the meaning of social relations, and, to that end, he needs to represent them through stylized models. To a certain extent we may have committed that error in this paper. However, we have noted that every instance of rural poverty is specific with respect to a locality and that relieving it or overcoming it will always require study of the particular case. With the same caution, we have kept away from proposals based exclusively on public sector intervention: we have insisted on a strategy based on small-farmers' response to their own conditions. Despite such caution, we believe that a bold strategy is required to empower the rural poor (investment in human capital).

We believe that agroindustry can be a source of rural development as long as its rural location, the transfer of flexible production systems and the development of marketing systems for its products are taken into account. These conditions would not seem to imply high costs in terms of efficiency.

We have illustrated this paper with examples; nevertheless, we do not yet know the results or whether the cases mentioned can be duplicated. In this regard, the area where there is least experience is that of policies and programs for temporary rural-urban migration. We, therefore, propose a Research Agenda for the purpose of documenting experiences. We recommend that the following topics be researched:

- a. Agroindustries with flexible production systems
- b. Organization of small-scale agroindustrial producers for sales in foreign markets.
- c. Rural agroindustry and contracting systems with large companies.
- d. Rural agroindustry and cooperative producers' organizations.
- e. Food processing at the rural home level.
- f. Mobilization of voluntary groups for rural agroindustrial development.
- g. Rural schools and rural agroindustrial development.
- h. Policies and programs for temporary rural-urban migration.

Although research is not IICA's principal function, it could carry out an orienting function, in such a way as to encourage State offices, universities, private foundations, international organizations and others to allocate their resources so as to contribute to implementing the strategy.

In addition to disseminating a research agenda, IICA could contribute by disseminating criteria for rural development. As has been mentioned in this paper, grassroots and voluntary activities in Latin America and the Caribbean are becoming more and more significant and they are performed by both local groups and voluntary groups from other countries. Disseminating the criteria deemed appropriate for promoting, for example, agroindustrial development in order to support rural development, could provide guidelines to orient the actions of such groups.

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V.

THE FINANCING OF AGROINDUSTRIAL DEVELOPMENT

The discussion of Topic V of the Seminar centered on the paper presented by Jaime Espinosa (*The financing of agroindustrial development: an overview of the national bank system*), which was based on the broad experience of the Latin American Association of Development Finance Institutions (ALIDE) over the last ten years. The document includes an examination of several institutional mechanisms associated with the promotion and financing of agroindustrial development in the region, and highlights the role development banks play in providing financial assistance and other complementary credit services. Although he provides an abundance of overall statistics, the author fails to specify the exact contributions received by the sector under study, because there is little detailed information available on loans granted to the agroindustrial sector.

However, according to information obtained by ALIDE on loans granted by development banks in 1986, broken down by economic sectors, it can be seen that, of a total disbursement of US\$64,356,200,000 granted by banks in the region, only 1.9% (US\$232,100,000) was allocated to agroindustry per se, while 22.6% went to the agricultural sector and rural development, and 17.6% to manufacturing industries.

The document reviews the role of the agroindustrial sector in the economy and its linkages with other sectors, the role played by development banks in funding the sector, actions taken by ALIDE in promoting investment projects and opportunities (Appendix 2 of Espinosa's paper contains a valuable list of international promotion investment projects during 1989) and, lastly, provides some general thoughts on the subject. The Appendix includes a review of the financing of agroindustry in eight countries of LAC.

In addition to reviewing the topic of financing, on which it provides much valuable information, the paper also underscores the important role agroindustry plays in regional development. It points up the fact that the sector is involved in a broad range of activities which make integration with other sectors possible, through direct and indirect linkages. For this reason, the agroindustrial system is defined as a process of economic, social and political integration. Of particular importance are Espinosa's comments on the promotion of agroindustry and on its financial needs. In this regard, both medium- and long-term needs are mentioned in connection with investments required for the setting up, or expansion, of agroindustrial plants. There is also a need for short-term funding for the purchase of inputs and raw materials which will make it possible for the sector to maintain an adequate level of activity.

Concrete proposals made by the speaker were: to establish specific credit programs for the promotion of agroindustry which reflect the nature of this economic sector; to consider the provision of medium- and long-term financing, not only for investments in agroindustrial enterprises, but also for the construction of infrastructure related to storage, transportation and marketing; to establish credit programs which are favorable to the sector in terms of interest rates, time frames and guarantees; to encourage a system of co-financing, with active participation by commercial banks; to consider

the acquisition of shares in agroindustrial enterprises, and the creation of reserve funds for guarantees or agroindustrial credit insurance systems; to act with the necessary flexibility and streamline banking procedures; and to publicize the service provided by the development banks.

The speaker offered examples of ways in which there can be financial cooperation operations among banks in the same country, or in two or more countries. In this regard, he mentioned the establishment of co-investment funds, co-financing arrangements, systems for the syndication of credit, bidding on previously evaluated projects, etc. In concluding his presentation, Jaime Espinosa referred to the different types of financial operations that will be needed to promote agroindustrial development.

During the time allowed for comments on the presentation, it was pointed out that the paper had not emphasized sufficiently the potential of agroindustry, which offers greater elasticity of income than agricultural exports. It was also mentioned that the public sector has not always performed as badly as is supposed. There were also comments on the way in which the international institutions (credit organizations) deal with agroindustrial development.

ERRATA

Due to an error in location, the document "The Financing of Agroindustrial Development: An Overview of the National Bank System" by Jaime Espinoza is to be found on pages 21-70.

VI.

**THE ROLE OF THE PRIVATE SECTOR AND ITS
ORGANIZATIONS IN AGROINDUSTRIAL DEVELOPMENT**

The paper by Eduardo Fresco on the role of the private sector in agroindustrial development was the basis for discussion of Topic VI of the seminar. In referring to the importance of agroindustry, the speaker pointed out some of the advantages it offers: its role in relation to agricultural production and productivity; its effect on improving the quality of raw materials, in that raw materials of consistent and high quality are required; it helps small farmers by encouraging them to diversify their activities; it contributes to solving the serious lack of funding for agricultural production; it contributes to making the supply of production inputs feasible; and leads to the diversification of production, and, of course, markets.

As to the major problems resulting from agroindustrial activity, Fresco pointed out the following: the lack of governmental coordination and the overlapping of ministries and agencies; the fact that ministry personnel often change with every election, or even more frequently; and excessive and mistaken interference by the State in marketing mechanisms.

From the presentation of the document, and the lengthy discussion which ensued, several basic ideas could be gleaned: there is a need for thorough planning, which goes beyond the stage of isolated projects; information systems are needed; it must be recognized that research plays an important role; food-related legislation is a labyrinth of norms that need to be standardized; and credit and funding are essential.

The speaker insisted that the protectionist policies of the major countries limit agroindustrial development in the countries of the region at two levels: on one level, tariff and non-tariff barriers they impose on processed and semi-processed products from Latin America prevent or discourage their export, and favor the export of non-processed raw materials. On the other level, by subsidizing the prices paid for their own products, the developed countries compete unfairly with the markets of LAC, and in some cases have even displaced regional production.

With regard to the governments of the Latin American countries themselves, they also have a negative effect on the operations of agroindustries, by excessively and improperly interfering in market mechanisms such as price controls and the setting of political prices. Protectionist measures applied in the region also have a negative effect: high tariffs, different types of taxes, control of exchange rates, certain sanitary standards used as barriers to imports, and the need to obtain import permits or licenses. All of these are inconveniences that must be faced by those involved in agroindustry, and these are only a few of the many difficulties to be found in the region.

In view of this situation, Eduardo Fresco underscored the importance of the participation of the private sector in areas related to technology, research and advice on legislation. Regarding funding, he expressed the opinion that private credit institutions should play a greater role, and that they should be encouraged to do so by the State, through favorable regulations and incentives. The private sector should play an important role in international trade, in which it is the major agent. In this regard, Fresco, emphasized the role of national entrepreneurial associations.

The speaker concluded by reiterating his firm belief that the objectives proposed for agroindustry can be achieved only through thorough planning, with the participation of all those involved: the State, public and private international agencies, agricultural and industrial entrepreneurs, farmers and workers, and academic centers.

THE ROLE OF THE PRIVATE SECTOR IN AGROINDUSTRIAL DEVELOPMENT

Eduardo Fresco León *

INTRODUCTION

For years, the importance of agroindustry has been discussed in political, academic and business circles and emphasis has been laid on its benefits for the countries of the region; nonetheless, it must be accepted that, unfortunately, little has been done so far in that field.

It is customary in Latin America to give prominence to certain topics in speeches and lectures, but we do not always succeed in going beyond the rhetoric. In the specific case of agroindustry, very little has been achieved either nationally or regionally.

A study entrusted by ALICA to Dr. Juan Manuel Castells (1983), states: "economic policies in Latin American countries have traditionally conformed to the myth of an agricultural potential that is more professed than real. According to this myth, there is a clear inclination in these countries toward agricultural activities, supported by natural resources specially suited to such activities." Such an inclination would eliminate the need to concentrate economic resources in the agroindustrial sector and permit them to be channeled into certain industries that many would consider synonymous with development or with state-of-the-art technology.

Despite the time that has elapsed, the situation denounced by Castells has not undergone any substantial changes. Consequently, efforts such as those proposed by IICA in its Marketing and Agroindustry Program should be supported, as they evidently aim to pass beyond the rhetorical phase and translate the intellectual consensus on the agroindustrial sector's importance into action in a planned, scientific manner.

CONCEPTUAL FRAMEWORK

The term "agroindustry" has been defined in a variety of ways by different authors. For the purpose of the topic under discussion, a simple, descriptive definition is the most apt; what we understand by agroindustry is any activity that includes both primary production and the processing of inputs derived from agriculture, livestock, fisheries or forestry, into

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intermediate or consumer goods. If we broaden this definition, agroindustry is a comprehensive system of production and industrialization activities which include services and the distribution of its products. This system, as Planella (1989) points out, "is a group of interdependent activities which are linked from the market to the production of raw materials." That is, we should approach the agroindustrial system as something that expands backward from the front. Planella also adds that it may be split up into various subsystems: production and operations; support or services; and coordination and regulation.

Both public and private concerns operate in agroindustry, but the former - despite their legal standing - do so under the system governing private activities, except for the State when it fulfills its function of supervision and control. In this paper, therefore, all entities operating in the field of agroindustry - regardless of their legal standing - are considered private sector. It should be pointed out, however, that in our judgment, public entities should confine their field of action to what corresponds, in principle, to the State and its institutions, and leave what are actually private activities to private companies and institutions.

In any event, an analysis of this nature cannot be approached without referring to the public sector, which, as we shall see, is responsible for creating a necessary framework of infrastructure, regulations and incentives for the other agents operating in the agroindustrial system to be able to carry on their activities. We shall, therefore, refer at several points in this paper to the role that should be played by the public sector in this sphere.

It is evident that agroindustry must be viewed mainly as the combined efforts of two sectors: agricultural producers and industrial producers. In a complementary manner, the commercial, financial and research sectors play a part as necessary services, and the whole - as has been mentioned - should come under the State's guiding role.

IMPORTANCE OF AGROINDUSTRY

Much has been said about the impact of agroindustry on the economy and society. However, we consider it essential to mention the most salient features of agroindustry's contribution to economic development. Agroindustry holds a strategic position by bringing together agriculture and industry into a single intersectoral relationship, and coordinating marketing channels and production and processing operations as a unified business complex. Thus, agroindustry is uniquely capable of increasing production and agricultural activity, generating income and employment in the economy and making more rational use of resources.

It should not be forgotten that agriculture and mining are the most important sectors of the economy in Latin America and will continue to be so for a long time to come; moreover, in many countries agroindustry is the most

important sector of the processing industry, in terms not only of employment, but also of the total amount of its investments and the generated value of its production. In this regard, the following basic features of agroindustry can be established:

1. It plays an important role in relation to agricultural production and productivity. Agroindustry collaborates with agriculture in selecting the most appropriate function for each crop, as well as in adopting more efficient sowing techniques and more rational crop distribution. It also enables production of the most perishable agricultural products to be located in areas which have the best production potential and which are necessarily close to consumption centers; which while being the optimal situation, does not occur in every case. It concentrates and specializes agriculture in the most favorable areas, and thus contributes to increasing agricultural activity by encouraging farmers and regions to specialize.

2. It contributes to improving the quality of primary products by calling for raw materials of a specific and constant quality for most of the year, so as to make fullest possible use of installed industrial capacity.

3. It provides assistance to small-farmers. It encourages them to diversify their activities and complement their agricultural production, for example with cattle-raising. This is singularly important, for it has been shown that those who depend on subsistence agriculture alone are almost always poor. Agroindustrial activities help to improve their living standards.

4. It contributes to solving the serious problem of lack of financing for agricultural production. On the one hand, the contracts that the industry signs with farmers, guaranteeing purchase of their products, enable rural producers to show that they can count on definite earnings, which permits banks to consider them creditworthy. On the other hand, it is simpler for financial agents to obtain information on farmers' production potential and financial status through agroindustry, rather than having to discuss each case individually with producers.

5. It facilitates the supply of production inputs. Industry can acquire substantial quantities of such inputs and thus make them available to producers at very reasonable prices and with favorable terms.

6. It lowers transport costs. By reducing the perishability of many products, long-distance transport becomes feasible and, furthermore, their weight and volume diminishes.

7. It permits better utilization of agricultural raw materials through industrialization and improving the use given to agricultural products. This, in turn, reduces the considerable post-harvest losses.

8. It contributes to streamlining and modernizing the agricultural products distribution system, which is often overly complicated and costly.

9. It expands consumption, since by extending the shelf life of products, it allows continuous, year-long consumption.

10. It contributes to the diversification of production and, consequently, of markets, both at the national level and in regard to exports.
11. It allows the reduction of seasonal agricultural price fluctuations, which is one of the principal factors that reduce farmers' earnings. It also lessens the differences that usually exist between rural workers' earnings and those of urban workers.
12. It facilitates the absorption of increasing amounts of rural labor.
13. It channels investment toward the rural sector.
14. It effectively injects technology into the rural sector and, thus, brings scientific and technological advances to the producer. This helps to overcome small-farmers' educational limitations and, more especially, their traditional habits, which frequently stand in the way of their own development.
15. Agroindustries constitute true centers of economic development in the countryside by originating a number of complementary activities: supplies of implements, tools, spare parts, fertilizers, pesticides, commercial enterprises, transport systems, credit institutions, technical services, etc. In this regard, it has been pointed out that investment in agroindustry is one of the most promising sectors, due to the backward and forward linkages it generates (Lanschner, 1974).

PROBLEMS THAT AGROINDUSTRY SHOULD ADDRESS

We have given a brief outline of some of the advantages offered by agroindustrial activity. However, this panorama would not be complete if we did not state the difficulties that lie in the way of its development.

1. Reference has been made to the myth of agricultural potential in Latin America, which has led us to take as an unquestionable assumption our capacity for providing incentives to agricultural producers, while neglecting the urgent need to provide agriculture with the necessary technology. Only by ridding ourselves of this myth will agriculture and agroindustry be able to progress at an adequate pace.
2. As a result, regional agricultural production suffers from low productivity, which is an obstacle to attaining an appropriate economy of scale.
3. Protectionist policies in the central countries act as a limitation to the development of agroindustry in the peripheral countries in two ways. On the one hand, the tariff and non-tariff restrictions they apply to Latin American processed or semi-processed products either prevent or discourage their exportation, while encouraging exports of our unprocessed raw materials. As Frigerio (1981) states: "this is one of the ways in which, through the mechanisms of the international division of labor, the countries at the center reserve for themselves the economy's most dynamic sectors and convert the countries on the periphery into suppliers of raw materials." Suffice it to say that despite the efforts being made in our countries directly or through

international agencies (such as the GATT), this situation means that the path will be very tedious and difficult, with slow progress and often with deplorable setbacks. On the other hand, by means of subsidized prices for their own products, the central countries compete in a blatantly unfair manner in the different markets and, furthermore, have increasingly succeeded in penetrating Latin American markets, thus displacing regional production. This situation has resulted in the formation of huge product surpluses which flood the different markets on a massive scale, exacerbating the food crisis in our region and increasing its dependence on the developed countries.

4. The Latin American governments themselves also frequently have a negative effect on the development of agroindustry through excessive or incorrect interference in market mechanisms. Such is the case with price-control or price-fixing systems, which are measures that cause real harm to companies by notably reducing profit margins, and often also by forcing them to sell products below their real cost. The fact that inflation is a structural problem in Latin America leads many governments to believe that it can be overcome through price regulation or price freezes. They forget that what really results from such measures is stagnant production and supply shortages, which noticeably affect the very consumer they seek to protect, and discourage prospective investors, who realize that in that way they will not obtain adequate returns on their investment.

5. A series of protectionist measures is also applied within the region. These have a marked influence on trade in agricultural and agroindustrial products and, consequently, a negative effect on the sector. This protectionism is expressed in the form of import restrictions through high tariffs, taxes of different kinds, exchange controls, health standards used as import barriers, the need to obtain import licenses or permits, in short, a very wide range of restrictions, which undoubtedly translates into a further obstacle to agroindustrial exports.

6. At the national level, agroindustry comes up against an administrative difficulty that stands in the way of its development. Piedrahita (1973) accurately expresses it as follows: "industrial processing of foods is an activity that is somewhere between agriculture and industrial activity proper. It is, therefore, an orphan sector that pertains to two Ministries, neither of which accepts it as its own." This situation would appear to have been resolved in some countries by including agroindustry within the sphere of the Ministry of Agriculture; but, in fact, this is not the case, since because specialized know-how is needed, officials of that Ministry are not fully familiar with the problems that an industry has to deal with. In other countries, this administrative dispersion persists; primary production must be attended to by the Ministry of Agriculture and manufacturing by the Ministry of Industries. Even greater incoherence exists in some countries where some agroindustries are handled by the Ministry of Industries and some by the Ministry of Agriculture. Consequently, it would be necessary for the Executive Branch to establish inter-institutional coordination in which the State's function in the sector does not translate into an obstacle to the development of agroindustry. It can, therefore, be seen that at the government level no clear policies and priorities exist in relation to agroindustry. On the contrary, there is inconsistency and a lack of definition that notably affect planning on the part of management.

7. It is very difficult for agroindustry to gain access to capital markets on suitable terms and at reasonable costs. In the public sector, agroindustry has not generally succeeded in being accorded the priority it deserves in terms of development credits; moreover, the producer has to confront a bureaucratic tangle in order to obtain them. In private banks, small and medium-sized producers or industrialists are affected by the excessive redtape involved in obtaining credits and also by the high interests that are generally charged in our countries.

8. The existence of public marketing companies constitutes, in our judgment, unnecessary intervention in a sphere that should be reserved for private enterprise. The abovementioned companies, which in general were created for the purpose of protecting consumers with the lowest incomes through the supply of low-cost products, have broadened their field of action into both the commercial and the industrial areas. Such institutions import products from abroad, usually through international public competitive bidding; in the majority of cases, they do so in a monopolistic manner, at prices established by the State. It is easy to see how, in this way, they enter into conflict with the interests of the private sector since they are competitors in distribution and often also regulate the fixing of prices for raw materials. Moreover, in other cases, as has been mentioned, they industrialize products in much more advantageous conditions than private industry, owing to the privileges and monopolies they enjoy. All this reduces the private operator's field of action and neutralizes his opportunities for greater investment in agroindustry.

THE ROLE OF THE PRIVATE SECTOR AND ITS ORGANIZATIONS

At the beginning of this document, it was stated that in our region the importance of agroindustry has been reiterated for some years as a factor in the development of our economies. It was also said that little progress has been made in bringing that idea to reality. We then emphasized some of the elements that give an indication of this sector's true importance and mentioned the difficulties that stand in the way of its development. This section will identify areas in which the private sector plays or should play an important role in contributing to the growth of agroindustry.

The Need for Planning and Coordination

There is a notable absence of thorough, serious, and strictly scientific planning of the agroindustry we wish to achieve in our countries. What is usually done is to program or prepare isolated projects, unrelated to one another, which in most cases, unfortunately, end up in the archives of some library as reference material. Another failing that should be pointed out is that in many cases such projects are prepared without the active and direct participation of the private sector.

An essential contribution to the development of agroindustry would be the drafting of a comprehensive planning project that would initially make it possible to define the subsectors with the best chances of success, and then, put into effect specific development projects. Every stage of these projects should involve the presence and active participation of people from the private sector, since they are the agents or operators behind all undertakings.

Therefore, any programming that is considered without their points of view is bound to fail. Such private-sector participation should include businessmen and their trade associations, as the latter can activate business interests and give impetus to the projects. Furthermore, such institutions make it possible for small- and medium-scale rural and industrial entrepreneurs to take part, since without their chambers or associations it would be very difficult for them to gain access to the projects, at either the design or execution stages.

During a later stage, the public and private international agencies that have a bearing on agroindustry could devise a coordination system in conjunction with governments, so that each country's experiences could be used by others, and also to bring about transfers of existing technologies in the region. Lack of knowledge of the latter frequently means missed opportunities.

Compilation and Dissemination of Information

Every day, information is increasingly important to decision making, both for the planner and for the businessman. Nevertheless, the region continues to be a long way from reaching even minimal levels of efficiency in this field. Information on economics, technology, commerce, markets, etc. is totally dispersed, incomplete and outdated.

Private businessmen, both rural and industrial, generally find it very difficult, and often impossible, to gain access to information. This is a source of wrong decisions and mistakes in company management. Therefore, it is essential to set up information systems. Naturally, government agencies should take part in a coordinated manner, since agroindustrial executives need to dedicate most of their time to their business and cannot afford to waste it going to various government departments to find statistics and production data in one, information on foreign markets in another and material on the most suitable technology to apply in their companies in yet another.

It is again worth mentioning the role that should be played by international public and private agencies, and the advisability of creating a major Latin American information network with which to overcome the current situation, in which we find information systems that are incomplete and burdened with unnecessary duplication.

The Role of the Mass Media

One segment of private enterprise that is called upon to play a role of singular economic and social importance is the mass communications media. In the context of comprehensive planning to which we referred, newspapers and television and radio stations should undertake campaigns to inform the public on the importance of agroindustry for national economies and on the proper use of foods. Thus, eating habits could be influenced in such a way as to ensure that they are more suited to the population's nutritional requirements and also that they are in the country's best economic interests.

Technological Underdevelopment

One of the serious disadvantages faced by agroindustry is - as has been pointed out - the relative underdevelopment and stagnation of agriculture in comparison to the developed countries, which incorporate scientific and technological advances and achieve higher levels of productivity and quality. Naturally, the situation in agriculture is reflected in agroindustry, which in turn is also behind the times in terms of equipment and the technology applied to industrial production processes.

As in all evaluations, there are exceptions that serve as models to be followed. Such, for example, are the tendencies shown by the sugar industry in certain countries such as Colombia and Peru; the rice industry in Uruguay and Colombia; the soybean oil industry in Brazil; the dairy industry in Uruguay, and other similar ones. Other than the exceptions mentioned, the food agroindustry has not succeeded in reaching a reasonable technological level. Nor is its relationship with producers stable; it merely provides them with technical assistance and the agronomic extension services that lead to higher productivity.

The fact that in a great many countries the majority of food factories have been set up in urban areas far removed from production zones is a clear example of that dissociation, which is harmful not only to producers, but also to industrialists, who find difficulty in obtaining agricultural varieties adapted to industrial processing.

It is, of course, widely accepted that agroindustry developed by private enterprise requires investments of such magnitude that in general only large-scale establishments are able to undertake them. This is reflected in what Castells calls the dualism suffered by the food industry. On the one hand, he says, we have a few export-oriented industries that have achieved modern technology that is competitive on a worldwide scale. The remainder do not match international quality standards and lose their market share to imports (Castells, 1981).

Other authors denounce what has come to be called the transnationalization of food production. In recent years, this situation has increased in pace and importance, precisely because of the substantial investment required by agroindustry, which the majority of Latin American companies are not in a position to undertake.

It would seem unnecessary in this paper to enlarge upon technological problems. However, we would say, by way of explanation, that the following difficulties exist:

- a. Obsolete equipment at the level of small farms and in industry.
- b. Inadequate application of quality-control standards.
- c. Rural production carried out in unacceptable conditions of hygiene, which translates into low-quality raw materials for industry.

- d. In certain cases, it has been shown that sanitary standards in industrial plants have not been complied with. This leads to products that are unsuitable for consumption and to the rejection of exports in other markets.
- e. Processed products frequently are not presented in attractive, modern packaging, which is very expensive. (In the case of canned goods, the cost of the can is sometimes as high as 70% of the total cost).
- f. There is high product loss through poor post-harvest handling. Moreover, owing to the lack of technological resources, many important sub-products fail to be used by the industry.

We are not unaware of the fact that in a continent beset by economic, labor and social problems, the agroindustrial businessman's priority is his own survival, and, consequently, technology becomes a concern of secondary importance. Nevertheless, it is still an important issue; unless the present situation is rapidly corrected, regional food dependency will increase considerably.

A few years ago, the developed countries imported sugar, meat and dairy products from our region. Today, by means of enormous investments and the introduction of highly advanced technological packages, they have succeeded not only in stopping imports, but also in becoming exporters that compete against our diminished production. At present, biotechnology tends to complicate and aggravate this situation. As Arroyo (1987) points out: "The concept of absolute and relative advantages that some countries have with respect to raw materials and finished products is becoming less and less valid every day. For instance, it is now technically possible in most cases to produce substitutes for the raw materials imported thus far from the Third World by the industrial countries, which are becoming increasingly self-sufficient in foods. Thus, relative advantages are becoming something which countries must constantly win for themselves in international markets, with not guarantee of keeping them for long."

Accordingly, it is absolutely essential for our countries to increase and improve agroindustrial productivity through massive incorporation of technology and biotechnology, so as not to fall further behind in our position as agricultural and agroindustrial producers. In this vital and difficult task, the private sector should play a leading role, in conjunction with the State and research centers. Businessmen cannot - in our judgment - remain as mere spectators, but rather should be the protagonists, by contributing not only with their investments, but also with their practical and professional criteria on the technology to be selected and developed.

Research and Agroindustry

If we consider the crucial importance of introducing technology to develop this sector, it is evident that research has an important role to play in this field. There are various research institutes or centers in the region, many of them of high standing. It is essential that these research centers carry out their work in close collaboration with the private sector

and in such a way as to produce profitable feedback, and thus avoid the gap that often exists between the academic and private sectors. We understand that the blame in this regard lies on both sides. The existence of some institutes with dynamic private sector participation demonstrates that entrepreneurs can be attracted as long as researchers plan their work and carry it out, as much as possible, to address the interests and problems of agroindustrial entrepreneurs. Industrialists tend to view the tasks carried out by research institutions with mistrust, for sometimes they fear undue interference in their companies; furthermore, they have a natural human resistance to change. On the other hand, businessmen cannot expect all research to be carried out by public or private academic institutions. They too should earmark part of their companies' resources to in-house research.

In sum, the researcher in this field should seek solutions that can be swiftly applied to the rural sector and to industry, and that aim to overcome technical problems, improve processes, equipment and production techniques, and create or improve products. All this should be accomplished in a joint effort between academics and private entrepreneurs.

Food Legislation

One of the problems that has to be faced daily by businessmen is the gamut and diversity of existing regulations that cover, in terms of sanitation and food-science, the production of raw materials and processed foods and their marketing.

On many occasions, it has been said that this field is plagued by a tangled jungle of regulations ranging from the simultaneous existence of different rules for imported foodstuffs and for national products (often stricter for the latter), to the existence of various codes or regulatory bodies in a single country. In addition to this, health authorities do not possess the means to control their own regulations and requirements, which generally causes lengthy delays in the approval of new products. This hinders and has a marked effect on the launching of new products onto the market.

As Planella (1989) accurately points out: "although legislation and standardization as regards health, commercial or procedural aspects is the function of the State, it should be complemented by the private sector in order to avoid threats to public health and prevent commercial fraud of the consumer. Furthermore, such standards facilitate the task of quality control in companies and the certification of quality in trade operations. Clear quality standards or regulations are a stimulus to improving technology, increasing production efficiency and reducing costs."

It would be extremely useful for the private sector to contribute with its points of view in the drafting of such regulations, in order to make it possible to apply them and avoid what frequently occurs: that the officials charged with drafting them is unfamiliar with the realities of production and industrialization.

The Financing of Agroindustry

It was mentioned earlier that financing and credit are fundamental elements in developing agroindustry. In this regard, it would be advisable for international and national credit agencies to accord priority in their policies to the different stages involved in an agroindustrial operation.

In this context, we consider that private credit institutions should play a more prominent role, probably with the encouragement of the State through the private banking system's regulatory and comptrollership norms. This point has been underscored on a number of occasions at meetings of the Latin American Association of Development Finance Institutions (ALIDE), whose members include both public and private institutions.

International Trade

The principal actor in international trade is private entrepreneur, whether he produces merchandise or fulfills a purely commercial function. In small, weak economies such as those of Latin America, any agroindustry that aspires to develop must set its sights on foreign markets, since domestic markets are generally very restricted in terms of dimensions and purchasing power. Therefore, the opening up and development of export markets takes on special importance.

There are many examples in the region of agroindustrial sectors that have gotten off to a good start thanks to their foreign sales. The private sector's role in this area has several facets. It takes an active part, together with the State, in gaining access to markets through international negotiations, in tariff reductions, obtainment of export quotas, signing of agreements on health controls and product quality, etc. It has been demonstrated that when a government does not permit the private sector to participate in these tasks, such negotiations are generally doomed to failure, or at least the optimal results sought by the negotiator fail to be achieved.

National associations that bring entrepreneurs together fulfill a very important function, whether directly or through the Latin American Association of Food-related Industries and Associations (ALICA). They bring industrialists together, call meetings to conduct business, coordinate positions on prices for exports to extraregional markets, smooth out differences that stand as obstacles to trade, reach agreements subsequently submitted to governments to be put into final legal form, and fulfill other functions which definitely help to boost the exchange of products within the region.

After various years' experience in this sphere, we are able to conclude that the work performed by ALICA and its national associations has been highly valuable, has generated trade and, what may be considered even more interesting, has encouraged joint ventures.

CONCLUSION

We have emphasized the importance of agroindustry in the region. We pointed out the advantages it offers and enlarged on the difficulties it must address and overcome. Then, in the analysis of the private sector's role in this sphere, we stressed the elements we consider basic for the sector's development; placing special emphasis on technological underdevelopment, in the understanding that overcoming this problem is the most likely path to a significant activation of agroindustry in our countries.

In concluding this paper, we would like to express our conviction that it will be through planned action that the objectives we seek for agroindustry will be attained. In that planning, and in the subsequent actions that must be undertaken, it is necessary for all the actors related to agroindustry - the State, public and private international organizations, agricultural and industrial entrepreneurs, small-farmers and workers, and academic centers - to act jointly and with proper coordination. If we do not do this, in a few years we will still be talking about agroindustry and its increasing backwardness in relation to the central countries.

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APPENDICES

APPENDIX I
SEMINAR PROGRAM

Tuesday April 4

OPENING SESSION

Welcoming addresses by representatives of the sponsoring organizations

10:45 INTRODUCTION

Dr. Rodolfo Quirós Guardia, Coordinator of the Seminar

TOPIC I: The macroeconomic environment for agroindustrial development in Latin America and the Caribbean

Trends in the International Economy and Markets: Implications for Agroindustrial Development (Edward Schuh)

Speaker: E. Schuh
Commentator: B. Perkins
Moderator: C. Luiselli

14:30 Macroeconomic Policies and Agroindustrial Development (Carlos Pomareda/Jorge Torres Zorrilla)

Speaker: J. Torres Zorrilla
Commentator: N. Reig
Moderator: C. Ossa

16:45 Food security, small-scale farming and agroindustry (Alexander Schejtman)

Speaker: A. Schejtman
Commentator: H. Zeballos
Moderator: C. Sabsay

Wednesday April 5

09:00 Topic II: Access to and penetration of domestic and international markets by agroindustrial products

The penetration of industrial country markets by processed agricultural commodities from developing countries (Ronald Duncan)

Speaker: R. Duncan
Commentator: J. Torres Zorrilla
Moderator: C. Benito

Protectionism in OECD countries and the development of preferential system of access (Alejandro Jara)

Speaker: A. Jara
 Commentator: C.M. Echeverría
 Moderator: A. Troncoso Vilas

14:30 **The benefit of harmonized health and sanitary regulations in the world of international trade (Lester Crawford)**

Speaker: Robert Wicks
 Commentator: N. Tape
 Moderator: F. Bezerra da Silva

16:45 **Developing agroindustrial capacity to exploit domestic and international market opportunities (Harold M. Riley)**

Speaker: H. Riley
 Commentator: D. Hughes
 Moderator: W. Lopez Paesano

20:00 **RECEPTION**

Thursday April 6

09:00 **Topic III: The role of technology and the new technologies in agroindustrial development**

The role of technology and the new technologies in agroindustrial development (Guy Poulter/Lynne Burbage/Ian Thomas)

Speaker: L. Tubiana (economic viewpoint)
 G. Poulter (technological viewpoint)
 Commentator: C. Barriga
 Moderator: L.F. Vieira

The role of technology and new technologies in agroindustrial development: a Latin American view (Walter Jaffé)

Speaker: W. Jaffé
 Commentator: C. Pinto
 Moderator: J. Gomes Lobato

14:30 Topic IV: Agroindustrial development in Latin America and the Caribbean: Current state and outlook for the future.

Agroindustrial development in the strategy for agricultural reactivation: perspectives and requirements (Eduardo Jacobs)

Speaker: E. Jacobs
 Commentator: C.O. Chirinos
 Moderator: A. Schejtman

16:45 Agroindustry as a source of rural development: Its potential in Latin America and the Caribbean (Carlos A. Benito)

Speaker: C. Benito
 Commentator: R. Bressani
 Moderator: N. Reig

Friday April 7

09:00 Topic V: The financing of agroindustrial development

The financing of agroindustrial development: An overview of the national bank system (Jaime Espinosa)

Speaker: J. Espinosa
 Commentator: J. Fernandez
 Moderator: C. Sabsay

10:45 Topic VI: The role of the private sector and its organizations in agroindustrial development

The role of the private sector in agroindustrial development (Eduardo Fresco Leon)

Speaker: E, Fresco
 Commentator: K. Schakel
 Moderator: A. Troncoso Vilas

14:30 CONCLUSIONS: Discussion of the reports of the rapporteur

16:45 **CLOSING SESSION**

Summary of the Rapporteur

Closing ceremony

APPENDIX II

CLOSING SESSION

On April 7, after the Rapporteur Cassio Luiselli read his report, and final recommendations were received from the participants, the closing ceremony took place. Participating were Dr. Benedito Rosa do Espirito Santo, the Assistant Secretary General of the Ministry of Agriculture of Brazil; Mr. Raphael Valentino Sobrinho, the Coordinator for International Affairs of the Ministry of Industrial Development and Trade of Brazil; representatives of the agencies sponsoring the seminar and the embassy of Canada; and officials from IICA.

On behalf of the participants, Dr. Claudio Barriga, Director of the Department of Agribusiness and Development of the School of Agricultural and Forestry Sciences of the University of Chile, spoke of the activities of the seminar. He acknowledged the contribution of each of the institutions and people who had made the seminar possible. He said, "First, we wish to thank IICA for organizing and coordinating the seminar, the institutions of the host country (Bank of Brazil, Central Bank of Brazil, National Bank of Economic and Social Development) and the Canadian International Development Agency, whose support has made it possible for us to discuss a subject of such importance to the future of our region."

Dr. Barriga added, "We have been able to see over the last few days that, while we may differ in our approach, we all agree that for there to be social and economic development in Latin America, priority must be given to increasing our exports, in recognition of the fact that agricultural production, integrated through a system of agribusinesses, is an inexhaustible source of resources that, because of its multiplier effect, should be used as a springboard to the twenty-first century."

In concluding, he stated, "I must mention the importance we should attach to the private sector as a key agent in the production process that will lead us to development. Entrepreneurs must fulfill their role in society, with its inherent demands for leadership and responsibility, in order to turn our region into a model of well-being and equity."

Raphael Valentino, the representative of the Ministry of Industrial Development and Trade of Brazil, also commented on the broad aspects of agroindustry. First, he pointed out that the gap between agriculture and industry is wide, and that it will have to be narrowed, as has been done in the developed countries. He spoke optimistically and confidently of agriculture, and applauded the activities carried out during the seminar, "the most modern way of applying the multidisciplinary approach." In his final comments, he urged the participants to pay close attention to changes occurring in the world economy.

On behalf of the Ministry of Agriculture, Benedito Rosa do Espirito Santo thanked IICA for holding the seminar, which had been of great benefit to those who work in agriculture or in the formulation of sectoral policies. He explained that he was particularly impressed with the way the participants had understood that agroindustry should not be looked at in isolation. He briefly reviewed agroindustrial activity in Brazil, and called on the countries of the region to take full advantage of the possibilities offered by international markets.

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This compendium consists of articles on agroindustrial development in Latin America and the Caribbean. They were presented during the High-Level Policy Seminar for Agroindustrial Development, held in Brasilia, Brazil, April 4-7, 1989. The Seminar was organized by IICA and cosponsored by the Canadian International Development Agency (CIDA), the Bank of Brazil, the National Bank for Economic and Social Development (BNDES) and the Central Bank of Brazil.

The sessions of the Seminar were organized around six main topics, as were the documents which served as the basis for discussion. Topic I, "The Macroeconomic Environment for Agroindustrial Development in the Countries of Latin America and the Caribbean," includes papers by Edward Schuh, Carlos Pomareda/Jorge Torres Zorrilla and Alexander Schejtman. Topic II, "Access To and Penetration of Domestic and International Markets by Agroindustrial Products," includes presentations by Ronald Duncan, Alejandro Jara, Lester Crawford and Harold Riley. Topic III, "The Role of Technology and New Technologies in Agroindustrial Development," was based on works presented by Guy Poulter *et al.* and Walter Jaffe. Topic IV, "Agroindustrial Development in Latin America and the Caribbean: Current State and Outlook for the Future," including Topics V and VI, on the financing of agroindustrial development, and the role of the private sector and its organizations in agroindustrial development, were presented by Jaime Espinosa and Eduardo Fresco, respectively. The book begins with the report of the general rapporteur of the Seminar, Cassio Luiselli, on the key ideas and topics discussed, together with the main conclusions and recommendations of the event.

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