RESEARCH REPORT NO. 5
LATIN AMERICAN STUDIES CENTER Michigan State University

MARKET COORDINATION IN THE DEVELOPMENT OF THE CAUCA VALLEY REGION - COLOMBIA

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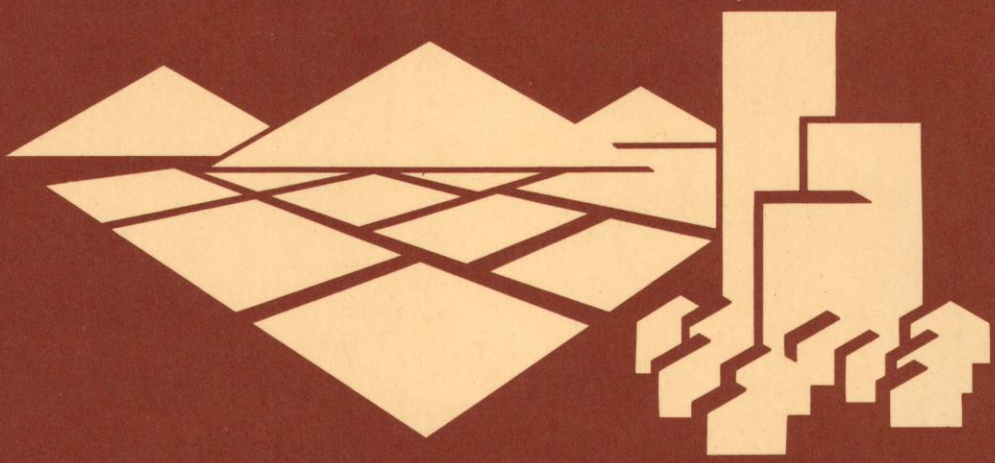

MARKETING IN DEVELOPING COMMUNITIES SERIES

Based upon research conducted by Michigan State University in cooperation with the Corporación Autónoma Regional del Cauca (CVC).

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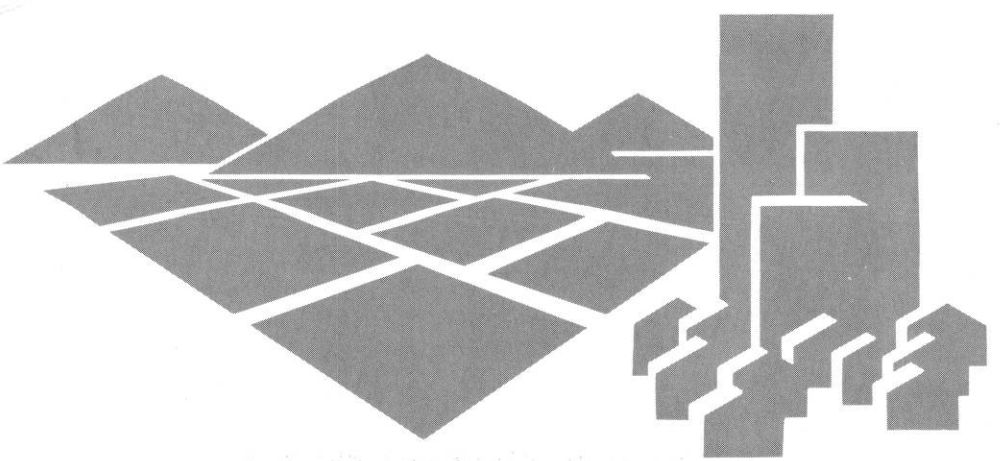

MARKETING IN DEVELOPING COMMUNITIES SERIES

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FOREWORD

This report summarizes the results of a study directed by a Michigan State University research team and carried out jointly with Colombian agencies. The MSU research team was composed of members of the Department of Marketing in the College of Business and the Department of Agricultural Economics in the College of Agriculture and Natural Resources.

This is the fourth report in a series on marketing in developing communities that has been published by the Latin American Studies Center at Michigan State University. The other reports in this series are listed below:

Food Marketing in the Economic Development of Puerto Rico

Market Processes in the Recife Area of Northeast Brazil

Market Processes in La Paz, Bolivia

The Michigan State University research program which began in 1965 has been carried out under two interrelated contracts financed by the U.S. Agency for International Development. The first contract, *A Comparative Study of Food Marketing Systems in Selected Latin American Countries* (AID/TCR-786) was conducted for the Technical Cooperation and Research Branch of USAID, Washington. It had two interrelated goals: 1) to provide developing countries with information to assist in the design of improved food marketing systems; and 2) to formulate a more adequate conceptualization of the role of marketing in the development process. The second contract created the Latin American Market Planning Center (LAMP) at Michigan State University (AID/la-364) which operated through the Latin American Bureau of AID, Washington. The LAMP Project expanded the scope of the program to include not only food marketing but also the marketing of technical farm inputs and selected industrially produced consumer goods.

For a general overview of the Colombian project and a summary of the major research findings and the recommendations, the reader is directed to Chapter 1, pp. 1-8 ; Chapter 7, A Summary Diagnosis and Chapter 8, On Implementation, pp. 1-5.

Throughout this report the basic monetary unit is the Colombian peso. The official exchange rate in February, 1969, when much of the research data were collected, was 16.90 pesos for one U.S. dollar.

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ACKNOWLEDGEMENTS

The PIMUR project (Proyecto Integrado de Mercadeo Urbano Rural) was jointly financed by the Colombian Government and the U. S. Agency for International Development. The Colombian Autonomous Regional Corporation of the Cauca Valley (CVC) was responsible for the administration of Colombian funds, and also contributed the time of the Co-Director and another experienced technician. Michigan State University provided the technical direction for the project through the AID financed Latin American Market Planning Center. The CVC and the University were contractually linked to the Specific Projects Section of the National Department of Planning. However, we are indebted to numerous other agencies and individuals who have given their support to the PIMUR project, and without their help this report could not have been prepared.

Martin Stoller, Marketing Advisor, Bureau for Latin America, AID/Washington, was instrumental in negotiating arrangements for the project and has provided continued advice and administrative support during the conduct of this study.

The USAID Mission in Bogotá, directed by Marvin Weissman, has provided logistical support for the Michigan State University Contract team. Mission staff who have provided administrative and technical support to the project include James K. McDermott, Rural Development Officer; William Rhoads, Program Officer; and John Oleson, Assistant Mission Director.

We are grateful to Edgar Gutiérrez C., former Head of the National Department of Planning; to Augusto Cano, Assistant Director; and to Omar Botero, former Head of the Section for Specific Projects, for their administrative approval of the project and for expediting the release of Colombian project funds. During the conduct of the project we have benefitted from continued contacts with Humberto Colmenares, Tomás López, and Miguel Angel Rivera on technical aspects of the PIMUR study. Camilo Cárdenas has provided able administrative supervision of the financial operations of the project.

Due to the cooperation of Henry Eder, Executive Director of the CVC; Roberto Moncada, Personnel Director; Rosario Moreno, Luis M. Velasco, Julio Salcedo, and Oscar Mazuera, there were never administrative difficulties which hampered the fast-moving project work schedule.

The project has also benefitted from the logistical support and active participation of several other agencies. The Promotora de Abastecimientos, directed by Antonio Forero, was active in promoting the project, provided office space during the early stages of the operation, and has had personnel actively engaged in all phases of the study.

Reynaldo Scarpetta, formerly Dean of the Division of Social Sciences at the University of Valle, was also instrumental in bringing the PIMUR project to Cali, and in providing two faculty members to the task force.

IDEMA, a national marketing agency, also contributed the services of a full-time technician.

The Sociedad de Agricultores del Valle, and its former Executive Director, Guillermo Barney Materón, were helpful in promoting the project. They also provided office space and conference facilities for the PIMUR staff during the organizational phase of the Project.

We are grateful to Antonio Garcés, Director of Empresas Municipales of Cali, and to Oscar Lozano for making available the IBM 1401 computer without charge to the project. This made it possible to provide additional training for local personnel, while enlarging the library supply of computer programs and expediting the PIMUR data analysis. We also appreciate the competent services of Allan Dale of Systems Research, Inc., who provided technical direction of our data processing operations. In addition, James Thomas, U. S. Peace Corps Volunteer, worked many long hours programming and supervising data processing.

We recognize that information summarized in this report could never have been assembled without the diligent work of more than 40 PIMUR interviewers recruited largely from local universities. We also gratefully acknowledge the cooperation of the many businessmen, farmers, and consumers who willingly provided us with information. We were assisted greatly in our study of rural communities by Mario Iglesias of the Faculty of Agronomy at Palmira, and by Jan Flora of Cornell University. Both participated directly in the research, and in fact helped with the preparation of a technical report.

An advisory board was organized early in the project in order to provide an exchange of ideas with participating and interested agencies. We are grateful to those board members who have been most helpful in the research phase and who have manifested a continuing interest in helping put the research results into action. The members are:

Jaime Uribe U.	Gerardo de Francisco
Enrique Luque	José Vicente Arboleda
Antonio Garcés	Guillermo Cobo
Henry Eder	Eduardo Polo
Marino Renjifo	Jaime Cifuentes

We are especially grateful to the Michigan State University Technical Advisory group. While serving as part-time consultants, they have in fact provided "full-time" and invaluable experience, leadership, and know-how through all phases of project planning, execution and report preparation.

Finally, we express our most sincere appreciation to all project personnel, who are listed below. Their dedication to their jobs, their willingness to cooperate with each other, their eagerness to learn, and their sincere desire to make a lasting contribution to regional development are reflected in this summary report.

Michigan State University - Technical Direction - Team of Consultants

Harold M. Riley and Donald Taylor - Co-Directors, Latin American Market Planning Center

James D. Shaffer - Professor of Agricultural Economics

Donald Henley - Assistant Professor of Marketing

Urban Studies Group

Colin Guthrie
Michigan State University

and

David Lloyd Clare - Co-Leaders
University of Valle and
Promotora de Abastecimientos

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Patricia Chain
Flor de María Martínez
Luz Elena Zuluaga
Beatriz Solórzano
Promotora de Abastecimientos

Kelly Harrison (MSU)
Co-Director of PIMUR

Nelson Suárez González (CVC)
Co-Director of PIMUR

March 31, 1970

Map of Colombia

A panoramic view of Cali, a fast growing city of over 800,000 that serves as the political and commercial center in the Cauca Valley region. The statue in the foreground depicts Sebastián de Belalcázar, the Spanish explorer who founded the city of Cali in 1536.

CHAPTER 1

INTRODUCTION

PIMUR--Proyecto Integrado de Mercadeo Urbano Rural

The primary objective of PIMUR was to conduct diagnostic studies of market coordination in the Cauca Valley region and to formulate recommendations to improve resource use efficiency and stimulate economic growth. Secondary objectives were to train Colombian personnel in the technical aspects of economic studies and to contribute to a better understanding of market coordination processes in economic development.

The discussions which led to the organization of the PIMUR project originated in response to expressed concerns of civic leaders in Cali who were confronted with major decisions on changing the urban food distribution system. A decision had already been made to remove the Galeria Central as a first step in the improvement of a large area in the center of the city. The Galeria Central has served for many years as the hub of the food system. In further discussions with representatives of local agencies, the National Department of Planning and the U.S. Agency for International Development, it was determined there was a need for a broad study. While emphasizing the urban food distribution system, researchers would deal more comprehensively with the problems of the regional food production-distribution system and its relationship to the development of the region. Thus, the scope of the study was extended to the broad problems of economic integration of the rural and urban areas , focusing on Cali and its principal area of influence. Although the study was to be carried out in the Cauca Valley, it was anticipated that the problems identified and some of the suggested solutions would have relevance to other regions in the country.

The PIMUR project staff was assembled in October and November of 1968. The staff consisted of a small contingent from Michigan State University and a larger group of Colombians, most of whom were relatively recent university graduates. (See Acknowledgements, pages ix-x , for detailed description of the task force.) The project was carried out within a period of one year, which placed stringent time constraints on the research activities.

The research procedures and methods of operation drew heavily on the experience of a Michigan State University group which had conducted similar studies

in Brazil, Bolivia, and Puerto Rico.[1] Initially, activity was concerned with preparing a detailed work plan based upon a review of previous studies, consultations with public officials, and reconnaissance-type interviews with consumers, farmers, industrialists, and others. This was followed by detailed personal interviews with individuals chosen through systematic sampling procedures to be representative of various segments of the marketing system. A total of 3800 interviews were completed. The survey data were transferred to IBM cards for analysis at the Empresas Municipales computer facility in Cali.[2] However, due to the massive amount of data and the limited capacity of the facility, considerable analysis was shifted to the Michigan State University Computer Center.

The PIMUR staff prepared 16 technical reports which served as the basic materials for this summary. The technical reports provide a much more detailed description and analysis of specific components of the regional economic system than is reasonable to include here in the summary report. The depth of analysis varies, reflecting, among other things, the varying emphases on different topics. Primary emphasis was on the urban food distribution system and the related vertical production-distribution systems for selected food commodities. Although important to the comprehensive diagnosis of market processes, relatively less emphasis was given to studies of the manufacture and distribution of agricultural inputs and consumer goods and to food processing, packaging and residential construction.

A list of the Technical Reports follows:[3]

No. 1 Some Aspects of Market Integration of Rural Trading Centers in the Cauca Valley

No. 2 Production, Distribution and Use of Packaging Materials for Agricultural Products in the Cali Area

No. 3 The Distribution and Use of Technical Agricultural Inputs in the Cali Area

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[1] These studies have been summarized in the following publications: C. C. Slater, H. M. Riley, Kelly Harrison, *et. al.*, *Food Marketing in the Economic Development of Puerto Rico*, Research Report No. 4, Latin American Studies Center, Michigan State University, East Lansing, 1970.

_____, *Market Processes in the Recife Area of Northeast Brazil*, Research Report No. 2, Latin American Studies Center, Michigan State University, East Lansing, 1969.

C. C. Slater, Donald Henley, *et. al.*, *Market Processes in La Paz, Bolivia*, Research Report No. 3, Latin American Studies Center, Michigan State University, East Lansing, 1969.

[2] Code books and magnetic tapes containing all survey data have been placed on file with the Corporación Autónoma Regional del Valle del Cauca (CVC) in Cali and with the National Department of Statistics (DANE) in Bogotá.

[3] Copies of the PIMUR Technical Reports have been provided to government agencies, and selected university libraries. Copies can also be purchased from the CVC. All Technical Reports are in Spanish only.

No. 4 The Production and Distribution of Selected Consumer Goods in the Cali Area

No. 5 Food Processing and Distribution in the Cali Area

No. 6 The Cali Urban Food Distribution System

No. 7 The Cali Consumer: Incomes, Food Purchases, and Shopping Patterns

No. 8 The Transport System for Agricultural Products in the Cali Area

No. 9 Market Information and Communication in the Cali Area

No. 10 Laws and Regulations Affecting Market Coordination in the Cali Area

No. 11 Grain Production and Marketing in the Cauca Valley

No. 12 The Cali Milk Production and Distribution System

No. 13 Slaughtering and Distribution of Beef and Pork in Cali

No. 14 Poultry and Egg Production and Distribution in the Cali Area

No. 15 Fruit and Vegetable Production and Distribution in the Cali Area

No. 16 An Economic Analysis of Residential Construction in Cali

This summary report highlights the special studies and integrates them into an overall diagnosis of the existing marketing system. In each section of the report there are specific recommendations related to the diagnoses. The final chapter deals with implementation problems and strategies. The balance of this first chapter will introduce a framework for diagnosing market coordination problems. This is followed by a brief description of the geographic area studied. Demographic and economic characteristics of the region are summarized, and long-range projections are presented as an environmental framework within which we can consider future development problems and the need for marketing services and facilities.

A Framework for Diagnosing Market Coordination Problems

Market Processes and Economic Development[4]

Market processes are viewed here as the primary mechanism in coordinating

[4]A more complete review of literature and expression of views on marketing and economic development can be found in the following publications:

1) Research Reports 2, 3, and 4, as listed in Footnote 1 on Page 2.

2) J. C. Abbott, "Marketing Issues in Agricultural Development Planning," in *Markets and Marketing in Developing Economies*, eds., Reed Moyer and Stanley Hollander, (Richard D. Irwin, Inc., 1968).

3) N. R. Collins and R. H. Holton, "Programming Changes in Marketing in Planned Economic Development," *Kyklos*, Vol. 16, January, 1963. Reprinted in *Agriculture in Economic Development*, eds., C. Eicher and L. W. Witt, (McGraw-Hill, 1964).

production, distribution and consumption. From an economic viewpoint, market processes include the exchange activities associated with the transfer of property rights, the physical handling and transformation of products, and the institutional arrangements for facilitating these activities. Market processes are also seen as an integral part of the social system. The behavior of market participants is conditioned by social customs and traditions which affect exchange relationships, attitudes toward institutional change and willingness to adopt new procedures.

Our definitional concept of market processes is a broad one. We reject any arbitrary classification of "production" and "marketing". We see the food system as a set of interrelated stages of production activity. These include the manufacture and distribution of agricultural inputs such as seed, fertilizer, machinery and pesticides; the farm production activities; and the assembly, storage, processing and distribution of food products to consumers. Coordination of these activities is achieved largely through market processes.

We also attempt to emphasize the role of marketing in a dynamic economic system where change is continually occurring through technological and institutional innovation. This leads to concern, not only for efficient resource use in a static framework, but for technological and institutional changes which greatly increase production possibilities with existing resources. These changes should be considered within an overall economic development framework so that employment and income consequences can be evaluated. However, due to limitations of data and analytical tools, comprehensive evaluations of contemplated technological and institutional changes are necessarily rather crude conjectures of the results of particular reform programs.[5]

Market processes increase in relative importance as a community develops. Increased specialization is fundamental to rising levels of productivity and income. As near subsistence agrarian societies shift toward industrialization, the proportion of population in urban centers increases. Likewise, as incomes rise, food and clothing preparation shifts from the home to specialized processing and distribution firms. As modern technology is introduced into agriculture, farmers find it profitable to purchase industrially-produced inputs such as fertilizer, pesticides, and machinery. As a result of these changes, marketing activities become a larger proportion of total economic activity. Farm production declines as a percentage of total economic output and the satisfaction of food needs becomes increasingly dependent on the effectiveness

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[5]For a theoretical discussion and an empirical example, see Chapter 11 and 13 of *Market Processes in the Recife Area of Northeast Brazil*, Research Report No. 2, Latin American Studies Center, Michigan State University, East Lansing, 1969.

of market coordination. At the same time, the consumer's food costs include a growing percentage spent on market services. Thus, the functions of specialized intermediaries and physical distribution activities become important concerns for development planning.

Food production and distribution makes up a large proportion of economic activity in less developed countries. Hence, increased productivity and reduced real costs of food can have a significant impact upon levels of living and the economic growth rate. In Cali, about 42 percent of total household expenditures are for food. However, due to the unequal distribution of incomes, we find that most of the families are spending considerably more than one half of their income for food. When divided into quartiles based upon level of per capita income, it was found that the poorest quartile spent 82 percent of its income on food while the second poorest quartile spent 63 percent. For these low-income families, a reduction in food prices would result in significant increases in real purchasing power, thereby affecting overall economic activity.

The dynamic effects of reducing food prices can be illustrated using actual family income-expenditure relationships derived from the PIMUR consumer study. If we assume that technological and institutional changes in production and distribution of foods could reduce Cali food prices by 10%, what effect would this have on demand for additional food and for non-food products? Table 1.1 compares the peso expenditures before and after a food price reduction.

TABLE 1.1 ESTIMATED EFFECT OF A 10% REDUCTION IN FOOD PRICES ON THE DEMAND FOR ADDITIONAL FOOD AND NON-FOOD PRODUCTS

	Expenditures per Capita per Month			
Level of Family Income Per Capita[a]	Present		After 10% Reduction in Food Prices	
	Food	Non-Food	Food	Non-Food
I	$ 75.19	$ 15.43	$ 70.44	$ 20.18
II	112.27	64.65	105.09	71.83
III	161.08	178.86	149.32	190.62
IV	294.02	769.59	267.85	795.76
City-wide Average	152.30	227.12	140.68	238.74

[a]See Table 1.7 for information on classification of families by level of per capita income.

SOURCE: Calculations based upon data from PIMUR, Consumer Survey, 1969.

For all income groups food expenditures would decline while nonfood expenditures would increase. For the lowest income group, nonfood expenditures would increase by about 30%. The overall average increase in nonfood expenditures for all families would be about 5%. Thus, it is clear that a reduction in food prices would have a significant stimulating effect on demand for nonfood products. Furthermore, while total per capita food expenditures are less after the price reduction, consumers would be buying a larger volume of food than before. For all Cali consumers the 10% price reduction would mean that the same diet could be purchased for 10% less (*i.e.*, $137.07 as compared to $152.30 before the price change). But some of the savings of $15.23 would be allocated to buy more food. For all consumers, an average of $3.61 more would be so allocated. This would permit the average consumer to buy 2% more food with a total outlay of $140.68. Because their income elasticity of demand for food is higher, a 4% increase in food volume would be purchased by consumers in the lowest income group.

The above adjustments could only occur if supplies of food and non-food were perfectly elastic, or if sufficient time elapsed for production to respond to increased demand. In a competitive economic system, the dynamics of change could begin with reduced food prices brought about through market improvements. This would increase real purchasing power, forcing prices back upward at retail, which, when reflected back to farmers and manufacturers, would call forth expanded output. When this increased output reaches the market, prices would decline toward a new equilibrium resulting in lower consumer prices, and higher levels of output for both food and nonfood products.

This example serves as a realistic illustration of the effects which might result from increased productivity in the food system. It should be stressed that productivity increases in the processing and distribution stages can be just as important as productivity increases in farm production. In both instances there are secondary and tertiary effects on employment and income which are important in formulating development policies.

In discussing the effects of changes in market processes, it is important to consider the dynamics of innovation. In many instances the development of more stable and remunerative markets has a strong stimulating influence on the adoption of new production technology. This is undoubtedly a more important contribution to economic development than the short-run economic savings derived from a system evaluated within a static equilibrium framework.

An Approach to Diagnosis

A diagnostic study of market coordination is essentially a search for unexploited opportunities in an economic system. It is an organized effort to identify conditions which limit output expansion and create unnecessary costs.

The approach is pragmatic and eclectic. Hopefully it is also practical, in that the results are useful to policy makers and private business managers.

There is no general theory of economic development to provide a rigorous and deterministic framework for this type of diagnostic research. Economic development is a complex, interactive growth process that can best be conceptualized as a system of relationships. The identification of important development opportunities or difficulties often requires a comprehensive investigation of a broad set of economic activities. This can serve as the basis for a general strategy to foment desirable patterns of development. A program of follow-up research can then provide feed-back information to guide decision-making as the development program evolves. Detailed, in-depth studies of specific sub-parts of the system can be fitted into the overall development planning process, but resources will probably be better utilized if the detailed studies are preceded by a more general diagnostic study.

In most developing countries there is a lack of information about existing production and distribution systems and consumption of agricultural and industrial products. Hence, a useful first step toward problem identification is to carry out a descriptive, diagnostic study.

A modified market structure - conduct - performance framework of analysis can be useful in organizing such a diagnostic investigation.[6] This framework of analysis is oriented toward the evaluation of system performance when judged against broad economic and social goals. For the purpose of the PIMUR study, we have assumed that three broad goals are generally accepted in Colombia. These are:

1. Growth in per capita gross product
2. High levels of employment
3. Greater equality of economic opportunity

The evaluation of system performance is both normative and relative. It is normative in the sense that we observe how the results deviate from what seems to be desirable as expressed in the general development goals. The evaluation is relative and pragmatic in that there is no ideal condition likely to be attainable. Hence, results flowing from the present system must be judged against what is attainable through alternative ways of organizing the system. Following this approach there is no attempt to evaluate a particular economic system on the basis of structural criteria alone. The emphasis is on the degree of acceptability of the results and the conditions which will most likely produce the desired results.

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[6]For an early exposition of this framework of analysis, see Joe Bain, *Industrial Organization*, (New York: John Wiley, 1959).

For the purposes of this diagnostic study, *market structure* variables are the number, relative size and absolute size of participants. Also included are conditions of entry and exit. *Conduct* variables are the behavior patterns of market participants as they arrange transactions and work out procedures for inter-firm coordination. Public participation and regulations are also a part of the behavioral system considered under conduct. *Performance* variables are selected results relevant to the attainment of broad social and economic goals. Three performance criteria are of central importance in the context of a developing economic system. These are listed below, along with questions which give direction to evaluation procedures:

1. Resource Use Efficiency -- To what extent is the system achieving the lowest possible costs? Are there obstacles to efficient resource use patterns, either internal or external to the firm? To what extent are consumer demands being accurately transmitted to farmers, processors, and distributors? Cost comparisons for alternative ways of organizing and coordinating subsectors of the production-distribution system provide a basis for judging relative economic efficiency.

2. Progressiveness -- To what extent is the system generating and rapidly adopting new technology that reduces production and distribution costs for presently consumed goods and services? To what extent is the system developing new products or improving the quality of existing products to satisfy changing consumer demands?

3. Equity -- Are there institutional barriers which cause a socially and politically unacceptable distribution of income from the system? Are there groups of participants who seem to be seriously disadvantaged? What is the effect of inequities in income distribution on the dynamic growth process?

This framework was a general guide in the diagnostic investigation of market coordination in the Cauca Valley of Colombia.[7] The description and analysis of sub-parts of the food system served as the basis for identifying opportunities for reducing costs or offering consumers improved products at the same cost. At a more macro-level, opportunities for improved coordination of agricultural and industrial activities have been examined as a means toward achieving more rapid rates of economic development.

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[7]For related views on research approaches, see the following articles:

Norris T. Pritchard, "A Framework for Analysis of Agricultural Marketing Systems in Developing Countries," *Agricultural Economics Research*, Vol. 21, No. 3, July 1969.

James D. Shaffer, "Changing Orientations of Marketing Research," *American Journal of Agricultural Economics*, Vol. 50, No. 5, December 1968.

_____, "On Institutional Obsolescence and Innovation - Background for Professional Dialogue on Public Policy," *American Journal of Agricultural Economics*, Vol. 51, No. 2, May 1969.

The Geographic Area

The study was focused on the city of Cali and the area which supplies most of the major food products for the city. The configuration of the supply area varies by commodity. Delineation of these areas was made on the basis of a checkpoint study of trucks entering Cali, supplemented with source of purchase information obtained from product wholesalers. A description of the commodity supply areas is given in Chapter 3.

For agricultural products the principal area of influence of Cali is the Cauca Valley (Figure 1.1). The flat part of the Valley has an area of approximately 430,000 hectares. The Valley is about 200 kilometers long and has an average width of 15 kilometers. It extends from Cartago in the northern part of the state of Valle to Puerto Tejada in the northern part of the state of Cauca. It is bounded on both sides by mountains, with an average elevation of approximately 3000 feet in the valley area. The climate is warm with a mean annual temperature of 25°C. The average annual rainfall is about 1000 mm. There are two rainy seasons making it possible to produce two grain crops per year. Sugar cane, corn, soybeans, cotton, and beans are the principal cultivated crops. The soils are exceptionally fertile and adaptable to mechanization. Most of the land is held in large units. In the mountain highlands surrounding the Cauca Valley, however, there are many small farmers. Coffee is the principal cash crop, although fruits, vegetables, corn and beans are also produced in small quantities.[8]

Cali is the capital of the state of Valle and is the dominant commercial center in the southwestern area of Colombia. A highway network links Cali with other major trading centers such as Pasto, Popayán, Buenaventura, Palmira, Buga, Tuluá and Cartago.

Cali's commercial influence extends well beyond the Cauca Valley region to the other regional centers such as Manizales, Medellin, Barranquilla, Bogotá, and Bucaramanga. The city also plays an important role in import and export movements through the port of Buenaventura. In the PIMUR study of industrial production and distribution of consumer goods and agricultural inputs the area of influence of Cali was expanded to this larger area. The lists of industrial firms interviewed included several in Medellin, Bogotá and Barranquilla, who are major suppliers to Cali and the Cauca Valley region.

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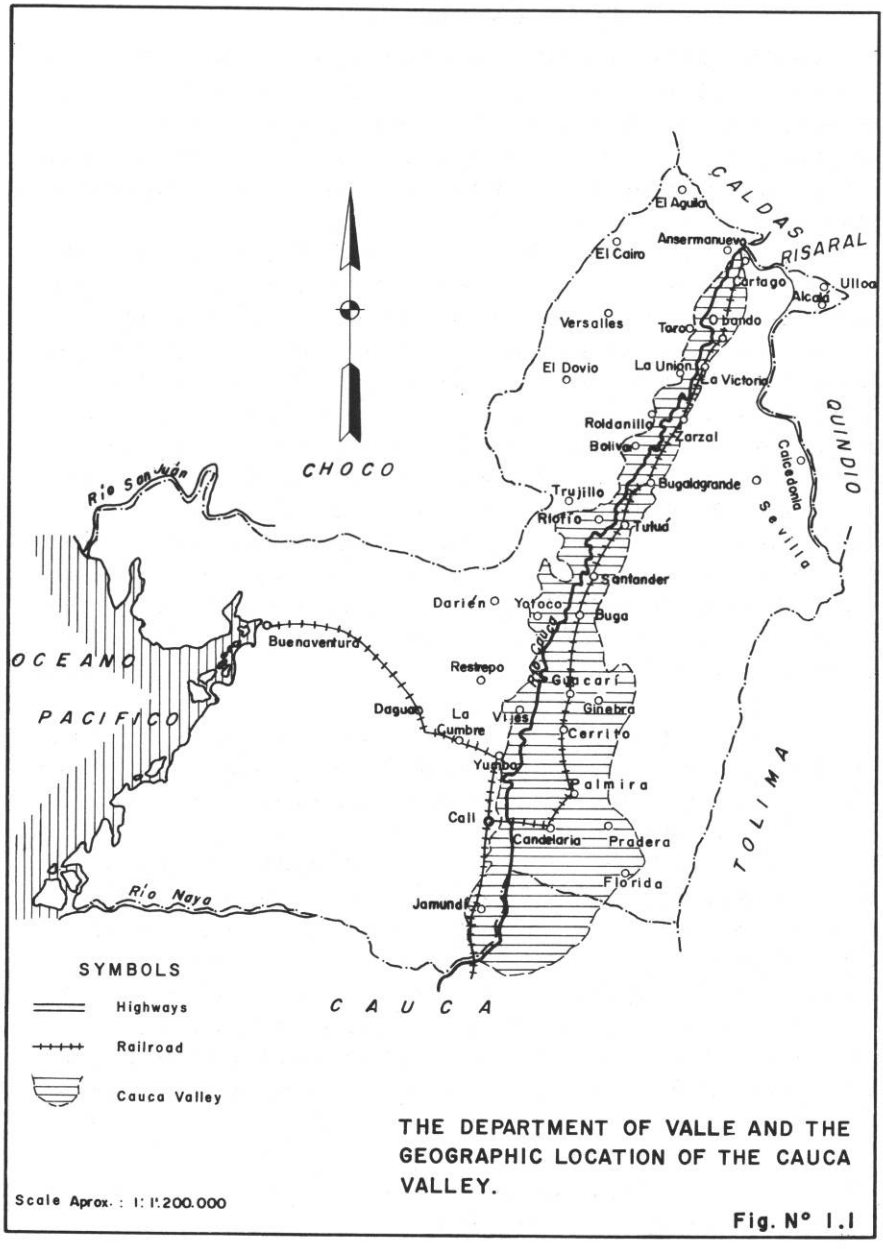
[8]See PIMUR Technical Report No. 1, *Some Aspects of Market Integration of Rural Trading Centers in the Cauca Valley.*



THE DEPARTMENT OF VALLE AND THE GEOGRAPHIC LOCATION OF THE CAUCA VALLEY.

Fig. N° 1.1

The Institutional Environment

The existing institutional environment is an integral part of the economic system. The public entities most relevant to an understanding of market processes are identified briefly below:

The National Department of Planning prepares national development plans and approves major public investments and development programs instituted by the various ministries of government.

The Ministry of Agriculture is primarily responsible for the formation and implementation of agricultural policies consistent with national development policies. The ministry develops and coordinates national programs of production, distribution and consumption in the agricultural sector.[9] The following agencies form a part of or are attached to the Ministry of Agriculture:

1. ICA (Instituto Colombiano Agropecuaria) - ICA carries out research, extension, and higher education in agriculture. It maintains a regional office in Cali, and a National Center for Agricultural Research in Palmira. The Regional Office in Cali has charge of the Departments of Valle, Risaralda, Quindio and Caldas. ICA also has responsibilities for quality control of fertilizers, pesticides, feed concentrates, and improved seeds. Furthermore, ICA is charged with the enforcement of sanitary codes and other standards for handling agricultural products.

2. IDEMA (Instituto de Mercadeo Agropecuaria) - The central function of IDEMA is to regulate prices and markets for food products through buying and selling activities, importation, and exportation; guaranteeing support prices to food producers. IDEMA has a regional office in Cali. In the Cauca Valley, IDEMA operates grain storage facilities in the cities of Cartago, Zarzal, Roldanillo, Buga, Yumbo and Palmira, and they also are in charge of cotton gins in Zarzal, Buga and Roldanillo. In cities such as Cali, IDEMA maintains retail outlets for articles of prime necessity, using both fixed store locations and moveable trailers.

3. INAGRARIO - This agency stores agricultural products and gives negotiable warehouse receipts. In the Valle, INAGRARIO has facilities for storage, drying and preserving corn, blackbeans, sorghum, and soybeans in the cities of Buga, Cartago, and Palmira.

4. Caja Agraria (CAJA DE CREDITO AGRARIO, INDUSTRIAL Y MINERO) - The Caja Agraria is essentially a credit institution, principally financing agricultural production. In Valle the Caja Agraria carries out its credit

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[9] A major reorganization of the Ministry of Agriculture occurred in 1968. For detailed information on the existing organizational structure see Decree No. 2420, 1968.

programs with offices in the main cities. The Caja also operates CRESEMILLAS, a large seed multiplication and distribution enterprise. In addition, the Caja operates several retail outlets handling agricultural supplies.

5. INCORA (Instituto Colombiano de Reforma Agraria) - This institute administers the Colombian land reform program. INCORA has two projects in the Department of Valle, one in the Irrigation District - Roldanilla - La Union - Toro and the second in Palmira. Both projects emphasize the fomenting of agricultural development by means of supervised credit, technical assistance, and the organization of producer cooperatives.

Regional and local entities with responsibilities relating to the food system are as follows:

CVC (Corporación Autónoma Regional del Valle del Cauca) - The CVC is a public corporation whose main function has been to develop an electrical power system for the Cauca Valley. The CVC also has responsibility for management of natural resources in the Cauca Valley region, promotion of commercial agriculture and provision of extension services to rural families.

EMSIRVA (Empresas de Servicios Varios) - One of the functions of this public corporation is the operation of the Cali slaughterhouse and management and control of public food markets (Plazas mercados).

The Promotora de Abastecimientos de Cali - This is a public agency recently created to plan, promote and construct a new wholesale food marketing facility for the city.

Demographic and Economic Characteristics and Projected Changes

Public and private planning decisions must be made within the context of the total economic situation. In this section we will attempt to identify several of the more important demographic and economic characteristics of the city Cali and the state of Valle. Especially important for planning decisions are population and income projections, because volume of commodities, services demanded, and needed facilities to meet the generated demands are closely related to these characteristics. The future is unknown, and as a matter of fact, so is the present. Planning decisions must be based upon available evidence and judgement.

Population estimates used in this study in projecting current aggregate consumption and future demands are summarized in Table 1.2. The projections into the future should be clearly recognized as assumptions based upon an interpretation of past trends and an evaluation of some of the factors likely to influence these trends in the future. We neither predict they will occur nor suggest they are desirable patterns of population growth. A variety of events and policy actions will influence the outcome. As a whole, we believe these

TABLE 1.2 POPULATION TRENDS AND PROJECTIONS 1951 - 1989, COLOMBIA VALLE AND CALI

	Number of People in Thousands					
	Colombia[a]	Valle[f]	Urban Cali[b]	Six secondary Cities, Valle[d]	Other County Seats of Valle[e]	Rural Valle[c]
1951	11,548	1105	241	198	107	556
1964	17,485	1733	639	381	221	513
1969	20,000	2156	895	480	266	515
1974	23,398	2641	1,219	596	311	515
1979	27,004	3227	1,624	732	356	515
1984	31,159	3920	2,113	891	401	515
1989	35,772	4737	2,699	1077	446	515

[a]The 1951 and 1964 data are census data and imply a net annual growth rate of about 3.2 percent. Projections are based upon assumed rates of 3.2, 3.1, 3.0, 2.9, and 2.8 by 5-year periods.

[b]The 1951 number is from the census. The 1964 population estimate is based upon a re-evaluation of the census data and is the accepted figure by Planeación Municipal. (See Arce, Miguel, and Molta, Guillermo, *Estimates and Characteristics of Unemployment in Cali*, University of Valle, Department of Economics, Graduate Thesis, December, 1964, and PIMUR Technical Report No. 7, Consumidores.)

The implicit growth rate for 1951-1964 is about 7.8%. The rates assumed from 1964 to 1969 were 7.4, 7.2, 6.9, 6.7, and 6.6; from 1969 to 1971 6.5; from 1971 to 1986 a uniform decline in growth rate from 6.4 to 5.0 and from 1986 on, a constant rate of 5.0. Thus, based upon past trends, the projections of Cali population are very conservative. Assuming growth in the immigrant population at past rates seems to provide unreasonable population relationships. For example, the apparent migration to Cali amounted to an average of about 4.2 percent annual rate of increase in Cali population for 1951-1964. Applied to the 1964 population this would imply an immigration of about 26,000. However, the same rate applied to a two million population expected in the 1980's implies an in-migration of more than 80,000. It is expected that the number of migrants will increase as the total Colombian population increases and as the population of the city increases, but that it will represent a significantly smaller percentage of the city's population.

[c]The 1951 and 1964 data are based upon the census reports. Anyone living outside a city or *cabecera* is defined as rural. This includes some very small towns. It is assumed that the rural population will stabilize at, current levels with the increased population pressures and the labor substitution effect of new technology in agriculture canceling out.

[d]The 1951 and 1964 population estimates for the six largest cities of Valle excepting Cali (Buenaventura, Buga, Cargago, Palmira, Sevilla and Tuluá) were calculated from census reports. These cities grew at an implicit annual rate of 5.29 from 1951 to 1964. The projection assumption was arrived at by first assuming a vegetative growth rate of 3.2 and calculating the average annual net absolute migration to these cities for 1951-1964 and then applying a growth rate of 3.2 plus this constant absolute net migration of 6,400 annually for the 1964-1989 period.

[e]The 1951 and 1964 estimates of population for the *cabeceras* of Valle other than the seven largest cities was calculated from census reports. The implicit growth rate for that period was about 5.7 percent. The average growth in that period was about 9,000 per year, and the 1964-1989 projection assumes their growth to continue at this absolute level. As transportation improves it is probable that the population of many of these towns will decline. We assume this will be offset by increases in some of the other towns.

[f]The 1964-1989 population projection for Valle was determined by adding the estimates for Cali, the six secondary cities, other county seats and rural Valle. It implies a slightly declining growth rate averaging somewhat above 4.0 which is higher than the 3.5 rate implicit in the 1951-1964 census data due to expected net migration into the area.

projections are conservative. We have assumed a modest decline in the birth rate for Colombia and a substantial decline in the growth rate for the city of Cali. We also assume that most of the increased population of Valle will be urban. By 1989 we expect only about ten percent (10%) of the population of Valle will live in areas defined as rural. The projections imply that many of the migrants to Cali will continue to come from areas outside Valle.[10]

The composition as well as the size of the population is important to some planning decisions. Table 1.3 presents the age-sex distribution of the total Cali population as of 1964, and of those who immigrated to Cali from 1958 to 1964. The age profile reflects a rapidly growing population with a high proportion in the under-15 age group and a small percentage over 60. The age distribution will stimulate the natural growth rate, partially offsetting the expected decline in fertility rates. Also notable is the high proportion of women to men. This also reflects the higher ratio of women to men among Cali immigrants.

TABLE 1.3 DISTRIBUTION OF TOTAL POPULATION OF CALI AND OF 1958-1964 IMMIGRANTS BY AGE AND SEX

	Total Population			1958-1964 Immigrants to Cali		
Age Group	Male %	Female %	Total %	Male %	Female %	Total %
0 - 14	20.8	21.0	41.8	16.3	17.6	33.9
15 - 59	24.6	29.1	53.7	27.8	34.5	62.3
60 + More	1.9	2.6	4.5	1.6	2.2	3.8
TOTAL	47.3	52.2	100.0	45.7	54.3	100.0

SOURCE: CUIP Population Census for the Department of Valle del Cauca, 1964.

Of special significance is the high proportion of immigrants to Cali (62.3%) relative to the total population in the 15 - 59 age group (53.7%). The population projections and an estimate of the proportion of total population economically active was used to construct Table 1.4, which reports a projection of the number of economically active people in Cali by 5-year periods up to 1989. This estimates the number of persons working or looking for work. In any period the difference between those employed and those "economically active" are defined as unemployed. We estimate that during the total 5-year period (1964-1989), a net addition of 82 thousand people entered the Cali labor market. When added to the 204 thousand economically active in 1964, this provided the estimate of 286 thousand economically active in Cali in 1969. The major significance of these data is to illustrate the magnitude of the task of creating

[10] We estimate that half the heads of households in Cali in 1969 were born outside of Valle. Source: General Consumer Survey, 1969. See Technical Report No. 7.

productive employment for the growing population. Our projections indicate the necessity of creating about 104 thousand new jobs in Cali in the next five years, and the growth of the number seeking employment to 864 thousand in 1989--more than three times the number currently employed.

TABLE 1.4 PROJECTED GROWTH OF ECONOMICALLY ACTIVE POPULATION OF CALI 1964 - 1989[a]

Period	Number of Persons Economically Active at End of Period	Net Addition to Potential Labor Force
	Thousands	of People
1964	204	
1964-1969	286	82
1970-1974	390	104
1975-1978	520	130
1980-1984	676	156
1985-1989	864	188

[a]These data are based upon the projections of Table 1.1 and the assumptions that 32% of the Cali population will continue to be economically active. The estimate of 32% as economically active is based upon three studies: 1) Estimates and Characteristics of Unemployment in Cali, Arce Miguel and Molta, Guillermo, Universidad del Valle, Facultad de Economia, Tesis de Grado (December, 1964); 2) Unemployment and Employment of the Labor Force in the City of Cali, Center of Economic Research, University of Valle, Department of Economics, Results of the survey taken between March 1 and 7, 1965, page 13; and 3) *Encuestas Urbanas sobre Empleo y Desempleo, Apendice Estadistico*, Centro de Estudios Sobre Economia (CEDE) Bogotá, July, 1968.

We have no very reliable estimate of the level of current unemployment in Cali. The census of 1964 calculated unemployment in Cali at about 11 percent. A survey in 1965 estimated 13.2%[11] and one in 1968 estimated 15 percent[12] unemployed. The PIMUR consumer survey did not attempt a direct estimate of unemployment because of the difficulty of defining individuals in this status. We did estimate the percent of the total population employed, which was somewhat more than 23%. Previous studies had indicated 32% of the population to be economically active.[13] Assuming some downward bias in our estimate, the rate of unemployment was estimated to be about 20 percent.

[11]El Centro de Investigaciones Sobre Desarrollo Económico (CIDE). *Empleo y Desempleo de Mano de Obra en la Ciudad de Cali*, Universidad del Valle. Facultad de Económia, Cali, 1965, p. 13.

[12]Centro de Estudios sobre Desarrollo Economico (CEDE). *Encuestas Urbanas Sobre Empleo y Desempleo. Apendice Estadistico.* Universidad de los Andes, Bogotá, July, 1968.

[13]The PIMUR consumer survey provides some estimates of employment. Based on the consumer survey questions: "Is the head of this household now working?" and "How many other persons of this household are now working?" We estimate that 23 percent of the total population was employed at the time of the survey. This probably underestimates employment. Those engaged as maids and those who work at casual labor probably are underestimated. If we assume 25 percent employed and accept 32 percent as an estimate of those economically active, we get an estimated *unemployment* of slightly more than 20 percent. See Technical Report No. 7, *The Cali Consumer: Incomes, Food Purchases and Shopping Patterns*.

Fifteen percent of the households with a head under 64 years of age reported the head of the family was not employed. About 6 percent of the households were headed by a person 64 or older. However, only 8% of the male heads under 64 were not working, as compared with 53% of the female heads (households without a male head) who reported not being employed. Seven percent of all families reported that no member of the family was employed while about 13 percent reported the head was not employed but that some other member of the family had employment. These data indicate a high incidence of unemployment among young people and women.

Unemployment is clearly a pressing problem in Cali, and based on the labor force projections one may assume that the problem will become more pressing in the next two decades.

Table 1.5 shows the estimated distribution of the employed population of Cali in May, 1968, by major classes of economic activity. It shows that manufacturing is the largest source of employment, but that services and commercial activities also employ a large proportion of the population.

TABLE 1.5 DISTRIBUTION OF LABOR FORCE BY TYPE OF ECONOMIC ACTIVITY, CALI, MAY, 1968

Economic Activities	Percent
Agriculture, Forestry and Fishing	1.8
Extractive Industries	0.7
Processing	34.1
Construction	6.9
Electricity, Water, Gas and Sanitary Services	0.2
Commerce	18.1
Transportation, Storage and Communication	5.4
Services	22.2
Public Services	5.4
Armed Forces (excluding Police)	0.8
Other Activities	4.3
TOTAL	100.0

SOURCE: Centro de Estudios sobre Desarrollo Económico (CEDE). *Encuestas Urbanas sobre Empleo y Desempleo, Apéndice Estadístico*, Bogotá, July, 1968.

The structure of the economic activity for the Department of Valle is more adequately revealed in Table 1.6, where the value of production is shown for specific sub-sectors of the economy. Although these data are relatively unrefined estimates, they emphasize the importance of industry and agriculture as the largest components of regional economic activity.

TABLE 1.6 SECTORAL ORIGIN OF GROSS INTERNAL PRODUCT AT CURRENT MARKET PRICES FOR THE DEPARTMENT OF VALLE DEL CAUCA, 1964

Sector	Value Added	Percent
	(million pesos)	
Agriculture	1,525.8	20.70
Mining	41.7	0.57
Industrial Manufacturing	2,270.9	30.80
Construction	325.5	4.42
Electricity and water	64.8	0.88
Transportation, storage and communication	653.8	8.86
Commerce	1,164.3	15.80
Banking, insurance and finance	133.4	1.80
Housing	348.0	4.72
Public Administration	364.6	4.94
Services	479.6	6.51
TOTAL	7,372.7	100.00

SOURCE: El Centro de Investigaciones Sobre Desarrollo Económico (CIDE) de la Universidad del Valle, *El Por Que de Un Plan de Desarrollo Económico y Social Para el Departamento del Valle del Cauca*, Cali, 1966, Cuadro II-1.

Table 1.7 shows the industrial activity of Valle relative to other areas of Colombia as of 1966. Valle is one of the three major manufacturing centers of the country, contributing about one-fifth of the country's gross manufacturing product. The data also indicate that Valle manufacturing firms are somewhat larger than the average.

TABLE 1.7 A COMPARISON OF THE PERCENTAGE CONTRIBUTION OF SELECTED REGIONS TO TOTAL NATIONAL MANUFACTURING ACTIVITY, 1966

	Region		
	Antioquia	Bogotá, D. E.	Valle
Number of establishments (% of total)	16.7	24.1	15.5
Personnel employed (% of total)	25.4	26.0	17.5
Remuneration (% of total)	27.0	25.0	19.4
Gross Production (% of total)	20.2	22.4	20.4
Value Added (% of total)	23.3	23.3	21.1

SOURCE: *Boletin Mensual de Estadistica*, DANE, No. 212, October, 1968.

The difficulty of creating sufficient new and productive jobs for the burgeoning labor force in Cali becomes even more apparent when one considers the present levels of education. Table 1.8 shows that 62 percent of the heads of households in Cali have 5 years of schooling or less. Since more than half of the yearly growth in the labor force is made up of migrants who have even less education than current Cali residents, it is clear that educational levels will be a limiting factor in efforts to employ the exploding urban population productively.

TABLE 1.8 CALI - PERCENTAGE DISTRIBUTION OF EDUCATION OF HEAD OF FAMILY, HOUSEWIFE, AND MEMBER OF THE FAMILY WITH MOST EDUCATION BY LEVELS OF EDUCATION, FEBRUARY, 1969

Education Levels	Heads of Family	Housewives	Member with Most Education
No education	3.9	4.5	0.2
Primary, unfinished	31.0	40.3	16.6
Primary, completed	27.0	29.5	22.0
Secondary, unfinished	22.6	21.1	38.7
Secondary, completed	9.0	3.0	10.9
University	6.5	1.6	11.6
TOTAL	100.0	100.0	100.0

NOTE: 1. Unfinished education means not having completed the official number of years for each level (5 for primary, and 6 for secondary)

2. The university level includes university studies completed or incomplete.

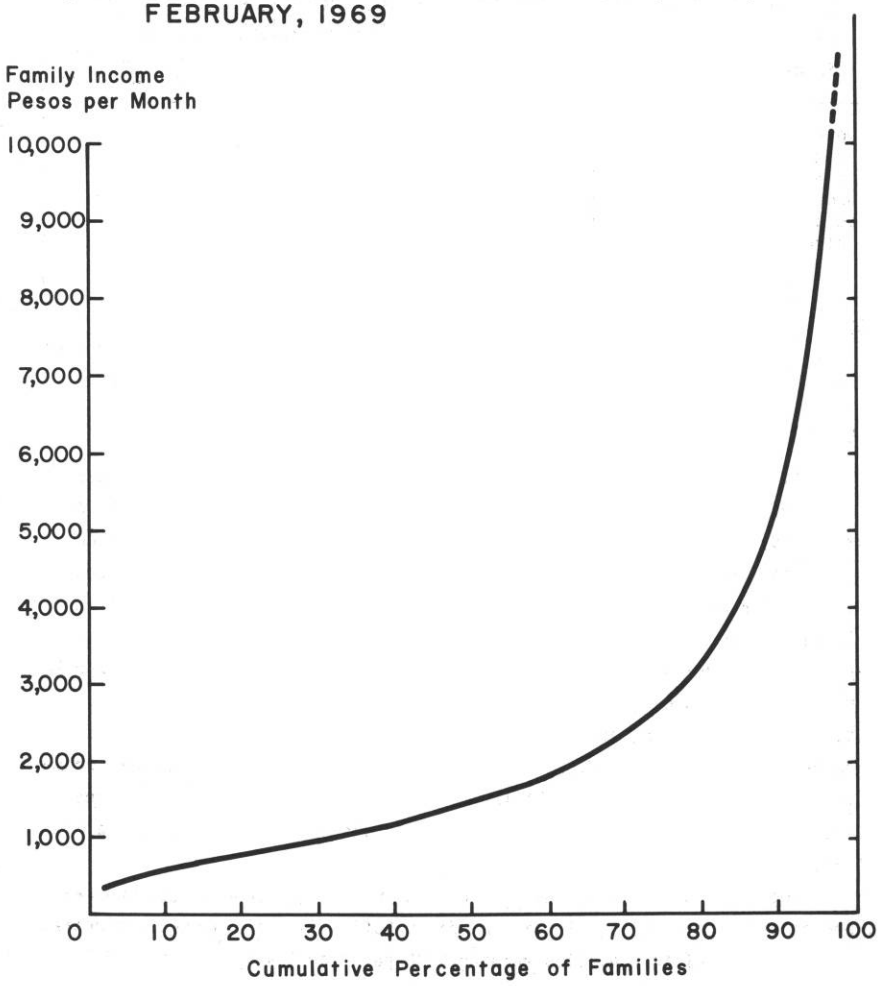
SOURCE: PIMUR, General Consumer Survey, 1969.

Estimates of level and distribution of incomes are important in assessing effective demand, productivity and equity of an economy. From the PIMUR consumer study we obtained estimates of disposable cash income. These data are based upon the respondent's estimates of the families' incomes from all sources and for all members. We would expect some under-reporting, and we would expect only cash income to be reported. We would not expect a large part of the social payments (*prestaciones sociales* such as *cesantia*, bonuses, etc.) to be reported, nor insurance by those covered under the Instituto Colombiano de Seguros Sociales. In addition, domestic and service workers often receive payment in kind or other special benefits, which are undoubtedly excluded from our income estimates. While it is difficult to estimate the value of these extra benefits, it is quite likely that available cash incomes are somewhat higher in reality at all income levels than our estimates indicate.

Recognizing the limitations of the data, we can get some useful general impressions in Figure 1.2. The income distribution is quite disproportionate, with 67 percent of the families earning 2100 pesos or less per month. Table 1.9 shows per capita incomes, per household incomes, and related information by per capita income groups.

Assuming that the current income distribution pattern holds and that all income groups enjoy an annual increase of 1.5% in real income, average per capita income projections are presented in Table 1.10 for the four income groups. These projections illustrate the slow rate of improvement for lower income groups assuming a higher real growth rate than has been achieved on the average in the past two decades. Columns 3 and 4 in Table 1.10 also show the population growth expected in each income group.

Fig. 1.2 DISTRIBUTION OF FAMILY INCOME, CALI, FEBRUARY, 1969



SOURCE: Pimur Consumer Survey, (1969)

TABLE 1.9 PER CAPITA AND PER HOUSEHOLD INCOME AND THE DISTRIBUTION OF POPULATION CLASSIFIED BY LEVEL OF DISPOSABLE CASH INCOME, CALI, FEBRUARY 1969

Range of Per Capita Income	Percent of Households	Percent of People	Income Per Capita Mean	Income Per Capita Median	Income Per Household Mean	Income Per Household Median
1. Less than 125	20.3	25.5	86	92	686	600
2. 126 - 240	27.8	29.1	176	167	1167	1000
3. 241 - 500	28.7	25.3	352	333	1962	2000
4. More than 500	23.2	20.1	1157	893	6340	5000
All Families	100.0	100.0	395	214	2500	1500

Based upon reports of the 520 out of 625 households who provided income information on the PIMUR General Consumer Survey in Cali.

TABLE 1.10 PROJECTED CHANGES IN PER CAPITA INCOME AND POPULATION BY PER CAPITA INCOME GROUPS - CALI, 1969 - 1989[a]

Income is in 1969, Pesos per Month[b]				
	Average Per Capita Income Pesos per Month	Changes in Income Pesos per Month	Number of People (Thousands)	Change in Number of People (Thousands)
		Group 1 - Less than 125 Pesos in 1969		
1969	86		228	
1974	93	7	311	83
1979	100	7	414	103
1984	109	8	539	125
1989	116	8	688	149
		Group 2 - 126-240 Pesos in 1969		
1969	176		260	
1974	190	14	355	95
1979	204	14	473	118
1984	220	16	615	142
1989	237	17	785	170
		Group 3 - 241-500 Pesos in 1969		
1969	352		226	
1974	379	27	308	82
1979	408	29	411	103
1984	440	32	535	124
1989	474	34	683	148
		Group 4 - More than 500 Pesos in 1969		
1969	1157		180	
1974	1246	89	245	65
1979	1343	97	326	81
1984	1446	103	425	99
1989	1558	112	542	117

[a]Assumes a 1.5% growth rate for each income group and a proportionate growth in the population among the income groups based upon growth rates assumed in Table 1.1.

[b]The official exchange rate between the Colombian peso and the U.S. dollar was 16.90 to 1 in February, 1969 when this research was being done.

The income projections are, of course, in 1969 constant pesos. Another important characteristic of the general economic setting is the changing value of the peso or the extent of inflation. Table 1.11 shows the change in the index of prices for workers from 1959 to 1968 (with 1955 = 100). The index of prices for employees and the wholesale price index show a very similar pattern of inflation. The index of total prices indicates that Cali has had slightly less price increases than the country as a whole. Most significant is the fact that the national index of food prices increased significantly more than the prices of all goods, and very much more than housing or clothing. Food prices increased more than 400% in monetary terms since 1955. This increase has clearly had very serious effects on the level of living for the low income families who spend a very high proportion of their income on food. In addition, it points up the necessity of reducing the costs in the food production-distribution system.

TABLE 1.11 CONSUMER PRICE INDICES (BLUE-COLLAR WORKERS)
(BASE: 1955 = 100)

Year	CALI					NATIONAL				
	Food	Housing	Clothing	Total	Price Change	Food	Housing	Clothing	Total	Price Change
					%					%
1959	161.4	143.1	142.6	155.8		155.9	140.9	149.7	151.9	
					5.2					5.7
1960	171.5	148.5	149.7	163.9		163.5	151.7	160.0	160.5	
					5.1					8.5
1961	183.4	152.9	156.9	172.3		180.9	163.4	166.6	174.1	
					4.1					4.3
1962	186.6	160.4	165.0	179.4		182.8	176.6	173.8	181.6	
					26.8					27.3
1963	246.1	186.4	208.1	227.2		241.5	211.5	215.2	231.1	
					17.8					17.7
1964	308.3	205.4	220.6	267.7		299.9	236.8	228.6	272.1	
					8.9					7.1
1965	332.8	232.6	236.4	291.5		312.9	265.6	245.9	291.3	
					17.0					16.7
1966	397.2	257.1	301.0	341.0		369.7	297.6	306.1	339.9	
					6.3					8.1
1967	410.7	279.8	325.3	362.3		388.1	227.3	338.8	367.3	
					6.7					7.4
1968	431.2	300.3	349.0	386.7		416.1	353.2	361.0	394.5	

SOURCE: Revista del Banco de la Republica, April 1964 - January 1969.

Organization of the Summary Report

The research findings from the 16 Technical Reports have been summarized into five chapters which comprise a central core of this report. Within each chapter (2 through 6) a brief description and diagnosis of various segments of the agricultural-industrial system are presented along with related recommendations. Chapter 2 is a description and analysis of the urban food distribution system serving Cali. The socio-economic characteristics of consumers are related to existing shopping patterns. Demand for food products and marketing services are projected several years into the future. The existing system of food wholesaling and retailing is described and alternative ways of improving the system are considered. The vertical production-distribution systems for meat, poultry, eggs, milk, selected fruits and vegetables and grains are described and evaluated in Chapter 3. Chapter 4 describes and evaluates the performance of special industries in the food system including technical farm inputs, food processing, packaging and transportation. Analyses of manufactured consumer goods industries and residential construction in Chapter 5 provide some important insights into the role of these activities in the industrial transition process. Some public aspects of market coordination, such as laws and regulations, information and communication and credit are presented in Chapter 6.

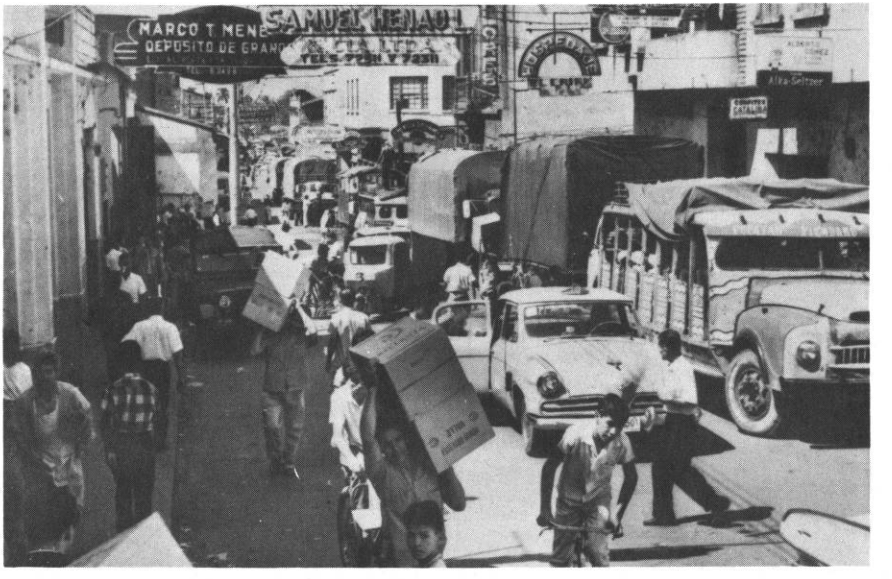
Following the description, diagnosis, and recommendations presented in Chapters 2-6, a more aggregative summary evaluation is made in Chapter 7. The performance of the existing system of market coordination is examined against a conceptual framework of how market processes can contribute to regional economic development.

The overall organization of this summary report is designed to facilitate the diagnosis of problems within a systems framework. There are obvious linkages between the urban food distribution system and the vertical commodity supply systems. Functional studies of credit, information flows, transportation, laws and regulations cut across all phases of the food system and the related industrial activities. In the diagnoses and related recommendations, these system interrelationships have been considered, although it has not been possible to portray these as a precise, formal economic model.

A final chapter (8) is directed toward implementation strategy and problems of financing and carrying out the recommendations that have evolved from the PIMUR project. Suggestions are offered on strategies for fomenting desirable patterns of change in market processes. However, it should be stressed that this report is not a blueprint for economic development. In combination with the related Technical Reports, it does provide a valuable information base for development planning with some specific recommendations for immediate consideration by policy makers and action agencies.

The Galería Central building constructed in 1941 to serve as the *plaza* market for Cali. This facility is located in the central area of the city.

Fruit and vegetable vendors and shoppers in the street adjacent to the Galeria Central.

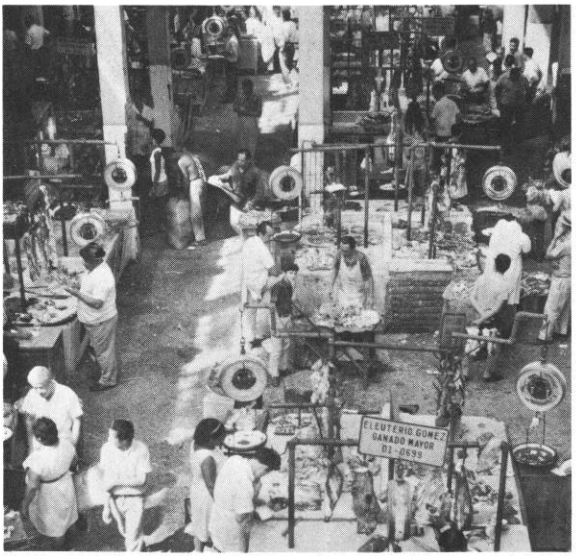


Traffic congestion in one of the streets in the Galería Central area which serves as the major wholesale center for the city.

A wholesaler-retailer establishment in the Galería Central area handling a broad line of food products including meat. *Ambulantes* are selling fruits and vegetables in the street in front of the store.

The Alameda *plaza* market which is one of five satellite public markets in Cali. This is the oldest and largest volume satellite market. It is located in a middle and upper income area.

The Cristobál Colón satellite market is the second largest public market. It is located in a lower income area.



The meat section in the Galería Central. Beef and pork carcasses are delivered to these stalls which are rented by individual retailers.

Fruit and vegetable stalls in the Alameda public market.

Fruits being sold on the sidewalk near the Alameda public market.

A small food store located within a residence in one of the lower income *barrios*. This type of outlet handles a high percentage of the food purchased by low income families.

A small *supermercado* located in a middle income *barrio*. A *panaderia* is located in the same building but is a separate business.

A modern supermarket located in an upper income area. The store is one of three operated by this firm.

CHAPTER 2

THE CALI URBAN FOOD DISTRIBUTION SYSTEM

Introduction

Analysis of the Cali urban food distribution system involves consideration of three major groups -- consumer, retailer and wholesaler -- as well as the interfaces between them. Since a central purpose of the food production-distribution system is to better serve the consumer, the initial focus in this chapter is on the consumer's purchasing patterns and attitudes toward various retail outlets. Characteristics of retailers, services provided by them, and economic costs and returns are viewed in the context of consumer needs. The structure of the wholesale sector servicing retailers is considered, together with the wholesaler-retailer relationship in terms of the services provided the retailers to enable them to more adequately serve the consumer sector.

Following description and analysis of the existing system, the need for change is considered. A political decision to tear down the main Central Market (Galeria Central), together with disruption of retail operations in the immediately surrounding area, is forcing realignment of consumer shopping patterns. The proposed development of a wholesale center should materially affect the retailer-wholesaler relationship. Within this context of change, the feasibility of larger scale, full-line, low-price neighborhood retail outlets is examined, as well as the feasibility and necessity of developing concommitant full-service wholesalers to supply these new retailers.

Finally, recommendations regarding the development of a more effective urban food distribution system are put forward.

Consumer Food Purchasing Patterns

Food consumption patterns in Cali are dominated in great measure by the level and distribution of income.[1] Income distribution is highly skewed (see Figure 1.2); although the mean family income is $2500 per month, 14% of Cali families reported monthly cash incomes of less than $600, 29% reported less than $900 , and 67% less than $2400 per month. Distribution of households and

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[1]The data presented on food expenditures and income come from two sources--the Encuesta General de Consumidores and the Encuesta de Canasta de Consumo, both carried out by PIMUR in February 1969. The first was a random sample of 629 families, and the second a sub-sample of 239 families who agreed to participate in the more detailed Market Basket study. Within each of these, there were sub-groups of 522 and 182 families, respectively, consisting of those families willing to give us details of their income. Much of the analysis could use data only from these sub-groups.

people by income class is shown in Table 2.1. Households of low per capita income have larger average size of household, which is one of the reasons for the low per capita income. About one-fifth of the households and one-fourth of the people have a per person monthly income of less than $125, while about one-fourth of the households and one-fifth of the people have per capita incomes of $500 or more.

TABLE 2.1 DISTRIBUTION OF POPULATION AND HOUSEHOLDS CLASSIFIED BY PER CAPITA INCOME LEVELS, CALI, FEBRUARY 1969

	$0-125	$126-240	$241-500	$501 and over	All Families
Average number of persons per household	8.0	6.6	5.6	5.5	6.25
% of Population	25.5	29.1	25.3	20.1	100.00
% of Households	20.3	27.8	28.7	23.2	100.00

SOURCE: PIMUR, General Consumer Study, 1969.

At the time of the PIMUR study, 42% of consumer income in Cali was spent for food. While high, this aggregate figure understates substantially greater food expenditures among low income groups. (Table 2.2.) The lowest quarter of the population spend an average of more than 80% of their income for food, while the second lowest quarter spend nearly two-thirds of their income for food.[2]

TABLE 2.2 DIFFERENCES IN TOTAL FOOD EXPENDITURES AMONG GROUPS CLASSIFIED BY PER CAPITA INCOME, CALI, FEBRUARY 1969

	$0-125	$125-240	$241-500	$500 and more
Income ($/month) Average	91.00	177.00	340.00	1064.00
Food Expenditures ($/month) Average	75.00	112.00	161.00	294.00
As % of Income	82	63	47	28
Elasticity of Demand	.61	.57	.57	

SOURCE: PIMUR, Consumer Study, 1969.

The distribution of expenditures among different foods for the four income groups and the total population is shown in Tables 2.3 and 2.4. Table 2.3 gives expenditures in pesos per month and Table 2.4 shows the percentage of expenditures allocated to each food.

[2]The data reported here suggest higher expenditures on food than reported in earlier studies. For example, a study by DANE in 1963 reported that food expenditures absorb 49.3% of the blue-collar worker's budget and 35.5% of the white-collar worker's income. An informal survey in 1966 by the CVC indicated that blue-collar workers in Cali were spending over 50% of their income on food, while in one of the poorest neighborhoods in Cali expenditures on food rose to nearly 60% of income. Both studies are quoted in José Miguel Bernal Z., *Certain Aspects of Food Distribution in Colombia* (Master of Science Thesis, M.I.T., 1965, reproduced by the Facultad de Administración Industrial, Universidad del Valle), p. 53.

TABLE 2.3 PER CAPITA EXPENDITURES FOR DIFFERENT FOODS BY PER CAPITA INCOME GROUPS, CALI, SPRING 1969

	Expenditures and Incomes in $ per Month				
	$0-125	$126-240	$241-500	$501 and over	Total Sample
Meats	20.25	33.26	49.16	87.18	44.94
Beef	15.58	25.74	36.88	57.77	32.44
Beef (with bone)	.03	1.15	1.42	3.08	1.32
Others	4.63	6.37	10.86	26.33	11.18
Poultry	1.63	4.24	7.05	22.57	8.07
Chickens	.23	.79	2.76	12.12	3.50
Eggs	1.40	3.45	4.29	10.45	4.57
Dairy	4.77	10.99	21.03	38.17	17.46
Fluid Milk	3.60	8.92	15.97	24.69	12.51
Others	1.17	2.07	5.06	13.48	4.95
Grains	14.04	19.29	23.35	27.65	20.58
Rice	8.86	12.09	14.31	15.00	12.37
Beans	2.63	3.06	3.44	4.21	3.28
Corn	1.29	1.36	1.48	1.11	1.32
Others	1.25	2.78	4.12	7.13	3.61
Fruits, Vegetables	13.13	19.29	22.14	53.97	25.61
Potatoes	3.85	4.02	3.90	5.30	4.22
Stem onions	.75	.89	1.02	1.30	.97
Tomatoes	1.25	2.05	1.85	5.67	2.55
Plátano	3.67	4.91	5.28	6.86	5.08
Others	3.60	7.42	10.09	34.84	12.79
Processed Foods	21.37	25.20	38.35	64.68	35.65
Oil	.72	2.75	5.25	9.52	4.23
Lard	3.20	2.92	2.39	1.52	2.57
Sugar	2.34	2.74	3.10	5.91	3.39
Pan-sugar	4.05	4.47	4.48	4.79	4.43
Bread	3.75	4.25	8.34	11.49	6.63
Pastas	.87	1.27	1.19	1.34	1.16
Chocolate	1.83	1.50	2.05	1.86	1.80
Coffee	2.33	1.98	2.22	3.57	2.47
Canned goods	.20	.80	2.50	10.58	3.10
Others	2.07	2.52	6.83	14.10	5.87
TOTAL	75.19	112.27	161.08	294.22	152.31

SOURCE: PIMUR, Market Basket Survey, 1969.

TABLE 2.4 PERCENTAGE OF FOOD EXPENDITURES SPENT FOR DIFFERENT FOODS BY PER CAPITA INCOME GROUPS CALI, SPRING 1969

	Income Group (pesos per month)				
	$0-125	$126-240	$241-500	$501 and over	Total Sample
Meat	26.93	29.63	30.52	29.65	29.51
Beef	20.73	22.93	22.90	19.65	21.30
Beef (with bone)	.04	1.02	.88	1.05	.87
Others	6.16	5.68	6.74	8.95	7.34
Poultry	2.17	3.78	4.38	7.68	5.30
Chickens	.31	.70	1.71	4.12	2.30
Eggs	1.86	3.08	2.67	3.56	3.00
Dairy	6.34	9.79	13.06	12.98	11.46
Fluid Milk	4.79	7.95	9.91	8.40	8.21
Others	1.55	1.84	3.15	4.58	3.25
Grains	18.67	17.18	14.50	9.34	13.51
Rice	11.78	10.77	8.88	5.10	8.12
Beans	3.50	2.73	2.14	1.43	2.15
Corn	1.72	1.21	.92	.38	.87
Others	1.67	2.47	2.56	2.43	2.37
Fruits, Vegetables	17.47	17.18	13.74	18.35	16.81
Potatoes	5.12	3.58	2.42	1.80	2.77
Stem onions	1.00	.79	.63	.43	.64
Tomatoes	1.66	1.83	1.15	1.93	1.67
Plátano	4.88	4.37	3.28	2.33	3.33
Others	4.81	6.61	6.26	11.86	8.40
Processed Foods	28.42	22.44	23.80	22.00	23.41
Oil	.96	2.46	3.26	3.24	2.78
Lard	4.26	2.60	1.48	.52	1.69
Sugar	3.11	2.44	1.92	2.01	2.23
Pan-sugar	5.39	3.98	2.78	1.63	2.91
Bread	4.99	3.79	5.18	3.91	4.35
Pastas	1.16	1.13	.74	.45	.76
Chocolate	2.43	1.34	1.27	.63	1.18
Coffee	3.10	1.76	1.38	1.21	1.62
Canned goods	.27	.71	1.55	3.60	2.04
Others	2.75	2.33	4.24	4.80	3.85
TOTAL	100.00	100.00	100.00	100.00	100.00

SOURCE: PIMUR, Market Basket Survey, 1969.

TABLE 2.5 INTERGROUP "ARC" INCOME ELASTICITY ESTIMATES FOR SELECTED FOODS, CALI, 1969

Product	Per Capita Income Levels, $/month		
	0-125 to 126-240	126-240 to 241-500	241-500 to 500 and over
Beef	.7623	.5640	.4280
Pork	1.1923	1.2026	.7758
Chicken	1.7020	1.7593	1.2199
Eggs	1.3104	.3440	.8105
Milk	1.3172	.8979	.4160
Rice	.4780	.2666	.0456
Beans	.2344	.1855	.1953
Corn	.0818	.1341	-.2762
Potatoes	.0922	-.0482	.3534
Yuca	.2920	.1649	.1753
Stem onion	.2647	.2159	.2341
Tomato	.7515	-.1626	.9853
Plátano	.4480	.1151	.4098
Cabbage	.9034	-.0812	.2777
Orange	.6420	1.0910	1.0101
Lard	-.1420	-.3164	-.4426
Oil	1.8136	.9908	.5750
Pan-sugar	.1528	.0035	.0664
Sugar	.2440	.1953	.6204
Bread	.1938	1.0301	.3161

SOURCE: PIMUR, Market Basket Survey, 1969.

Table 2.5 presents the arc income elasticities derived from the grouped income and expenditure data for major food items. In general, the elasticities appear consistent in pattern, with elasticities falling as incomes rise. There are, however, some anomalies which we cannot explain. They may reflect unusual consumption patterns; more likely, they are the result of problems in data collection. The major ambiguities are found in patterns of fruit and vegetable consumption between families in the second and third income quartiles, especially in the cases of potatoes, tomatoes and cabbages. Notwithstanding these few inconsistencies in the data, overall they appear sufficiently reliable to act as a base for public policy decisions.

Meat is a very important expenditure for families at all income levels, representing almost 30% of total food purchases. Most of this is for beef. The upper income group spends four times as much for meat per capita as the lowest group. Since meat is such an important food item, it offers a special opportunity to achieve benefits through improving distribution efficiency. The income elasticity for pork is higher than for beef; thus, we may expect some shift in the proportion of pork to beef as incomes rise.

In contrast to beef, the percentage of expenditures spent for poultry meat increases sharply with level of income. Currently, poultry is relatively expensive and comprises a small portion of the diet. However, if lower prices result from better feed conversion, the potential market can be expected to

increase significantly, as poultry had the highest average income elasticity of the foods studied. Eggs are slightly more important in expenditures than poultry meat and would be purchased in much greater quantities by low income families in response to increases in income or reduction in price.

Milk is also an important item in the diet at all income levels. In total, dairy products are nearly as important as grains in the expenditure of the Cali population. The highest income group spends nearly 13% of its food peso for milk, compared with about 6% by the low income group. The income elasticity between the lowest and the second lowest income groups indicates a substantial potential growth in milk consumption for the lowest group if incomes increase or milk prices drop. (Table 2.5.)

Expenditures for grains represented about 14% of food expenditures by the total Cali population.[3] The upper income group spends almost twice as much per person for grains as did the low income group, indicating that the demand for grains would expand with higher incomes or reduced prices. Even so, the higher income group expended only 9% of its food budget for grains, compared with almost 19% by the lowest group. Rice is by far the most important grain in the diet of all income groups. Corn is a very small consumption item, representing less than 1% of total expenditures, with a very low income elasticity.

A great range of fruits and vegetables is available in Cali and these items are an important element in the diet at all income levels. In total, fruits and vegetables accounted for about 17% of the food peso, about half of which was spent for a large number of different items which we have classified as "other". Both potatoes and *plátano* represent greater percentage expenditures in the low income diet, although more is spent for them absolutely by the higher income groups. In the case of potatoes, the upper income group buys a higher priced potato as well as a larger quantity. The upper income group spends four times as much for all fruits and vegetables and ten times as much on the miscellaneous "other" category as does the lowest income group.

The importance of food processing is shown by the high percentage of all food budgets spent for processed foods. One of the few foods which shows a decline in expenditures as income increases is lard, which is replaced by the more preferred vegetable oil. This is clearly indicated by the relative income elasticities. While the upper income group spends three times as much for processed foods as the lowest group, the low income group spends a larger percentage of its food peso for these items.

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[3]In addition, wheat is purchased as bread (about 4% of the food peso) and pastas, and some additional corn is included in the "others" processed category.

The overall performance of the economic system, and the food sub-system in particular, can be partially judged by the nutritional adequacy of consumers' diets. The nutritive content of the average market basket purchased by low income families was estimated using data from the PIMUR Market Basket Study and the nutritive composition values reported in an earlier Colombian nutrition study[4] (Table 2.6). The daily calorie intake was estimated to be around 1400 per capita and the protein intake about 27 grams per day. These overall averages are approximately the same as those reported for low income families in Cali in the 1960 study mentioned above.[5] In both instances the observed nutrition levels reveal deficiencies in terms of both calories and proteins when compared with recommended intakes. Nutritional needs vary substantially by age, sex and physical size of individuals. Hence, protein requirements may vary from about 40 to 90 grams per person per day. The Cali data indicate a substantial protein deficiency[6] which is made more serious by the low proportion of the total protein which is derived from animal sources. The caloric requirements per capita in a warm climate such as that of Cali ranges from around 1000 to 1200 calories for children under five years of age to around 2500 to 2700 calories for male adults, with an average per individual per family of about 1500 calories.[7]

Thus, it is clear that the low income families in Cali would benefit substantially from programs that would raise their incomes and/or lower the real price of food.

It is suggested that further analysis of the PIMUR Market Basket data and related field observations should be undertaken to more clearly identify nutritional conditions in Cali as an input for consumer education programs and for the planning of additional studies in support of applied nutrition programs.

In planning changes in market facilities and institutions serving Cali, it is helpful to have estimates of the volume of products being handled by the existing system, as well as projections of volumes that will need to be handled in the future. Table 2.7 provides estimates of the peso value of major food groups and selected specific products purchased at retail by Cali households in 1969. Using the population and income projections presented in Table 1.10 and the income elasticities derived from the PIMUR Market Basket Study (Table 2.5),

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[4]Arnold E. Shaefer, *et al.*, *Colombian Nutrition Survey*, A Report by the Interdepartmental Committee on Nutrition for National Defense, Washington, D.C., 1961, Appendix Table VI, pp. 256-260.

[5]*Loc. cit.*, pp. 86 and 89.

[6]U. S. Department of Agriculture, *Food--The Yearbook of Agriculture*, 1959, Washington, D.C., p. 61.

[7]Arnold Schaefer, *op. cit.*, p. 85.

TABLE 2.6 AVERAGE DAILY FOOD PURCHASES BY LOW INCOME FAMILIES AND ESTIMATED NUTRITIVE CONTENT PER CAPITA, CALI, 1969

Product	Average Quantity per Capita[a]	Caloric Intake[b]	Grams of Protein[b]
Beef	.079 lb.	59.42	4.79
Milk	45.5 gms.	22.75	1.55
Eggs	.077 eggs	6.02	.47
Rice	.137 lb.	245.56	5.34
Beans	.027 lb.	40.77	2.75
Corn	.043 lb.	70.52	1.63
Potatoes	.217 lb.	72.91	1.65
Plátano	.194 lb.	69.84	0.88
Tomatoes	.032 lb.	2.18	.11
Cooking fat	.025 lb.	111.50	-
Sugar	.076 lb.	145.92	-
Pan Sugar	.119 lb.	185.64	.30
Bread	.112 loaves	56.62	1.51
Pastas	3.31 gms.	11.55	.35
Coffee	.013 lb.	6.24	.23
Chocolate	.006 lb.	13.23	.11
TOTAL		1120.67	21.66
Adjusted Total[c]		1392.14	26.91

[a]Average quantity purchased per capita by PIMUR market basket families in lower quartile when grouped by per capita income.

[b]Based upon nutrient composition values which appear in Appendix Table VI, *Colombian Nutrition Survey*, May-August 1960, A Report by the Interdepartmental Committee on National Defense, Washington, D.C., 1961.

[c]The items listed above in this table represented about 80.5 percent of the total market basket purchased by these families. The total nutritive intake has been adjusted to include these other food items.

TABLE 2.7 TOTAL MONTHLY EXPENDITURES FOR ALL FOOD AND FOR SELECTED FOOD ITEMS IN CALI, 1969 WITH PROJECTIONS FOR 1979 AND 1989 (at 1969 prices)

Product	1969 million pesos	1979 million pesos	1979 Index 1969=100	1989 million pesos	1989 Index 1969=100
Meat	38.37	79.09	203	142.51	367
Beef	29.20	59.83	205	108.45	371
Poultry	6.98	15.25	218	29.50	423
Chickens	3.03	7.18	237	15.03	496
Eggs	3.95	8.40	213	15.74	398
Dairy	15.10	31.03	205	56.63	375
Milk	10.82	23.16	214	43.86	405
Grains	17.80	34.95	196	60.43	339
Rice	10.70	20.90	195	36.11	337
Beans	2.84	5.49	193	9.42	332
Corn	1.14	2.14	188	3.54	312
Fruits and Vegetables	22.15	46.63	211	87.07	393
Potatoes	3.65	7.00	192	11.85	325
Yuca	.30	.58	193	.99	330
Tomatoes	2.21	4.48	203	8.04	364
Plátano	4.39	8.66	197	15.11	344
Processed Foods	30.84	61.08	198	105.85	343
Lard	2.22	4.00	180	6.34	286
Oil	3.66	8.12	222	15.95	436
Brown Sugar	3.83	7.28	190	12.23	319
Sugar	2.93	5.80	198	10.23	349
Bread	5.73	11.63	203	20.84	364
TOTAL	131.24[a]	268.03	203	481.99	366

[a]The "total" is the sum of expenditures for major food groups such as meat, grains, fruits and vegetables.

SOURCE: Computed from PIMUR Consumer Survey data and population and income projections presented in Table 1.10 of this report.

we have derived projections of food expenditures for 1979 and 1989. These projections provide estimates of the demand for food by households in Cali if relative product prices remain the same as in 1969 and if households adjust their purchases in accordance with the income consumption patterns revealed in the cross-sectional analysis of the PIMUR Market Basket data.

As would be expected on the basis of data presented in Tables 2.3 and 2.5, the greatest relative increases in projected demand are for products such as poultry, meat, milk, eggs, cooking oil, selected fruits and vegetables, and beef. However, since the projections are based upon relatively large annual increases in the Cali population (5 to 7% per year) and relatively small increases in real income per capita (1.5% per year), the differential increases in demand among products are not particularly wide. For example, the demand for corn triples by 1989, while the demand for milk quadruples.

The Structure of Food Retailing[8]

An Overview of Food Retailing Institutions

The retail food distribution system in Cali, as in most developing countries, consists of a large number of low volume outlets. At the time of the PIMUR sample census in November 1968, there were approximately 9000 food retailers of various types in the city, or one retail outlet for every 15.4 households. Approximately 42% of the retailer population is composed of public market operators (Table 2.8). An additional 48% of the retail outlets are personal service grocery stores, *i.e.*, with clerk attendants who wait on the customer. There are also approximately 860 outlets (10% of the total) specializing in poultry, dairy, meat and bakery products. Finally, a few self-service outlets are in operation.

TABLE 2.8 NUMBER AND TYPE OF RETAIL FOOD OUTLETS IN CALI, NOVEMBER 1968

	Number	%
Public market retailers	3755	42.1
Personal service stores	4241[a]	47.6
Self-service stores	54	0.6
Specialty outlets	864	9.7
TOTAL	8914	100.0

[a]This includes the 696 independent meat *bancos* operating within personal service stores, but does not include 19 of the largest wholesale-retailers who do the major portion of their business at wholesale.
SOURCE: PIMUR, Retail Study, 1969.

The approximately $137 million of food consumed monthly in Cali is distributed through the four major outlet types as shown in Table 2.9.[9] Public market operators handle one-fifth of the food moving through retail outlets. These operations are particularly important in the marketing of fruits and vegetables, and account for 30 percent of the meat sales. However, while the

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[8]This section and subsequent ones dealing with retailers and wholesalers are based on PIMUR Technical Report No. 6, *The Cali Urban Food Distribution System.*

[9]The data presented in Table 2.9 are not completely equivalent to those presented earlier in Table 2.3. Data on the value and volume of food consumed in Cali were collected in the consumer studies, retailer-wholesaler surveys, and channel studies. While these data were generally consistent, they nevertheless differed for some products. Since no reasonable basis existed for adjusting the consumer data by income level, it has been presented as collected. In developing the aggregate data in Table 2.9, however, we have reconciled the three sources of data. For a detailed discussion of the reconciliation, see PIMUR Technical Report No. 6, *The Cali Urban Food Distribution System.*

public market system is an important element in food retailing, it should be kept in mind that it is *not* the major factor in the food marketing system. Personal service outlets are the largest element in the system, marketing over half the food sold at retail. These retailers are important factors for the whole range of food products, although they are relatively least important in fruit and vegetable distribution. Self-service stores account for one-eighth of retail food sales, generally in the upper income areas. Their major sales volume is in processed foods, of which canned and bottled goods are important items. Specialty stores are significant factors in the retailing of poultry and eggs, and dairy products.

TABLE 2.9 MONTHLY RETAIL SALES OF FOOD IN CALI, BY OUTLET TYPES AND PRODUCT GROUP, FEBRUARY 1969 (Thousands of Pesos)

	Total	Public Markets	Personal Service Stores	Self-Service	Specialty Stores
Meat	37,994	11,599 (30.5%)	20,522 (54.0%)	2,637 (7.0%)	3,236 (8.5%)
Processed Foods	32,579	2,177 (6.7%)	21,475 (65.9%)	7,668 (23.5%)	1,259 (3.9%)
Fruits and Vegetables	20,718	10,679 (51.5%)	5,138 (24.9%)	1,453 (7.0%)	3,448 (16.6%)
Grains	17,570	2,407 (13.7%)	12,724 (72.4%)	2,439 (13.9%)	-
Dairy Products	13,701	409 (3.0%)	5,637 (41.1%)	1,448 (10.6%)	6,207 (45.3%)
Beverages	8,435[a]	7 (0.1%)	7,914 (93.8%)	514 (6.1%)	-
Poultry and Eggs	6,142	283 (4.6%)	2,304 (37.5%)	1,020 (16.6%)	2,535 (41.3%)
TOTAL[b]	137,139	27,561 (20.1%)	75,714 (55.2%)	17,179 (12.5%)	16,685 (12.2%)

[a]Only beverage sales in these outlets are shown. Total sales would also include home delivery, and other outlets such as bars, restaurants, stands, etc.

[b]Retail sales to consumers only. Does not include institutions or industries.
SOURCE: PIMUR, Retail, Consumer and Commodity Studies, 1969.

The Central Market area, consisting of the Galeria Central, the two adjoining Calvarios public markets, and a variety of personal service retailers in the immediate surrounding area, is a significant part of the food retailing system. This area alone accounts for approximately one-fourth of all food sold in Cali and attracts customers from all income classes. In considering the significance of the Central Market area, it is important to distinguish between the area itself and the Galeria Central. While the public market operations attract large numbers of customers because of their fruit, vegetable and meat offerings, the personal service retailers operating in the area also have significant drawing power, as they are among the lowest priced (and highest volume) retail units for grains, processed goods, and meat. Thus, it is the combination of a wide variety of goods, in terms of both type and quality, offered at low prices which attracts customers. In this respect, the area is similar to a supermarket operation.[10] Physically, however, the Central Market area leaves much to be desired; the public markets are extremely crowded and unsanitary and the surrounding streets are choked and refuse-ridden. Further, the heavy movement of shoppers into the area creates substantial congestion, as well as being costly in terms of operating expenses and investment for public transportation.

One aspect of marketing conditions in the Central Market complex merits particular notice. Generally, neither the assembly nor wholesaling institutions handling fruits, vegetables, and meat provide grading and sorting services.[11] Retailers must therefore handle products varying widely in quality. Since large numbers of consumers of all income classes shop in the Central Market area, grading of fruits and vegetables and, to some extent, meat is essentially performed by the housewife, enabling the retailer to sell the different qualities with relatively little waste. On the other hand, self-service stores in the upper income areas can only market the higher quality items, while the customers of the personal service stores in lower income *barrios* can only afford the less expensive, lower quality items. Thus, retailers outside the Central Market area who handle fruits, vegetables, and meat are faced with a merchandising and managerial problem which is but a symptom of problems in the assembling and wholesaling functions. Either the retailer cannot get the quality level desired, with subsequent sales problems, or he must put substantial managerial time into procurement, with a consequent diminution of time to manage daily operations and merchandising at the retail level.

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[10] There are also many nonfood retail outlets in the area, which increases its drawing power.

[11] While there is not a precisely delineated or adhered-to system of grading in grains, there is a general system which is understood and utilized.

Patronage of the various outlet types appears to have changed over the past few years. The sales volumes of self-service outlets have increased substantially; managers of these outlets expect the trend to continue. Public market operators, on the other hand, think that their sales have been decreasing and will continue to do so. Despite population increases in the lower income *barrios*, most personal service retailers think that sales have stayed constant or declined, and will continue to do so. Easy entry into small-scale retailing tends to keep the sales volume of any one *tienda* low.

Food Retailer Characteristics

Some general characteristics of the three main retailer groups are shown in Table 2.10.[12] The data indicate the small-scale nature of much food retailing in Cali, and point out some substantial differences between outlet types.

Public market operators have by far the smallest sales volume, averaging only two-fifths that of personal service stores. In turn, the latter stores, on the average, are quite small compared to the self-service outlets, which are nearly 18 times larger in terms of sales volume.

TABLE 2.10 GENERAL CHARACTERISTICS OF CALI RETAILERS BY TYPE OF OUTLET

	Public Market	Personal Service	Self-Service
Average monthly sales	$7,300	$17,850	$318,000
Average size - M^2	3	26	258
Average no. of paid employees	0.1	0.4	15
Average no. of non-paid employees	1.1	1.5	1
Average years in business	8	5	10

SOURCE: PIMUR, Retail Study, 1969.

Public market operators have only a limited amount of space for their business and are therefore severely restricted in the amount of goods they can stock and sell each day. Personal service stores average only 26 square meters in size, with the great majority of the stores located in private residences, either in the garage or a street level room. While there are many factors inhibiting the growth and efficiency of most personal service stores, their small physical size surely limits their ability to handle either a better assortment of the types of goods they now carry or a wider and more complete line. Although there are some large personal service stores

[12] The data are based on a series of structured interviews conducted by PIMUR in the spring of 1969. An area-stratified random sample of 629 retailers was completed, of which 297 of the interviewees were with personal service stores, 291 with public market operators, and 41 with various types of self-service outlets.

in the Central Market area, in general only the self-service outlets appear to be of a physical size which permits full-line retailing and the handling of large volumes of customers.

There is a rapid rate of turnover in personal service outlets, as approximately 30% of those interviewed had been in business for a year or less. Within the self-service group, cooperatives averaged 17 years in business, while half of the supermarkets have been in business for two years or less. Public market stall retailing tends to be stable, as one-third of the *puesteros* had been in business ten years or more. Most of the more recently established retailers in this group are in the newer satellite *plazas*.

Except for self-service stores, virtually all retailing operations are individual or family businesses. It is common for more than one family member to work in the store, the average being 1.6 in personal service stores and 1.1 for public market businesses. In general, only the larger personal service and self-service stores employ paid personnel; in the public markets, paid assistants are employed almost exclusively by the meat stalls.

The educational level of owner-managers gives some indication of the potential of these retailers to originate or accept changes in their mode of operation. Self-service store operators averaged nine years of education; 11% had completed secondary education. Personal service retailers reported an average of five years of schooling. Only 1% of the personal service retailers had finished their secondary education. None of the public market retailers had completed high school, while 30% had two years or less of formal education. The average educational level of this group was four years.

Only a small percentage of the personal service and public market retailers appear to have sufficient educational background to assimilate advanced technical assistance. Nevertheless, simple accounting and merchandising programs could make a considerable difference in current operations. Ninety-seven percent of self-service retailers, as well as 63% and 43% of personal service and public market operators, respectively, said they would like assistance in these areas. Any training programs offered the latter two groups would have to take into account their capacity to absorb modern management techniques.

Variety Within Major Outlet Types

Although it is convenient to consider the food retailing system in terms of the four main groups noted earlier, it is important to realize that there are major differences between outlets within these groupings.

Self-service Outlets - These outlets, the sector of greatest change in the Cali food retail system, consist of four main types of operations: 1) supermarkets; 2) consumer cooperatives; 3) general merchandise chain stores; and 4) Cajas de Compensación Familiar. With the exception of the chain stores,

which are located in the center of the city, self-service outlets are located in middle and upper-income *barrios*, principally in the latter.

A large number of retail stores in Cali call themselves supermarkets, but only 19 of these operate under a full-line, self-service policy. These stores offer all classes of food products, although variety in their fresh meats and produce departments is limited due to the existing difficulties in obtaining uniformly high quality products, as well as the usual problems in managing and merchandising these products. All the supermarkets are located in upper and upper-middle income *barrios*, with heavy concentration in the northwestern section of the city. At the time of the PIMUR study, there appeared to be no indication that new privately owned supermarkets would be opened in the lower income *barrios*. Supermarket monthly sales averaged $455,000.

As of February 1969, 17 cooperatives in Cali had retail food stores run by paid managers. These cooperatives were formed by the employees of private and public sector corporations, but are now open to the general public for membership. A complete line of dry packaged food is carried, but only three cooperatives offered fruits and vegetables (other than potatoes), while seven handled some fresh meats. The restricted product line is due mainly to the difficulties of handling highly perishable products and to the problems in obtaining a satisfactory supply of these products. Many of these stores are located in the higher income neighborhoods. Since their membership consists largely of lower and middle class clerical and laboring people, patronage is limited by travel time and cost considerations. Sales averaged less than half those of the supermarkets, at $202,000 monthly.

There are 14 general merchandise stores in Cali, owned by five chains, the largest of which operates four stores. In general, these are high-volume, low-margin stores which use rice as a loss leader to attract customers into the store. The stores are located principally around the Central Market area, although one is situated close to Alameda, the most important satellite *plaza*, and another in a shopping center in a high income area. Middle income consumers appear to be the major clients of the chain stores. These stores have expanded their total operation in recent years, and are probably the most aggressive merchandisers in the retail system.

There are currently eight Cajas de Compensación Familiar in Cali, three of which have supermarkets, all opened in the last two years.[13] These stores are presently handling a full line of grains and processed foods, with only

[13]The "Cajas de Compensación Familiar" are private sector organizations formed in accordance with Decrees 0118 and 1521 of 1957. All companies with a capital of $100,000 or more must pay 4% of their payroll into a Caja, which in turn pays a family subsidy to employees earning $1500 or less according to the number of children in the family. Any surpluses may be invested in other social activities for the benefit of its members, such as children's clinics, supermarkets and schools.

one store offering fresh meats and vegetables. Other products, such as drug items, household goods and some clothing, are also available. The three stores are located in middle and upper-middle income areas, limiting their accessibility to those members who either live in the vicinity, have private transportation, or can afford the time and cost of public transport. This locational limitation is a major one, since the original objective of these organizations was to provide benefits for members in the lower income levels; however, the current clientele of these outlets are in the higher income groups. The Cajas' sales have increased rapidly as a result of aggressive merchandising and low prices.[14]

Personal Service Outlets - When differentiated along the dimension of sales volume, certain patterns emerge for personal service retailers with regard to location of outlet, physical size, and product mix (Table 2.11).[15] Personal service outlets are referred to hereafter as *tiendas*, small *graneros*, large *graneros*, and wholesaler-retailers (in ascending order of sales volume).

TABLE 2.11 SIZE. LOCATION AND PRODUCT MIX OF VARIOUS TYPES OF PERSONAL SERVICE STORES CALI, FEBRUARY 1969

	No.	Area M^2	Average Monthly Sales	Main Location	Principal Products	% Cali Retail Sales
Tiendas	2696	22	$ 6,900	*Barrios*	Beverages Processed	13.6
Small *graneros*	673	35	33,100	*Barrios*	Grains Processed Meats	16.3
Large *graneros*	152	55	102,600	Central Market Area	Grains and Processed	11.4
Wholesaler-retailers	24	121	231,600	Central Market Area	Grains and Processed	4.8
Banco de carne (retail)	696	5	18,000	*Barrios* and Central Market Area	Meats	9.1

NOTE: Monthly sales had the following ranges: *Tiendas* $0-20,000; Small *graneros* $20,001 to $50,000; Large *graneros* $50,001 to $200,000; and Wholesaler-retailers $160,000 to $350,000.
SOURCE: PIMUR , Retail Study, 1969.

[14]The largest of the three Caja supermarkets had monthly sales of well over $1,000,000 at the time of PIMUR's survey.

[15]The outlets also differ substantially with regard to the price level at which they sell and the gross margins at which they operate, as will be discussed later in this chapter.

The smallest volume outlets - *tiendas* and small *graneros* - are located in the low and middle income *barrios*, principally the former. Both are major outlets for low income families, and their performance is therefore of great concern. Generally located in a street-level room of the owner's residence, *tiendas* handle a narrow line of processed foods and grains, as well as some household cleaning and personal care articles. A sizeable minority of *tiendas* (30%) also carry a small quantity of meat. Beverages account for 18% of the *tiendas'* sales volume, and provide slightly over 35% of their gross profits.

Small *graneros* handle a broader product line than the *tiendas*, and offer more variety within lines. Grains are an important element in their product offering, as are staple fruits and vegetables. About one-third have their own fresh beef operation, which is undoubtedly a strong attraction to the housewife, as she can do virtually one-stop shopping at the small *granero*. Many small *graneros* do not handle beef themselves, but rent space within their stores to independent butchers, who may also handle fruits and vegetables. These rented *bancos* are an important element in the retailing of beef; we estimate that some 20% of retailed beef passes through them. The small *graneros* have five times the sales volume of *tiendas*, which can be attributed to the wider product line carried, lower prices, and greater physical space in which to handle customers.

Personal service outlets with the greatest sales volume are located in the Central Market area, where they have the benefit of a large volume of customers of different income classes. Since these outlets are in close proximity to the Galeria Central, they generally do not carry fruits and vegetables. Grains and processed goods are their major items. However, the large *graneros* do rent space to independent butchers (who are both wholesalers and retailers), thereby broadening the appeal of their outlets. These rented *bancos* handle 13% of the beef sold at retail.

Wholesaler-retailers perform a dual function in the food marketing system. In total, approximately 50% of their sales are made at retail. The remainder of their business volume consists of sales to other retailers, principally small *tiendas* in outlying *barrios*. The average purchases made by these *tiendas* are too small to be handled by regular wholesalers and at times are indistinguishable from a retail purchase. The wholesaler-retailers operate at lower gross margins than the large *graneros*, which undoubtedly is an important factor in their larger sales volume. Further, their sales area is twice that of the large *graneros*, and this increases the number of consumers who can be properly serviced.

The large personal service outlets in the Central Market area supply slightly over 16% of the total retail sales of Cali. As we shall discuss in

detail later, they do so at lower prices than those prevailing in the neighborhood personal service stores, although there is obviously an offsetting time and money cost to the consumer in coming to the Central Market area to purchase food.

Public Market Retailers - The Cali public market system, managed by Empresas de Servicios Varios (EMSIRVA)[16] is made up of the Galeria Central *plazas* (Galeria Central and Calvarios), five satellite *plazas*, and the Mercados Campesinos. A new satellite plaza in the Alfonso López *barrio* started operations in October 1969 (at which time the Calvarios markets were closed down). There are two main groups of public market retailers, permanent stall operators and mobile vendors. As of early 1969, there were 2,398 permanent stall operators and 1,357 mobile vendors distributed among the various markets as shown in Table 2.12. Approximately 81% of the sales volume of the public market system moves through stall operators and 19% through mobile vendors.

TABLE 2.12 DISTRIBUTION OF STALL OPERATORS AND MOBILE VENDORS IN THE CALI PUBLIC MARKET SYSTEM, BY PUBLIC MARKET AND PRODUCT TYPE - FEBRUARY, 1969

	Galeria Central	Alameda	C. Colón	Floresta	Siloé	Porvenir	Total
Fruits and Vegetables	628	243	37	65	26	66	1065
Meats and Fish	268	44	42	38	15	31	438
Grains and Staples	126	27	33	29	10	18	243
Dairy	65	7	10	-	4	-	86
Poultry and Eggs	40	4	-	2	-	6	52
Bread and Pastas	24	2	3	4	-	-	33
Others	334	47	46	23	8	23	481
Total Stall Operators	1485	374	171	161	63	144	2398
Mobile Vendors	925	90	219	57	31	35	1357
TOTAL	2410	464	390	218	94	179	3755
% of Total	64%	12%	10%	6%	3%	5%	100%

SOURCE: EMSIRVA and PIMUR, Wholesale-Retail Surveys, 1969.

There are substantial differences between public market stall operators in sales volume, which varies by type of product handled and public market location. For example, fruit and vegetable *puesteros* averaged $4765 per month, with sales in the Galeria Central *puestos* being nearly 15% higher than those in the satellite *plazas*. Stall operators specializing in grains and staples had considerably higher sales, averaging $16,850 per month, with the *puestos* in the satellite markets having sales 20% higher than in the Galeria Central, reflecting the greater competition from the large personal service stores in the Central Market area. Meat *puesteros* in the public markets have average monthly retail sales of $26,500, with beef stalls having higher average sales

[16] EMSIRVA is a public corporation created by the municipal government to manage the slaughterhouse, public markets, garbage collection, etc.

than other meat stalls. Beef and pork *puestos* in the Galeria Central also have an important volume of wholesale sales which gives them an overall average monthly sales volume of $46,500.

Fruit and vegetables provide virtually all the sales volume of the mobile vendors. Sales average $3,850 per month, or 80% of the volume of fruit and vegetable stall operators. In total, they account for 25% of the retail sales of fruits and vegetables in Cali.

There are two groups of mobile vendors--those operating legally and those operating illegally. "Legal" *ambulantes* operate on temporary permits, renting a stall or floor space by the day. In the satellite *plazas*, they sell within the limits of the market itself, while in the Galeria Central they often move out onto the sidewalks. Although the total number of "legal" *ambulantes* fluctuates from day to day, the average in February 1969 was 560. Approximately 800 illegal vendors operate on the sidewalks in the vicinity of the public markets, over 90% of them in the area of the Galeria Central. Although selling in this manner is against the law, their number has increased by over 200% in the last four years, and in recent months there has been a growing number in the vicinity of the Plaza Alameda.

Within the public market system, the Galeria Central complex is by far the most important *plaza* market, with 64% of the total number of public market retailers in Cali located here and 60% of the total retail sales made in these markets. This pattern will change drastically, of course, when the three buildings of this complex are torn down.

Specialized Outlets[17] - This group includes the specialized retail outlets handling one or two products. These outlets are of particular importance in the distribution of poultry and eggs and fresh milk. To a lesser extent, they are important in the retailing of meat, especially to upper income families.

There are some 12 specialty meat stores in the city. Most of them are fairly large-volume, operators handling beef, pork, and viscera, as well as some prepared meats. The major volume, however, passes through two outlets which do a large-volume business selling first grade meats to high income customers.

There are also nine *famas* with a total of 51 meat stalls, most of which sell beef. Over 90% of the total sales made in *famas* are at wholesale, but the remainder is sold directly to consumers.

In February 1969, there were 136 stores specializing in the sale of poultry and/or eggs, of which 46 sold to other retailers as well as to final consumers. A number of these specialty outlets are the result of forward

[17]Additional information on distribution of meat, milk, poultry and eggs is presented in Chapter 3.

integration by the medium and large producers. Specialized stores account for 66% of poultry sold at retail, as few outlets other than supermarkets handle the product because of its limited demand. In the distribution of eggs, specialized stores are somewhat less important as retail outlets, as there is fairly wide distribution in *tiendas* and small *graneros*. Nevertheless, these specialty outlets account for 26% of eggs purchased by consumers. Average monthly retail sales for specialized wholesaler-retailers is $31,300, while those outlets operating only at retail average $18,400.

The retail distribution of fresh milk is to a large extent carried out by specialized outlets, the most important of these being the home delivery truckers who account for 46% of all fresh milk (both pasteurized and raw) reaching consumers. Specialized neighborhood stores sell approximately 8%. Although home delivery accounts for 46% of total milk retail sales, there are some differences between pasteurized and raw milk distribution in this channel.

The two pasteurizing plants in Cali distribute 31% of their output through home delivery. Cremex has its own trucks and distributes directly, while Pasteurizadores del Valle does this only for the San Fernando brand and allows 15 private truckers to distribute Salomia brand on predetermined routes. Both the companies and the truckers also distribute to neighborhood *tiendas* and *graneros*, as well as to restaurants, etc.

Direct home delivery is of greater importance in the case of raw milk, accounting for 62% of sales in this product. Producers themselves are responsible for 15% of this volume, while 190 truckers who purchase from the farms deliver the rest. Both farmers and truckers deliver to the specified milk stores, although truckers are more important in this aspect.

In February 1969, there were 157 stores specializing in retailing raw milk, of which only 121 were authorized by the municipality to do so. They are usually very small stores using the front room of the retailer's home for this purpose. Generally only raw milk is sold through these outlets, although other dairy products such as cheese are sometimes available. These stores are of importance in the low-income *barrios*, which are unattractive routes for truckers since milk purchases are not made every day. They account for 15% of the total distribution of raw milk.

Consumer Shopping Patterns and Attitudes Toward Retailer Types[18]

Shopping Patterns

The data presented on the volume of sales by different types of outlets reveal a great deal about consumer shopping patterns and preferences for various types of food retailers, given the current alternatives. (Table 2.9.) This section will elaborate upon these shopping patterns by showing the allocation of food expenditures among types of outlets for families living in different areas of the city, classified according to socio-economic strata. In considering possible changes in the retail system, it is necessary to recognize the very significant differences which exist in shopping patterns for families in different areas of the city.

The city planning commission (Planeación Municipal) has classified every *barrio* in the city according to the socio-economic class which predominates (Figure 2.1). The locations of the Galeria Central and the six satellite markets, which have a definite influence on shopping patterns in the various *barrios*, are also indicated on Figure 2.1.

Table 2.13 shows some of the income and demographic differences between the socio-economic areas.[19] Most significant, of course, are the great disparities in income, and hence purchasing power, among these areas. It is important to note that fully three-fourths of the families are in the lower two classifications with average monthly income per household of $1500 and $1000, respectively.

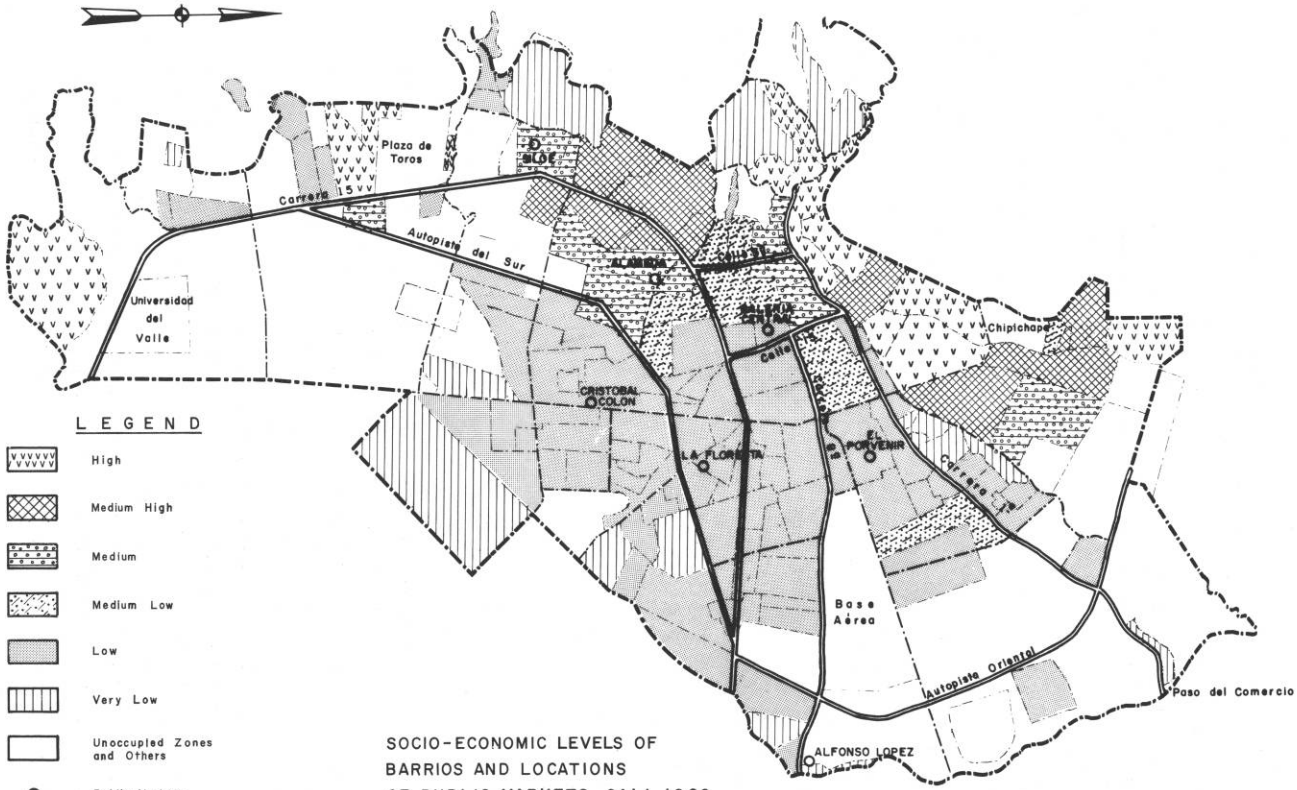
TABLE 2.13 MEAN INCOME AND HOUSEHOLD SIZE OF CALI *BARRIOS* CLASSIFIED BY SOCIO-ECONOMIC AREA, 1969

	1 Upper	2 Upper Middle	3 Middle	4 Lower Middle	5 Lower	6 Slums
Average household income ($/Mo.)	11,185	5,568	4,440	2,490	1,603	1,013
Average per capita income ($/Mo.)	1,687	1,009	710	400	251	157
Average number of persons per household	6.55	5.35	5.79	6.48	6.27	6.43
% of Households	4.6	4.9	8.3	11.9	49.9	20.4
% of Population	4.8	4.2	7.7	12.4	50.0	20.9

SOURCE: PIMUR, Consumer Survey, 1969.

[18]This section is based upon PIMUR Technical Report No. 7, *The Cali Consumer: Incomes, Food Purchases, and Shopping Patterns*. The technical report includes the results of two consumer surveys, providing considerable detail on consumer food buying in Cali.

[19]It should be noted that these data, which are essentially geographically based, are not directly comparable to the income class data presented earlier.



SOCIO-ECONOMIC LEVELS OF BARRIOS AND LOCATIONS OF PUBLIC MARKETS, CALI, 1969

Fig. Nº 2.1

While *barrios* tend to be relatively homogeneous within the municipality's categorization, there is nonetheless a fair degree of income dispersion within each socio-economic area (Table 2.14). For example, while the average per family income in the upper class areas was over $11,000 per month, nearly 30% of the families living in these areas reported monthly incomes ranging from $2,000 to $6,000. Similarly, 20% of the households living in Level 5 areas reported incomes of more than $2,000 per month.

TABLE 2.14 PERCENTAGE DISTRIBUTION OF INCOME RANGES OF FAMILIES IN EACH SOCIO-ECONOMIC LEVEL, CALI, FEBRUARY 1969

Income Range	SOCIO-ECONOMIC LEVEL					
	1 Upper	2 Upper Middle	3 Middle	4 Lower Middle	5 Lower	6 Slums
$10,001 or more	44.5	7.4	5.0	-	0.4	-
$ 6,001 - $10,000	25.9	25.9	20.0	3.4	0.4	-
$ 2,001 - $ 6,000	29.6	63.0	60.0	45.8	20.0	6.2
$ 801 - $ 2,000	-	3.7	12.5	40.7	55.6	50.0
$ 501 - 800	-	-	2.5	6.8	18.4	29.8
Less than $500	-	-	-	3.3	5.2	14.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: PIMUR, Consumer Survey, 1969.

Table 2.15 shows the distribution of total food expenditures among five major types of retailers for each of the socio-economic areas.[20] Table 2.16 gives for each area the percentage of respondents who patronize the various outlets according to the product group.[21] The retailer classification differs somewhat from those used in the previous section, since consumers identify stores near the Galeria Central and the satellite markets as part of these markets. Thus, "Galeria Central Area" includes public market operators (both stall and *ambulantes*), large *graneros*, and wholesaler-retailers. "Satellite Market Areas" includes public market operators (both stall and *ambulante*) and small *graneros* operating in the immediate region. Neighborhood stores refer to both *tiendas* and small *graneros*.

Almost half the food expenditures of families in Area 1 *barrios* are made in self-service outlets, particularly supermarkets. Most of the supermarkets are located in that area of the city. However, people in this high income group have their own cars or can afford taxis, and so have considerable freedom in choosing retailers. Nevertheless, distance from home is apparently still a factor of some importance, since the Central Market, which is nearer

[20] These data are based on a sample of 629 households. See Footnote 1 of this chapter.

[21] Since more than one outlet type may have been used, the percentages may sum to more than 100%.

to Area 1 *barrios* than are the satellite *plazas*, gets seven times as much patronage from this group, although the *plazas* have much better parking facilities than the Central Market. Of course, the greater degree of selection in the Central Market area, as well as nonfood shopping, may play a larger role in the observed shopping pattern.

The incomplete line carried by the Cali supermarkets is reflected in the use of specialty stores by Area 1 consumers. A quarter of their expenditures are made in "other" outlets, consisting almost entirely of specialty stores for meat and poultry and *camioneros* for milk.

Area 2 residents divide their purchases more evenly over the five types of retailers, in terms of both expenditure and percentage of people using each retailer, than the residents of any other area. This phenomenon can be explained in locational terms, as these *barrios* are almost all located in the southwest of the city. The concentration and quality of self-service stores in this area are considerably lower than in Area 1 and help explain the drop in the area of these stores from 45% to 16%. On the other hand, the *tiendas* in this area are relatively large and full-line.

Plaza Alameda is within reasonable walking distance for people in the northern quarter of this area, and accounts for most of the expenditures in satellite *plazas* by Area 2 consumers. The Central Market receives 26% of the expenditures. This reflects the central location and concentrated food retailing activity of this area. Once a consumer is in a bus or a taxi, the Central Market is a natural destination.

In summary, housewives in Area 2 appear to have no predominant orientation toward any particular outlet type. Their purchasing patterns are consistent with the hypothesis that accessibility and locational convenience are important determinants in outlet selection.

TABLE 2.15 PERCENTAGE OF TOTAL FOOD EXPENDITURES SPENT AT DIFFERENT TYPES OF RETAIL OUTLETS BY CALI CONSUMER, BY SOCIO-ECONOMIC AREA, SPRING 1969

Outlet Types	1 Upper	2 Upper Middle	3 Middle	4 Lower Middle	5 Lower	6 Slums
Galeria Central Area	14	26	31	32	22	26
Satellite Market Areas	2	15	24	8	20	11
Self-Service Stores	45	16	7	12	6	6
Neighborhood Stores	13	24	12	33	41	46
Others	26	19	26	15	11	11
TOTAL	100	100	100	100	100	100

SOURCE: PIMUR, General Consumer Survey, 1969.

TABLE 2.16 PERCENTAGE OF FAMILIES INTERVIEWED PATRONIZING PRINCIPAL OUTLET TYPES, BY PRODUCT AND SOCIO-ECONOMIC LEVEL, CALI, 1969

Outlet Type	PRODUCT TYPE					Socio-Economic Area
	Grains	Meat	Canned Foods	Fruits and Vegetables	Milk	
Galeria Central Area	10	28	4	38	0	1 Upper
Satellite Market Areas	4	0	4	7	0	
Self-Service Stores	66	31	69	45	4	
Neighborhood Stores	10	17	7	14	14	
Others	14	31	10	10	72	
Galeria Central Area	23	32	16	39	0	2 Upper-Middle
Satellite Market Areas	16	23	7	29	0	
Self-Service Stores	32	26	42	19	7	
Neighborhood Stores	26	26	29	16	29	
Others	13	10	13	16	71	
Galeria Central Area	33	44	21	48	0	3 Middle
Satellite Market Areas	15	31	10	33	0	
Self-Service Stores	27	14	21	14	0	
Neighborhood Stores	31	12	14	4	21	
Others	12	14	8	14	69	
Galeria Central Area	33	40	9	53	2	4 Lower-Middle
Satellite Market Areas	3	11	0	16	0	
Self-Service Stores	16	8	17	2	2	
Neighborhood Stores	36	40	20	31	39	
Others	21	5	12	7	52	
Galeria Central Area	37	32	2	40	1	5 Lower
Satellite Market Areas	8	10	2	11	1	
Self-Service Stores	11	3	6	1	5	
Neighborhood Stores	48	61	9	52	41	
Others	11	9	2	8	25	
Galeria Central Area	28	26	8	35	0	6 Slums
Satellite Market Areas	15	22	4	26	1	
Self-Service Stores	12	1	9	0	3	
Neighborhood Stores	41	51	13	35	49	
Others	11	3	5	3	33	

SOURCE: PIMUR, General Consumer Survey, 1969.

Shopping patterns in Areas 3 and 4 show very distinctly the effects of location on outlet selection. These *barrios* are all roughly equidistant from the Central Market, but almost all the Area 3 *barrios* have satellite *plazas* close by, while Area 4 *barrios* do not. Both groups spend the same proportion of their food outlays in the Central Market area. However, Area 3 expenditures in the satellite *plazas* (Alameda and Porvenir) amount to a quarter of their outlays, while the corresponding expenditures for Area 4 are relatively small (8%). The reverse pattern is found for expenditures in *tiendas*, with Area 4 consumers devoting a substantial portion of their food budget to this locationally convenient outlet type. The difference between percentages of expenditures in "other" outlets is the sum of various smaller differences. Area 3 consumers buy poultry and eggs from specialized stores, while the *tienda* is the most important supplier of these to the Area 4 group, which also buys a higher proportion of its milk at the *tienda* and less from the *camionero*.

Areas 5 and 6 are the most important, both in terms of the proportion of total population in these areas and of the problems they pose in respect to the provision of food.

Here again there are distinctive differences in the locations of *barrios* in the two areas. The Area 5 *barrios* lie east and southeast of the city center, with three satellite *plazas* (Porvenir, Floresta and Cristóbal Colón) dotted among them. Area 6 *barrios* are principally peripheral, the only accessible *plazas* being Cristóbal Colón and Siloe. The latter has poor assortment and selection, and little drawing power. The former lies on the bus route between La Unión de Vivienda Popular (by far the most populous Area 6 *barrio*) and the city center. This *plaza* is near enough to La Unión and far enough from the center that the difference in travel time between the two is significant. These locational considerations explain the differences between the two areas with regard to expenditures in the satellite *plazas*.

Residents in both Areas 5 and 6 make a substantial portion of their food purchases in the neighborhood *tiendas*. In this respect they exhibit significantly different shopping patterns than those found for higher socio-economic groups. As will be shown later, *tiendas* are not low-price outlets, nor are they considered to be high-service outlets. Rather, the high usage of these outlets appears to relate to both income and locational factors. Consumers in Areas 5 and 6 typically buy some food daily. To make the long trip to the Central Market area each day is for most families, especially those in Area 6 *barrios*, too expensive, both in time and money. For the most part, the *tienda* is the only convenient outlet.

From the data just presented, it appears that a primary determinant in the consumer selection of retail outlet type is accessibility. Data from a previous study[22] suggest that the satellite *plazas* draw their customers from an average distance of 0.6 kilometers, or six blocks. For *tiendas* this "radius of influence" will be much less, and only an outstanding *tienda* is likely to draw customers from more than two blocks. A 1964 study of the Galeria Central suggests that the area has strong drawing power for consumers living up to some 3 kilometers distance.[23]

Data on the frequency of major shopping trips, and the attendant money costs, for shopping outside the immediate neighborhood is shown in Table 2.17. The data presented do not refer to trips where the housewife went on foot both ways, and thus represents the cost of visits to either the Central Market area

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[22] ILMA, Feasibility Study for EMCALI, Food Supply Center in Cali, Colombia, February, 1965.

[23] Glen H. Mitchell, *et al.*, Report No. 1, *Some Economic Considerations of Perishable Farm Products Marketing Through the Central Galeria of Cali, Colombia with Emphasis on Possible Future Efficiency*. (Centro de Formación Profesional e Investigación Agricola, Universidad del Valle, September 1964), pp. 23-25.

TABLE 2.17 CONSUMER TRANSPORTATION COSTS ON MAJOR FOOD SHOPPING TRIPS, CALI, MARCH 1969

	Socio-Economic Area					
	1	2	3	4	5	6
Average trips per week	1.08	1.29	1.52	1.25	1.77	2.27
Average cost per trip	$4.30	4.65	3.66	3.00	2.57	3.17
Average cost per week	$4.65	6.00	5.55	3.75	4.55	7.20
Average food bill per week	570	430	393	296	175	138
Transport costs as % of food costs	0.80	1.50	1.40	1.30	2.60	5.12

SOURCE: PIMUR, General Consumer Study, 1969.

or one of the satellite *plazas*. As can be seen, frequency of shopping trips correlates highly with socio-economic strata. While Area 1 residents exhibit the once-per-week major shopping trip pattern found in developed countries, Area 5 and 6 residents, who make up the low income bulk of the population, shop in non-neighborhood outlets approximately once every three to four days.

Transport costs associated with shopping in non-neighborhood outlets show the heavy burden imposed on the lower income Area 5 and 6 families by trips to lower-priced outlets outside their neighborhoods.[24] Transport costs as a percentage of total food costs are over 2% for Area 5 families and over 5% for Area 6 families. Transport costs for families in Areas 1, 2, and 3 are somewhat understated since no costs were recorded for operation of private cars on shopping trips. Since private cars are a major mode of travel in these higher socio-economic groups, their costs are greater than shown in Table 2.17.

It is clear that lower income families, who are least able to afford it, must spend a substantial percentage of their food budget on consumer transport because of the lack of adequate food retailing facilities in their immediate neighborhoods. It should be noted that some of the transport costs associated with trips to centers of retail activity can be allocated to nonfood purchasing. However, the high percentage of income spent on food by Area 5 and 6 residents suggests that by far the greatest portion of the transport costs reported in Table 2.17 must be attributed to food purchasing activity.

In the aggregate, approximately 2.5% of the city's food budget is expended for consumer transport on major shopping trips outside the neighborhoods, principally to public markets or self-service outlets. Three-quarters of the aggregate expenses are absorbed by low-income families in Area 5 and 6 *barrios*. In addition, it is important to note that there is undoubtedly a high investment cost in the public transportation facilities (busses and taxis) required to move the housewife around the city on shopping trips. It need hardly be

[24] Most of the public markets are located within Area 5 neighborhoods (see Figure 2.1). Thus, some families in this area have negligible transportation costs, which tends to reduce the average cost of transportation for families in this level. On the other hand, those families living near the periphery have transportation costs similar to those in Area 6.

added that investment in vehicles represents a serious drain on the country's scarce foreign exchange. These data point to the need for well-stocked, low-price retail outlets located within walking distance of consumers. As we shall see, such a system appears feasible, from both a public and private viewpoint.

Consumers' Perceptions of Outlet Characteristics

Consumers' expressed beliefs and opinions about different types of retail outlets are useful in judging the relative performance of established outlet types. In addition, they provide some insight into the possible impact on consumer shopping patterns of alternative changes in the food distribution system. Such data may also be of immediate value to retailers wishing to modify their services to make their stores more attractive to consumers. To obtain information on consumers' beliefs, 629 Cali homemakers interviewed were asked which outlet types were, in their opinion, the best and the worst in respect to each of 15 attributes of possible importance to consumers in selecting an outlet.[25]

These types of attitudinal data are subject to many different influences and may be subject to somewhat differing interpretations. Nevertheless, we believe they give some insights to the system, if not a clear picture.

The data would indicate that the Central Market area offers a mixture of strong advantages and disadvantages as seen by many consumers, for it received a large number of best and worst designations on many of the 15 attributes. Consumers apparently shop at the Central Market because it offers higher-quality products, a wide assortment, low prices on basic foods, and is at least as reliable as most of the alternatives on weights and measures. Presumably, consumers avoid the Central Market for the negative attributes, which were said to be the dirt, congestion, and inconvenient location.

The satellite markets received few of the best or worst ratings. This is clearly because they have all of the characteristics of the Central Market but to a lesser degree. They offer more variation in quality than other outlets, but to a lesser degree. They offer more variation in quality than other outlets, but not as much as the Central Market. They may be dirty, but they cannot match the undesirable conditions in the Central Market.

Consumers indicate that, in their view, the neighborhood personal service outlets as now operated have only the advantage of locational convenience relative to other outlets. They did, however, receive more "best" ratings for offering credit and convenient hours than other outlets. Consumers find the

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[25]The attributes tested were: quality of foodstuffs, agreeable customers, gives credit, home delivery, hours open, cleanliness and hygiene of the establishment, honesty of weights and measures, bargains and discounts, low transportation costs, self-selection, service and attention, assortment of foodstuffs, convenience of location, price of basic foods, price of non-basic foods. For greater detail of the responses to the different attributes, as well as the methodology used, see PIMUR Technical Report No. 7, *The Cali Consumer: Incomes, Food Purchases, and Shopping Patterns*.

negative characteristics of these outlets to be poor quality, little variety, high prices, and not very reliable weights and measures.

The self-service outlets are rated high on cleanliness, pleasant customers to associate with, and service. They are also perceived by many to have the best quality and prices, especially on non-basic items. They received few "worst" ratings.

The "don't know" responses also give some indication of the importance of the various attributes and/or the prevalence of the characteristics in the system. It may be assumed that those characteristics given a high "don't know" response for both "best" and "worst" would be of less importance. The great majority of consumers answered "don't know" for both giving credit and home delivery.

To a large extent, these data simply confirm what most observers would conclude from an inspection of the Cali food system. While the data do not prove poor performance, we may well ask whether the wide assortment and low prices of the Central Market area cannot be combined with the locational convenience of neighborhood outlets. Data presented later in this chapter show that the positive characteristics of assortment, price, and cleanliness can be combined with locational convenience. The consumer seems to be sensitive to these benefits and, in the case of Area 5 and 6 shoppers, can be assumed to be willing to forego the present high cost of transport associated with food shopping.

Retailer Conduct and Performance

The data presented thus far show the major role which location, product assortment, and price play in the consumer's shopping behavior. Assortment and price are major factors drawing the housewife to the Central Market area, notwithstanding the time and cost of getting there and the general disagreeableness of the area. On the other hand, the *tienda* and small *granero* are major outlets for low and lower-middle income families, principally because of their location. For many shoppers locational convenience of *tiendas* clearly outweighs the negative factors of poor assortment and high price. While the small *granero* offers lower prices than *tiendas*, together with a wider variety and assortment of products, it is still high-priced compared with outlets in the Central Market area.

Price Levels and Ancillary Services

Since approximately half of the families in Cali devote over 60% of their income to food, the price at which they are able to purchase it is of significant importance. *Tiendas* and small *graneros* are important outlets for Area 5 and 6 families; because of this we were particularly concerned with

determining price levels in these outlets relative to those in other areas of the city.

Table 2.18 presents the results of a consumer price study conducted by PIMUR. In Area 1 (the highest income group) prices were collected at three supermarkets servicing these *barrios*. Prices in the middle class *barrios* of Areas 2, 3, and 4 (which have been grouped together because of their similarity with each other) and the low-income Area 5 and 6 *barrios* were collected from *tiendas* and small *graneros* in those areas. Samples of prices were also collected at the Central Market area and the six satellite *plazas*, the latter being grouped together for ease of presentation.

The data clearly indicate that the lowest prices are to be found in the Central Market area. The highest prices monitored were generally in the *tiendas* of Area 6 and, to a lesser extent, in the *tiendas* of Area 5. Surprisingly, the supermarkets of Area 1 were found to be among the lowest-priced outlets outside the public market areas. The major price advantage of the public markets is to be found in fruits and vegetables. Although the Central Market area and satellite *plazas* offer the lowest-priced commodities, there is also a consumer transport cost which must be taken into account for purchases made in those areas. For Area 5 and 6 residents, the average cost per trip is $2.57 and $3.17, respectively. As shown in Table 2.17, these housewives make 1.9 and 2.3 shopping trips per week on the average to these areas, which increases the cost of purchasing their food by 2.6% and 5.2%, respectively. If the costs of these shopping trips are applied only to those purchases made in the public market areas (Table 2.15), the lower prices available are largely offset by the transport costs, except in the case of fruits and vegetables.

TABLE 2.18 RELATIVE RETAIL PRICES[a] FOR SELECTED FOOD ITEMS BY TYPE OF RETAIL OUTLET AND SOCIO-ECONOMIC AREA, CALI 1969

Food Item	Area 1 Super-markets	Areas 2, 3, 4 *Tiendas* and small *graneros*	5	Area 6 *Tiendas*	Galeria Central	Satellite Galerias
Beef, 1st quality	103	103	102	101	100	100
Beef, 2nd quality	111	112	112	114	100	105
Beef, 3rd quality	115	115	114	117	101	100
Beef viscera	108	106	107	110	100	101
Rice, 1st quality	104	104	106	110	100	103
Calima beans	105	100	108	109	102	103
Corn, germ removed	100	104	108	112	100	102
Eggs, medium	103	108	110	116	100	102
Panela	100	103	109	107	103	102
Potatoes, *guata*	112	113	114	122	103	100
Potatoes, *criolla*	118	117	118	137	101	100
Tomatoes, ripe	126	132	137	143	100	111
Tomatoes, green	114	116	124	131	100	100
Onions	102	110	118	123	100	102
Plátano, green	164	159	138	165	105	115
Plátano, ripe	147	149	136	164	100	114

[a]The lowest price among all six types of outlets equals 100.
SOURCE: PIMUR, Price Study, 1969.

While all income classes shop in the Central Market area and at the various satellite *plazas*, families in Areas 6 and 5 make over 40% of their food purchases (by value) in neighborhood *tiendas* (see Table 2.15) and are therefore paying higher prices than the more affluent residents in the middle and upper income *barrios*. Area 3 residents, who are conveniently located to the Central Market and satellite market areas, appear to be purchasing at about the lowest prices in the city. The high income families in Area 1 are generally purchasing at lower prices than low income families in Areas 5 and 6.[26] Furthermore, there was some indication that quality was lower in the *tiendas* of Areas 5 and 6, although, insofar as possible, prices were collected on equivalent quality products.

Thus, we conclude that low income families tend to pay more for their food than higher income families and receive lower quality products.

Although by now the pattern of services offered by the various retail outlets is clear, there are several ancillary services - credit, home delivery, and hours open - which merit discussion. Based on data from the PIMUR consumer market basket and retailer surveys, credit extension is not a major factor in food retailing. Slightly less than 10% of the food budget of consumers in the two lowest income quartiles is purchased on credit. For those families headed by a casual laborer with uncertain income, however, periodic credit extension may be an important service. The highest and second highest income quartiles made only 5% and 4%, respectively, of their food purchases on credit.

PIMUR's retailer study also shows that at present the credit given consumers is on a very small scale, and is given more by the self-service stores than by the personal service stores and public market operators. For instance, all the cooperatives give credit, with 80% of cooperative sales being made on this basis. The cooperatives, of course, are able to garnishee salaries. Over half (60%) of supermarkets give credit; however, those giving this service make only 15% of their sales on a credit basis. Only 40% of personal service stores reported giving credit, and then on only 22% of their sales. Less than 30% of public market retailers give credit; 20% of the sales of those doing so are made on this basis. Retailers giving credit reported extending terms of 10 to 14 days.

The consumer market basket study showed that, excluding milk, only 2.6% of food purchase transactions involved home delivery, with consumers in the highest income level having 7.6% of their purchases delivered. In general,

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[26]The price patterns reported here are similar to those found in La Paz, Bolivia. See C. C. Slater, D. S. Henley, *et al.*, *Marketing Processes in La Paz, Bolivia* (East Lansing, Michigan: Research Report No. 3, Latin American Studies Center, Michigan State University, 1969), pp. 195-198.

supermarkets are the only outlets offering home delivery. Nearly half (46%) of the milk consumed in Cali, however, is home delivered by specialized milk distributors.

Tiendas and small *graneros* are open the longest hours, averaging 12 hours per day, 7 days per week. Public market retailers also operate on a seven-day week, but only an average of 8½ hours daily. Their hours are restricted by the policy of EMSIRVA, since the markets are kept open only from 6 a.m. to 4 p.m. daily. However, sales are slack in the afternoon, and most retailers leave before the 4 p.m. closing time. Self-service stores are open the least number of hours, usually 8 hours per day, 6 days per week.

The market basket study indicates that food purchasing in the evening is virtually non-existent. Shoppers in the three lower income levels made less than 5% of their purchases in the afternoon, a figure which increased to 8% for the highest income level. Virtually all purchasing is done in the morning, principally to ensure getting the best choice of perishable meats, fruits and vegetables. It should be noted that *tiendas* provide fill-in service, as well as beverage service, and this probably accounts for their long hours.

For the most part, then, the existing food retail system offers relatively little credit and delivery service to the consumer. In turn, the consumer appears sensitive to the deficiencies in the present system, but is not able to impose change. It is appropriate at this point to consider the margins, costs and profits for various retail outlets, in order to make some judgments regarding opportunities for improving food distribution in Cali.

The Economics of Food Retailing

The data presented in this section are based on the results of the general retailer survey of 629 outlets conducted during February 1969. These surveys collected information on purchase and sales prices, sales volumes, spoilage estimates for the principal items within the different product groupings, costs of operation and investment costs. This was later complemented by data collected from a few representative firms who were willing and able to give us further detailed information on investments and costs of operations.

It was not possible to obtain complete aggregate purchase and sales records for all the outlets studied. Gross margins are derived from the difference between purchase and sales price per unit (price spread) and data on estimated spoilage losses in the different product groups, by type of retail outlet. The data presented are therefore based on a subset of the products handled, principally the larger volume items within a product grouping, and probably understate overall gross margins in the system, as slower-moving items usually have higher margins. In the case of personal service retailers, the products studied in depth in the general retailer survey cover over 80% of their total sales

volume and are indicative of the stores' aggregate gross margin. For self-service retailers, individual products studied accounted for only 56% of total sales, which suggests that the data presented in Table 2.19 understate the overall situation to some degree. Overall gross margins may be higher than those shown for fruit and vegetable stall operations and *ambulantes*, as only two-thirds of the sales volume is covered by the products sampled. The estimated beef margins are representative of actual operations, since the outlets handling this product are generally highly specialized.

It is important to point out that cost and margin data for individual types of retailers is only one of the elements to be considered in judging the efficiency and overall costs of the food distribution system. The cost of supplying the individual retailer groups is a major factor that must also be considered. For example, it is noted in Table 2.19 that supermarkets have the second highest overall gross margin of the retailers studied. Nevertheless, Table 2.18 shows that prices in these stores are generally lower than those found in *tiendas* and small *graneros*. This is explained by the fact that the larger volume supermarkets are able to purchase products at a lower price by purchasing larger quantities through more direct channels.

The differences in gross margins between the various types of self-service retailers generally reflect the differences in the product mix offered (Table 2.19). Supermarkets have the highest overall gross margin in this group, which is attributable to their broad product line (including fruits, vegetables, and meats). Cooperatives handle a narrow line of staple products. This, as

TABLE 2.19 RETAILERS' GROSS MARGINS BY OUTLET TYPE , CALI, FEBRUARY 1969

	Price Spread	Spoilage Loss	Gross Margin
Self-Service			
Supermarkets	14.5	1.2	13.3
Cooperatives	10.9	1.0	9.9
Cajas de Compensación	8.6	0.8	7.8
Chain Stores	8.0	0.5	7.5
Personal Service			
Tiendas	13.7	0.8	12.9
Small *graneros*	12.2	0.9	11.3
Large *graneros*	9.5	0.9	8.6
Wholesaler-retailers	7.2	0.5	6.7
Public Market Retailers			
Fruit and Vegetable	24.7	12.5	12.2
Grains and Processed	9.2	0.5	8.7
Beef stalls	20.0	5.5	14.5
Ambulantes	26.4	15.0	11.4

SOURCE: PIMUR, Retailer Survey, 1969.

well as management philosophy, accounts for their lower gross margins. Management philosophy is a factor in the low gross margins reported by the Cajas de Compensación. In addition, the Cajas carry a wide line of nonfood items and drugs, with high total store volume thus permitting lower margins on food. Finally, these outlets have essentially a zero cost of capital.[27] The low margins in the chain stores are due to their use of a narrow line of staple food products as loss leaders.

The relationship between scale and gross margins for the various kinds of personal service outlets is highly significant. The low overall gross margins for the wholesaler-retailers reflects to a large extent the efficiencies and lower per unit costs associated with volume operations, but also reflects the partial wholesale nature of these operations. Differences in product mix between the four types of personal service outlets tend to hide some of the relationships between scale and overall gross margin. It is worth noting, however, that the small *graneros*, which carry the higher margin fruits, vegetables, and meats, are nonetheless able to sell at a lower overall gross margin than the *tiendas*. The higher gross margins for the smaller personal service outlets (which tend to corroborate the data presented earlier on prices in these stores) suggests that prices could be lowered substantially in the lower income *barrios* if larger-scale operations could be developed in those areas.

Although gross margins for *ambulantes* and fruit and vegetable stall operators do not appear high, there is substantial spoilage associated with these operations. The price spread for those items sold at full price is over double the gross margin. Nearly two-thirds of the sales of *ambulantes* are in highly perishable products, *i.e.*, *plátanos*, oranges, and tomatoes. Price spreads must therefore be high to offset spoilage losses.

The "normal" spoilage one might expect in these items is amplified by exposure to the sun as well as damage from passers-by. Spoilage losses by stall operators are also quite high in fruits and vegetables and reflect the handling of these products by consumers in their selection of the items they will purchase.

A final observation which can be drawn from Table 2.19 relates to the beef *puesteros*. A gross margin of 14.5% appears high given the nature of their operation. Working under a hot beef system, they purchase daily and therefore operate with minimal inventory investment. Furthermore, rental rates for meat stalls in the public markets are very low. Since beef *puesteros* handle one-fourth of the beef consumed in the city, their margins and expenses are a significant part of the cost of supplying food in Cali.

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[27]This should not be construed to mean that there is no opportunity cost to the system of the capital they use. While they are using scarce resources, they are permitted to do so at no charge.

Monthly income statements for the three major types of retailers are given in Tables 2.20, 2.21, and 2.22. Average investment in fixed assets (excluding buildings and vehicles) and such current assets as inventory, cash balance, and accounts receivable are also shown.[28] Fixed equipment for the various types of outlets was determined from a supplementary survey on equipment usage. Value was determined on the basis of existing prices for comparable equipment. It will be noticed, of course, that public market retailers have only very simple equipment and tools and the investment in these items is negligible.

TABLE 2.20 MONTHLY INCOME STATEMENTS - SELF-SERVICE STORES

	$	%
Sales	385,000	100.0
Purchases	342,265	88.9
Gross Profit	42,735	11.1
EXPENSES		
Rent	4,120	
Utilities	2,500	
Salaries and Fringe Benefits	21,300	
Transport	1,310	
Delivery	920	
Bad Debt Losses	300	
Depreciation	1,453	
Maintenance	600	
Miscellaneous	1,000	
TOTAL EXPENSES	33,503	8.7
Net Profits B/Taxes[a]	9,232	2.4
Imputed Return to Capital[b]	5,493	
Return to Management	3,739	
CAPITAL INVESTMENT		
Liquid Assets[c]	44,706	
Fixed Assets	175,000	
TOTAL	219,706	

[a]This should be considered as a return to capital and management.

[b]Calculated as 2.5% of total capital investment.

[c]Includes inventory, cash, accounts receivable, less supplier credit.

[28]Data on revenue, expenses and investments are averages for retailers within each type based on PIMUR retailer interviews.

TABLE 2.21 MONTHLY INCOME STATEMENTS - PERSONAL SERVICE RETAILERS

	Tiendas		Small *Graneros*		Large *Graneros*		Wholesaler/ Retailers	
	$	%	$	%	$	%	$	%
Sales	6,936	100.0	33,105	100.0	102,565	100.0	231,605	100.0
Purchases	6,041	87.1	29,364	88.7	93,744	91.4	216,087	93.3
Gross Profit	895	12.9	3,741	11.3	8,821	8.6	15,518	6.7
Rent	-		985		2,055		2,815	
Utilities	100		300		530		800	
Salaries and Fringe Benefits	160		655		1,670		3,575	
Transport	60		240		110		135	
Deliveries	5		45		20		335	
Bad Debt Losses	70		110		655		800	
Depreciation	37		62		108		290	
TOTAL EXPENSES	432	6.2	2,397	7.2	5,148	5.0	8,750	3.8
Net Profit before taxes[a]	463	6.7	1,344	4.1	3,673	3.6	6,768	2.9
Imputed Return to investment[b]	157		366		891		2,091	
Return to labor and management	306		978		2,782		4,677	
CAPITAL INVESTMENT								
Liquid Assets[c]	1,810		7,136		22,627		49,096	
Fixed Assets	4,450		7,500		13,000		34,540	
TOTAL	6,260		14,636		35,627		83,636	

[a]This should be considered as the return to capital and labor/management.

[b]Calculated as 2.5% of total capital investment.

[c]Includes inventory, cash, accounts receivable, less supplier credit.

Inventory investment was based on an item-by-item analysis from PIMUR data on frequency and volume of purchases. Average inventory was assumed to be 60% of purchases (*i.e.*, a safety stock of 10%) for perishable items such as fruits, vegetables, meats and dairy products and 70% of purchases (*i.e.*, a safety stock of 20%) for staple grains and processed items.

Rental expenses as shown are averages of the actual rates being paid by retailers. Two exceptions must be pointed out. No charge for rent has been made for the *tiendas*, since these operations are located in the proprietors' houses, and the out-of-pocket cost of using a room for a *tienda* rather than living area is practically zero, unless, of course, the house was rented specifically for its *tienda* facilities.

TABLE 2.22 MONTHLY INCOME STATEMENTS - PUBLIC MARKET RETAILERS

	Fruit and Vegetable Stalls		Grain and Processed Stalls		Beef Stalls		*Ambulantes*	
	$	%	$	%	$	%	$	%
Sales	4765	100.0	16,850	100.0	45,325	100.0	3850	100.0
Purchases	4184	87.8	15,384	91.3	38,753	85.5	3411	88.6
Gross Profit	581	12.2	1,466	8.7	6,572	14.5	439	11.4
EXPENSES								
Rent	55		155		180		16	
Salaries and Fringe Benefits			12		873		-	
Transport	85		45		80		31	
Bad Debt Loss	15		110		415		-	
Depreciation	2		8		12		-	
Miscellaneous	-		-		175		-	
TOTAL EXPENSE	157	3.3	330	2.0	1,735	3.8	47	1.2
Net Profit (B/tax)[a]	424	8.9	1,136	6.7	4,837	10.7	392	10.2
Imputed Return on Investment[b]	14		86		64		2	
Return to Labor/ Management	410		1,050		4,773		390	
CAPITAL INVESTMENT								
Liquid Assets[c]	258		2,453		1,057		89	
Fixed Assets	300		1,000		1,500		-	
TOTAL	558		3,453		2,557		89	

[a]This should be considered as a return to capital and labor/management.

[b]Calculated as 2.5% of total capital investment.

[c]Includes: Inventory, Cash, Accounts receivable, less supplier credit.

The other exception has to do with the rental rates in the public markets. The municipality has a substantial investment in public market facilities. While the present facilities may be largely amortized, the physical expansion of the city, together with the proposed tearing down of the Galeria Central, means that any future servicing of the city through public markets will require substantial public investment. Thus, analysis of alternative changes in future retail systems must include full capital and operating expense charges to public market operators.

Based on the cost of the recently constructed Alfonso López market, each

puesto involves a capital investment of $5,600.[29] At a straight line depreciation rate of 10% per annum and a (subsidized) mortgage rate of 1% per month, the monthly opportunity cost of capital per stall is $102. The average income per stall from rentals does not cover this cost, let alone the cost of administration and maintenance of the public markets. We understand that current income from rentals is only covering the operating expenses. If this is the case, then an additional sum of $100 per month would have to be charged stall operators to reflect their true costs to the system.

In the case of outlets which are owned and operated principally by private individuals and their families, *i.e.*, personal service outlets and public market operations, the net profit figure should be considered a return to labor, management and capital. Return to labor and management is considered to be the residual after a return on invested capital of 2½% per month or 30% per year (approximately equal to the open market price for money) is deducted from net profits. Thus, if the public market retailers were charged with the cost of public capital utilized by them, it is clear that their returns would be lowered.

The income statements for self-service stores show that these outlets as presently equipped and managed return 30% per annum on investment at an 11.1% overall gross margin after a salary for the owner/manager of $3739 per month is deducted. The returns for private supermarkets are somewhat higher than this figure, while returns to investments in cooperatives and Cajas de Compensación are lower.

Public market fruit and vegetable retailers (both stall operators and *ambulantes*) earn less than the $450 per month minimum wage. If the full operating and capital costs of the public markets were charged to the stall retailers, their returns would be reduced by one-fourth. Grain and processed goods *graneros* within the public markets earn somewhat more than double the minimum wage. It appears that even if their share of the operating expenses and capital investment of the public market system were allocated to these operations, they would still earn more than minimum wage in return for their labor. Beef *puesteros* return to labor is the highest for any retailer group studied, with the possible exception of supermarkets. The city has conferred some major benefits on them. They are permitted to buy directly from the *matadero*; they are charged a subsidized rent for their physical facilities; and they are somewhat protected from competition by the limited number of beef

[29] It seems appropriate to consider replacement cost as a true measure of the capital investment to be amortized and reinvested to service the future growth needs of the city. The $5,600 value per stall includes the costs of land, buildings, stalls and services, where land is estimated at $100 per square meter and building costs per stall at $5000.

puestos in the public markets (especially Galeria Central and Alameda). The data in Table 2.22 show that few public market retailers are making excessive profits in food retailing.

Opportunities for increased productivity in personal service retailing are indicated by the data in Table 2.21. As volume increases, gross margins drop substantially and returns to labor increase. Inter-firm comparison is somewhat ambiguous because of differences in product mix, and, in the case of wholesaler-retailers, type of operation. The order of magnitude differences in costs and margins as scale increases, however, appear to overwhelm any caveats regarding product mix or operating methods. The larger volume operations have lower costs per peso of sales and can operate at lower margins. And, as in the case of supermarkets, they purchase at lower prices, given the greater volume and ability to purchase directly from wholesalers, rather than through wholesaler-retailers.

The data in Table 2.23 are further indicators of increased economic efficiency as volume increases. Although *tiendas* have higher sales per peso of inventory, principally because of the importance of beverage sales, they are substantially less efficient than the other outlets in their use of fixed equipment, space and labor. There is a slight drop-off in the efficiency of use of fixed assets between large *graneros* and wholesaler-retailers.

TABLE 2.23 OPERATING EFFICIENCY MEASURES BY TYPE OF PERSONAL SERVICE RETAILERS, CALI FEBRUARY 1969

	Tienda	Small *Granero*	Large *Granero*	Wholesaler/ Retailer
Monthly sales per $ of inventory	$7.30	$5.60	$5.50	$4.10
Monthly sales per $ of equipment	1.60	4.40	7.90	6.70
Monthly sales per square meter	315.00	946.00	1,865.00	1,914.00
Monthly sales per employee	3,651.00	12,261.00	34,188.00	51,568.00

SOURCE: PIMUR, Retailer Survey, 1969.

Tienda operations earn slightly less than the minimum wage. If the number of family members involved in the business (1.6) is considered, per capita returns to labor are substantially less than the minimum wage.

Returns to labor in the small *granero* operations place the owner in the second lowest family income quartile in Cali. Large *graneros* and wholesaler-retailer operations are in the second highest family income quartile. (See Table 1.8 and Figure 1.2 in Chapter 1 for details on income distribution in Cali.)

The cost, margin and investment data just considered suggest strongly that the cost of food retailing for low and lower-middle income classes could be reduced substantially with the introduction of larger-scale retail outlets in

their neighborhoods. Lower food prices would result from: 1) the cost efficiencies associated with scale; 2) the reduced cost to the retailer of acquiring supplies as a result of large-scale purchasing; and 3) reduced consumer transport costs.

Since the data appear to point clearly to unexploited economic opportunities in personal service retailing, why have existing entrepreneurs not seen the possibilities and responded to them? The existing *tiendas* appear trapped in a condition of static equilibrium, lacking either the financial or managerial resources to change their position. The profits associated with volume can only be attained if a program of a wider product line, better assortment, and substantial price reductions and merchandising is instituted to achieve these volumes. Such a program requires inventory and fixed equipment financing, as well as a large measure of entrepreneurial initiative. Commercial bank credit is not available to them, nor is supplier credit likely to be forthcoming to these marginal operators with their high rate of turnover. There is no evidence to date that *tienda* operators are anything but marginal operators waiting for better employment opportunities.

A policy of small price reductions to achieve volume is untenable, since in a situation where a price reduction on the part of one *tienda* will be duplicated by a competitor across the street or halfway down the block, there is no private profit and indeed, there is only private loss to be had by relatively small price cuts.

The small *graneros* are faced with fewer handicaps than the *tienda* owners in attempting to gain scale. They do, however, have the problem of capital shortage, which limits their ability to finance the inventory, fixed capital, and early losses likely associated with a move toward a larger volume outlet. Perhaps most important, they may simply lack the entrepreneurial ability. There is also the problem of supply coordination and transport, which appears to be a substantial barrier to a major expansion in the neighborhood *barrios*. The lack of full-line, full-service wholesalers forces a full-line retailer to purchase from a variety of suppliers and to coordinate the delivery of their goods. The resultant heavy burden on managerial time strongly militates against the development of full-line retailers in outlying *barrios*, given existing wholesale operations.

It would appear that the more enterprising retailers have been drawn to the Central Market area, with its large daily influx of shoppers from all the income classes. There is no reason to think that they will voluntarily transfer to a neighborhood location, with all its uncertainty with regard to market potential and its higher cost of acquiring supplies. The Central Market area retailers have, of course, the advantage of close proximity to the major wholesalers in the city. However, the Galeria Central is scheduled to be

removed; the resultant potential breakup of consumer shopping patterns may well make the owners of large *graneros* and wholesale-retail operations receptive to locational transfer.

A critical question, then, is whether there is sufficient market potential for a full-line neighborhood store to achieve sufficient volume to obtain the increased productivity suggested in Table 2.23. Analysis of family food purchases and population concentration in the various socio-economic class *barrios* shows that sufficient purchasing power exists even in the lower income *barrios* to easily support outlets with monthly sales volumes of over $300,000.[30] It must be strongly stressed, however, that these volumes can be achieved only if the store follows an aggressive merchandising and pricing policy, is relatively full-line, and is properly stocked.

Perhaps the greatest barrier to effective large-scale, full-line neighborhood retailing is the problem of supplying these outlets. Just as the consumer is faced with high transport costs, poor assortment, and higher-than-necessary prices as a result of small-scale retailing, so the retailer is faced with the same problems relative to the wholesale sector. There are no wholesalers who provide one-stop purchasing, appropriate grading and sorting, and delivery. As a result, a full-line retailer must devote considerable time to seeing a wide variety of suppliers, inspecting and bargaining for price, and coordinating delivery to his place of business. This has been a major problem for the existing self-service outlets in Cali.

To better understand the wholesale food system in Cali, we now turn to description and analysis of its structure and performance.

The Structure of Wholesaling

The Central Market Area and Its Role in Food Wholesaling

The Central Market area of Cali is of prime importance in the wholesaling of most food products, with approximately 70% of the total city food supply passing through the wholesale sector in this area. Only liquid milk, poultry and eggs, soft drinks and processed foods distributed directly by manufacturers move through other wholesale channels.

The area immediately surrounding the Galeria Central building is honeycombed with *bodegas* and *depósitos* in which over 90% of the fruit and vegetable wholesaling in the city takes place, primarily in the early morning hours prior to 7:00 a.m. Space within these *bodegas* is rented on a regular basis by the larger fruit and vegetable wholesalers, but the majority rent on a daily basis and thus have no fixed place of business. The very small volume country

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[30] See pages 97 to 101.

assemblers and farmers generally conduct their business in the streets. Fruit and vegetable wholesaling in full lots (boxes or sacks) does not take place within the physical confines of the Galeria Central structure itself, except in the case of *plátanos*, whose main wholesaling location is in the basement of this building.

Approximately 80% of the total volume of meat consumed in the city moves through this area. Sixty percent of this volume is sold at wholesale and distributed throughout the city by 140 meat wholesaler-retailers operating out of *famas* and *expendios*. As in fruit and vegetables, most meat wholesaling takes place before 7:00 a.m.

Ninety percent of the total wholesale volume of grains and basic staple processed goods are handled by specialized wholesalers and wholesaler-retailers in the area.

The physical characteristics of the area make it increasingly inadequate for the functions carried out within it. The Central Market complex first took shape in 1897 and, as the city grew, most of the food wholesaling and retailing developed around this area. A wide variety of businesses complementary to food distribution activities, such as hardware stores, drugstores, suppliers of packaging materials, hotels, restaurants, bars and transportation companies have been attracted to the area.

Most of the buildings are old houses which have been adapted for use as warehouses and stores. Their layout is usually not adequate for the efficient handling of food products and they generally have only minimum storage facilities.

The streets and sidewalks are very narrow and usually in a state of disrepair. The multitude of wholesaling transactions and physical distribution activity taking place make traffic in the area chaotic, occasionally coming to a virtual standstill. Approximately 330 food trucks and 60 *chivas* move into the area of the Central Market daily. While many unload at night, a large number of inter-city and intracity vehicles service the area during the day, causing congestion in the rest of the downtown area. As a result, trucks hauling into the area waste a considerable amount of time getting to their destination, parking and unloading.

Hygienic conditions within the area leave a great deal to be desired. Refuse, which is always plentiful where fruits and vegetables are handled, is found everywhere. Because of the state of disrepair of the streets and buildings, cleaning operations are difficult and usually not effective. During the rainy season, the problem is aggravated by poor drainage. The whole area produces a stench of decaying food products, which in turn attracts tremendous numbers of flies and other insects, as well as rodents. These are clearly undesirable conditions for the handling of food products for human consumption.

While the Central Market area has expanded in a non-coordinated manner, with resultant inadequate storage facilities and grossly inefficient handling and physical distribution conditions, it nevertheless has a rationale for being. The concentration of wholesalers, each handling only a few of the wide variety of products found in the area, was perhaps inevitable given the small-scale nature of retailing. Because of price and quality variations, as well as the lack of generally accepted grades, retailers must purchase most of their products by personal inspection and comparison, as well as bargaining. It is also common - and indeed necessary - for wide-line retailers to purchase their total offering from a variety of suppliers. This is most easily done when there is close proximity between the various wholesalers. The concentration of wholesaling, as well as retailing, in the area has served to further intensify the strong drawing power of the Central Market area.

Types of Wholesalers and their Characteristics

As of February 1969, the population of wholesalers servicing Cali was approximately as shown in Table 2.24.

TABLE 2.24 NUMBER OF FOOD WHOLESALERS IN CALI, BY TYPE OF PRODUCT FEBRUARY 1969

Grains and Processed Goods	
Wholesalers	46
Wholesaler-Retailers	43
Distributors	14
Meat	
Forranea Suppliers	42
Beef and Pork Suppliers	49
Beef Wholesaler-Retailers	119
Pork Wholesaler-Retailers	21
Fruits and Vegetables	450
Poultry and Eggs	84

SOURCE: PIMUR, Wholesaler, Meat, Poultry and Egg Surveys, 1969.

An overview of the various wholesaler types can be gained from the data in Table 2.25. Although the data are aggregated, concealing many differences within the product group, they are nonetheless highly revealing. Fruit and vegetable wholesaling operations are small-scale, whereas substantial scale and organization have been achieved in grain and processed food wholesaling. Beef wholesaling is a moderate-sized operation.

TABLE 2.25 GENERAL CHARACTERISTICS OF CALI WHOLESALERS BY TYPE OF PRODUCT FEBRUARY 1969

	Grains and Processed Goods	Beef	Fruits and Vegetables
Average monthly sales ($)	914,400	106,000	30,000
Average number of paid employees	3.64	1.0	0.15
Average number of non-paid employees	1.10	1.0	1.24
Area (square meters)	228	5	6

SOURCE: PIMUR, Wholesaler Study, 1969.

Grains and Processed Foods - Four main channels exist for supplying retailers: 1) direct distribution by processor; 2) distributors; 3) wholesalers; and 4) wholesaler-retailers.

The larger processors of branded items usually have direct distribution in Cali, and in this way bypass wholesalers. Although direct distribution would appear uneconomic except for the largest processors with a wide product line, many firms apparently view the margin taken by wholesalers as potentially lost profits and do not fully appreciate the direct and indirect costs associated with their own direct distribution. Another important consideration, especially for the larger and more sophisticated firms, is that through experience they have learned that wholesalers cannot be trusted to "push" their products, or adhere to the various merchandising and pricing policies employed by the manufacturer. Further, the firms cannot depend on wholesalers as a reliable source of information on market conditions. Thus, because of the general lack of marketing services provided by most wholesalers, many firms who might have preferred otherwise have set up their own distribution organizations.[31]

Distributors handle branded processed foods, and are of two types: (a) distribution agencies; and (b) independent distributors. Distribution agencies are basically a variation of direct distribution by processor, but handle product distribution for those manufacturers with plants in other parts of the country.

Independent distributors are generally used by brand name processors too small to warrant their own agencies. In these cases, the distributor is usually given the exclusive distribution in the area. Occasionally the processor supplies his own salesmen and at times a delivery vehicle. Collections, credit risks, etc., are carried out by the distributor, who also supplies storage facilities. In some cases the goods are placed on consignment with the distributor and payment is made by him when a new order is placed.

[31] More information on processors' distribution is presented in Chapter 4.

In most aspects of their operations, independent distributors are similar to grain and staple wholesalers, although they are somewhat more aggressive in their sales efforts and customer services.

Grain and staple goods wholesalers handle the largest volume of foods within the Cali distribution system. The principal products which they carry are grains, flour, vegetable fats and oils, sugar and *panela*. In addition, their product line includes coffee, chocolate, pastas, and other processed foods, but these tend to be minor items for these wholesalers. Two fairly distinct groups can be identified within the broad classification of grain and staples wholesaling: 1) specialized wholesalers and 2) wholesaler-retailers.

There are 46 specialized wholesalers (including two cooperatives) who purchase their products directly from assemblers or processors located generally outside Cali and often outside Valle. These wholesalers usually handle five to seven different products, although the bulk of their volume is typically concentrated in one or two. In addition to being the principal suppliers of Cali in these products, the larger wholesalers also do a high proportion of their business outside of Cali. For example, sales in Cali account for less than 40% of the total volume handled by the seven largest firms.

As in other countries, a group of wholesaler-retailers have developed to bridge the gap between large wholesalers and small retailers. There are 43 firms in this category serving Cali. In addition to handling the products carried by specialized wholesalers, they handle potatoes, eggs and canned goods. As a further difference between them and the specialized wholesalers, wholesaler-retailers are not highly concentrated in a few items.

Generally, these businesses are supplied by the specialized wholesalers and local processors, while their sales are made to smaller neighborhood stores, public market retailers, and consumers. Although it is often difficult for them to differentiate between a wholesale and retail sale due to the low volumes purchased by small retailers, it is estimated that the total sales of this group are divided evenly between intermediaries and consumers. There is some indication that the wholesale business is increasing in importance, while the retail sales appear to be decreasing.

Total sales per outlet in this group average approximately $308,000 monthly. In general, the larger firms in this group do the bulk of their business at the wholesale level and the small firms the reverse.

Table 2.26 shows some of the other differences between specialized wholesalers and wholesaler-retailers. Entry into this latter group appears to be somewhat easier. Many of the older specialized wholesalers began operations as importers, while the wholesaler-retailers often integrated backward from retailing.

TABLE 2.26 GENERAL CHARACTERISTICS OF WHOLESALERS OF GRAINS AND STAPLE FOODS

	Specialist Wholesalers	Wholesaler-Retailers
Sales and storage area (sq. meters)	303	161
Average number of paid employees	5.0	2.7
Average number of non-paid employees	1.1	1.2
Number of years in business	14	7
Years of education of owner	9	6

SOURCE: PIMUR, Wholesaler Study, 1969.

Specialized wholesalers have had more schooling, although only 10% had completed secondary school. Only 5% of wholesaler-retailers had completed secondary education, while 67% had no secondary education.

Fruit and Vegetable Wholesaling - Although no precise figure could be developed, there are approximately 450 wholesalers of fruit and vegetables. (Table 2.27.) Only *plátano*, tomato and potato wholesalers tend to operate on a permanent basis in a fixed location; the wholesalers of the other fruits and vegetables usually rent space on a daily basis in a *bodega* or *depósito*.

TABLE 2.27 NUMBER OF WHOLESALERS OF FRUITS AND VEGETABLES CALI, FEBRUARY 1969

Plantain	120	Bananas	20
Tomatoes	72	Cabbage	15
Stem onions	40	Pineapple	15
Potatoes	39	Carrots	10
Oranges	35	*Lulo*	10
Yuca	20	Others	54

SOURCE: PIMUR, Wholesaler Study, 1969.

Some of the general characteristics of these fruit and vegetable wholesalers are shown in Table 2.28. Since potatoes, *plátanos*, and tomatoes account for nearly 50% of the fruits and vegetables consumed in the city, they are important elements in the system and have therefore been shown separately. With the possible exception of potato wholesalers, fruit and vegetable wholesaling is generally small-scale in nature. The physical size of the operations is small, even for potato wholesalers who reported by far the greatest average sales and storage area. With the exception of potato wholesalers, very few operations hired outside help. The great majority of these "businesses" are individual operations, as evidenced by the low average number of paid and non-paid employees.[32]

[32]Although these wholesalers hire very few workers directly, there are large numbers of porters who handle the movement of produce into and out of the *bodegas*.

TABLE 2.28 GENERAL CHARACTERISTICS OF WHOLESALERS OF FRUITS AND VEGETABLES, CALI, FEBRUARY 1969

	Potatoes	Tomatoes	Plantain	Others
Average monthly sales ($)	66,700	23,500	32,800	20-30,000
Sales and storage area (sq. m.)	32	4	11	6
Average no. of paid employees	0.69	0.35	0.08	0.05
Average no. of non-paid employees	1.2	1.3	1.1	1.3
No. of years in business	4.0	5.3	7.6	7.6
No. of types of articles handled	1.1	1.2	1.1	1.6

SOURCE: PIMUR, Wholesaler Study, 1969.

In all categories, close to 50% of those interviewed had been in business two years or less, while a sizeable minority (except in the case of potatoes) had been in business ten years or more). Thus, there appears to be fairly rapid entry and exit for a major segment of the wholesalers.

The data, then, show that, in general, fruit and vegetable wholesaling consists of small-scale, individual operations. Further, these operations tend to be specialized principally in one product.

As in other urban food marketing institutions, the age of the fruit and vegetable wholesalers averaged around 40 years. (Table 2.29.) Only a small proportion of those interviewed (less than 20%) were aged 30 or less. With the exception of tomato wholesalers, where nearly one-third had over five years of schooling, very few fruit and vegetable wholesalers had more than a primary education. And, again with the exception of tomato wholesalers, more than 30% of the respondents had two years or less of schooling.

TABLE 2.29 AGES AND EDUCATIONAL LEVELS OF WHOLESALERS OF FRUITS AND VEGETABLES, CALI FEBRUARY 1969

	Potato	Tomato	Plantain	Others
Average Age	37	40	43	40
Average Years of Schooling	3.8	5.8	3.5	3.3

SOURCE: PIMUR, Wholesaler Study, 1969.

Meat Wholesaling - Over 80% of the fresh meat consumed in Cali is supplied by 49 wholesaler-assemblers who buy live animals and have them slaughtered at the municipal slaughterhouse. The minimum unit of sale is one whole carcass. The remainder is handled by approximately 42 wholesalers who purchase meat (mainly beef) at the slaughterhouses in the towns near Cali.

The wholesalers who purchase in neighboring towns usually do not buy whole carcasses, but rather certain parts (which are frequently the higher

quality cuts). These wholesalers generally sell direct to self-service stores, specialized meat stores, institutions and the meat product industry.[33]

All meat from the *matadero* is now delivered by EMSIRVA to the public markets and to the *famas*, which are close by. No deliveries are made to other retailers or wholesaler-retailers, who must therefore make arrangements with a *fama* to handle the meat they have purchased from wholesaler-assemblers. This involves a small fee.

Forty-five percent of the meat slaughtered at the *matadero* goes through the public markets. Most of this meat (71%) is sold directly to the consumer, but 29% is also sold to other retailers, mainly small *tiendas*, and to industry. The remaining 55% of the meat from the *matadero* goes to wholesaler-retailers in the Central Market area. These wholesaler-retailers (140) operate a small *banco* or stall located in a larger store containing one or more *bancos*. Fifty-one of these *bancos* are located in *famas*. The *fama* is often owned by a wholesaler-assembler who rents out the *bancos* and usually supplies the meat to the stall operators.

The remaining wholesaler-retailers (89) rent stalls within the stores operated by other wholesaler-retailers and large *graneros*, thus facilitating the sale of leftover meat at retail. Nevertheless, wholesaler-retailers sell most of their meat to other retailers. This means that some 50% of the meat sold at retail in Cali goes through an additional step between the wholesaler-assembler and retailer.

On the average, meat wholesaler-retailers handle two carcasses per day, of which approximately 15% is sold at retail and 85% at wholesale. *Bancos* in the *famas* average monthly sales of $90,000, while the other *bancos* average $121,000. The physical space occupied by these operations is small (approximately five square meters) and little equipment is utilized.

Wholesaling of Poultry and Eggs - Coordination and integration between producers, wholesalers, and retailers make the urban distribution of poultry and eggs well organized, especially when compared to the distribution system for most other food products. Coordination is aided by the relatively small number of retail outlets, many of which specialize in these products.

At the wholesale level in Cali there are 22 specialized wholesalers of eggs and 16 specialized wholesalers of broilers. There are also 46 wholesaler-retailers who in general handle both of these products.

Specialized egg wholesalers market over 40% of the egg production in the

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[33] Some meat is purchased by wholesaler-retailers once a week when there is no slaughter at the *matadero*.

Department of Valle. Of the total volume handled, only 44% is consumed in Cali (accounting for over 50% of the total supply to the city) with the remainder being shipped to other markets.

Egg wholesalers are supplied by farmers and assemblers throughout the Valley. The largest supplier is AVIVALLE, an egg producers' association handling some 2,000,000 eggs monthly. In general, there are strong supplier relationships based on verbal contracts between buyer and producer, with the latter usually transporting the product to the wholesaler's warehouse.

Specialized wholesalers of broilers are frequently large producers who have integrated forward within the channel; they account for 17% of broiler production in the Valle. In contrast to eggs, Cali consumes over 75% of the total broiler production of the Department and hence there is little export of this product to other parts of the country.

The wholesaling function as carried out by these intermediaries is generally confined to the buying and selling of dressed broilers on a volume basis. There is some short-term storage of frozen broilers.

Sales are made either to wholesaler-retailers or retailers. Volume handled varies from 2000 to 25,800 pounds per month, with an average of 4,200 pounds a month.

Wholesaler-retailers of eggs and broilers are very important in the distribution of poultry, but less so in that of eggs, handling 46% of the distribution of the former and 13% of the latter. These wholesalers are supplied in similar proportions by producers, assemblers and wholesalers with whom they generally have verbal contracts. Sixteen percent purchase and slaughter live birds, while the rest handle only dressed and packaged ones.

Retailer-Wholesaler Relationships

Coordination between retailers and wholesalers is a critical element in an efficient distribution system. To devote his major efforts to the operation of his store and the servicing of customers, the retailer must rely upon his supplier to provide needed products in desired quality and quantity, at the right time, and at a competitive price. While the retailer clearly must closely monitor the purchasing function, it is nonetheless desirable that this not be a major and preoccupying activity.

To a large extent, the degree to which a wholesaler provides such services as full-line assortment, delivery, and credit is a function of cost and degree of competitiveness, which in turn are largely functions of scale at both the retail and wholesale level. Thus, a retail sector comprised of small-scale operations handling limited lines, with rapid exit and entry, can neither command services from the wholesale sector nor induce the development of these

services. At the same time, a small-scale, low-service, highly specialized wholesale sector tends to militate against the development of larger scale retailing, since the retailer finds the lack of wholesaler coordination and service a major barrier to achieving volume operations. Thus, at this point in our description and analysis of the Cali urban food distribution system it seems appropriate to consider retailer-wholesaler relationships.

Retailer Purchasing Practices and Problems

In general, all retailers identified problems in purchasing and/or financing as the areas of greatest difficulties within their businesses. These problems tend to be interrelated, since the lack of adequate resources or credit compounds purchasing problems. When asked to identify their greatest single problem in purchasing, retailers responded as shown in Table 2.30.

TABLE 2.30 MOST IMPORTANT PROBLEMS IN PURCHASING BY TYPE OF RETAILER, CALI, FEBRUARY 1969

	Self-Service	Personal Service	Public Market
Price variations	32%	25%	28%
Quality variations	19	5	10
Shortages of supplies	19	6	12
Lack of credit	-	17	8
Difficulties of transporting	-	25	7
Others	8	3	16
None	22	19	19
TOTAL	100	100	100

SOURCE: PIMUR, Retail Study, 1969.

With the exception of price variations, which is seen as the most important problem by all retailers and appears to affect them all to a similar extent, the other problems identified are closely related to the main characteristics of the various types of outlets, as well as to the types of products handled.

Self-service stores cater mainly to high income customers who demand superior quality. A high percentage of their total sales are in canned and bottled goods which they are able to acquire directly from processors. Many self-service outlets do not carry meats and fresh fruits and vegetables, for two main reasons. First, the high perishability of these products makes them inherently risky. Second, and perhaps underlying and intensifying the risk, is the difficulty of obtaining supplies of a consistent, desired quality. Since the self-service outlets cater to the upper income classes, high and consistent quality is important. Quality variations and supply shortages are, therefore, major purchasing problems.

Neighborhood personal service stores, on the other hand, do not face as demanding a consumer and often do not carry the more perishable products.

Therefore, they give considerably less importance to quality and supply shortages. They do, however, face greater difficulties in securing supplier credit, due mainly to the general instability common to these retailers, as well as to their low-volume purchases, which make them less attractive customers than the larger retailers. Transporting of purchases is also a major problem, especially to those retailers in the outlying *barrios*. These retailers must secure their own means of transportation, coordinate purchases from several suppliers and incur the high unit cost of transporting small lots.

Supply shortages appear to be a problem for public market operators, especially fruit and vegetable retailers. Quality variations are less of a problem, since the wide variety of customers patronizing the public markets provides a demand for all types of products. In general, stall operators are also considered better credit risks than neighborhood retailers, given the former's stability and fixed location. Since meat retailers and fruit and vegetable stall operators within these markets have rapid inventory turnovers, they have less need for credit than do personal service outlets.

Transportation problems are also minor for retailers located in the Galeria Central because of their suppliers' close proximity. Retailers in the satellite markets often consolidate transport with their colleagues. It should be noted that these satellite markets (excepting Siloé) are closer to the wholesale area than a large number of *barrios*.

Purchasing practices and retailer relationships with their suppliers reflect to a high degree the various conditions mentioned above. The percentage of retailers who usually purchase from the same set of suppliers and the reasons stated for doing so are shown in Table 2.31.

TABLE 2.31 PERCENT OF RETAILERS PURCHASING FROM REGULAR SUPPLIERS BY TYPE OF RETAILER, CALI 1969

	Self-Service	Personal Service	Public Market
Purchasing from regular suppliers	68%	68%	44%
Reasons given for this pattern:			
Better prices and discounts	40	38	20
Gives credit	32	22	32
Quality considerations	24	9	20
Friendship and confidence	4	23	25
Other	-	8	3
	100	100	100

SOURCE: PIMUR, Retailer Study, 1969.

In the case of processed foods, the limited number of suppliers for each item, as well as the known quality and fixed prices of these products, results in stable relationships between retailer and wholesaler. Where price-quality stability is less certain (*e.g.*, in fruits and vegetables) the degree to which

the retailer maintains a steady association with the supplier is reduced. Thus, although two-thirds of self-service and personal service retailers purchase from a regular supplier, only 44% of the public market operators, who sell mainly fruits and vegetables, have this steady relationship.

Friendship and confidence are considerably more important to personal service and public market operators than to self-service outlets. The latter, it may be presumed, rely more on strictly economic judgement than on personal relationships. Personal service and public market operators believe they can obtain better prices and increased credit through development of personal relationships. However, the high turnover rate in *tiendas* makes it difficult for them to establish such relationships.

Commercial credit is generally not available to the small store or public market retailer. As shown earlier, total net profits are usually only enough to meet family living expenses, leaving little or no surplus to be reinvested in the business. Supplier credit is thus the major potential source of financing. However, the small sales volumes of these stores, coupled with their high mortality rates and the lack of financial guarantees, makes credit extension risky and costly for suppliers.

The credit restrictions under which the economy is currently operating, in addition to high losses reported by wholesalers due to bad debts in the last two years, have forced suppliers to limit credit and carefully select those to whom they make credit available. (See Table 2.32 for details on credit extension.) As a result, self-service retailers are usually able to get credit, while smaller personal service retailers are forced to buy for cash.

TABLE 2.32 EXTENT AND TERMS OF CREDIT RECEIVED BY RETAILERS, CALI, FEBRUARY 1969

	Self-Service		Personal Service		Public Market	
	%	Days	%	Days	%	Days
Grains	85	14	36	14	65	12
Processed Staples	86	21	30	14	45	14
Fruits and Vegetables	25	10	9	11	32	3
Meat	28	14	1	2	100	3
Poultry and Eggs	58	12	3	10	29	5

SOURCE: PIMUR, Retailer Survey, 1969.

Little credit appears to be available from fresh fruit and vegetable wholesalers. In the case of meat, public market operators are able to finance purchases with credit, while personal service operators work on a cash purchase basis.

Larger self-service outlets generally receive credit on grains and processed staples, where credit is important to finance inventories. In contrast,

only about one-third of the personal service outlets and one-half of the public market retailers receive credit on these items.

Even though a retailer may purchase regularly from the same set of suppliers, this does not mean that he has only one supplier for each product or product group. Self-service retailers contact an average of 3.5 suppliers before purchasing an item, while personal service and public market retailers contact 2.2 and 2.9, respectively.

The frequency of purchases by retailers offers a good indication of the incidence of transaction costs in the system. Table 2.33 shows the average frequency of purchase for each item within product classes by type of retail outlet. Care must be taken in interpreting these data, for within each product group, especially processed staples and fruits and vegetables (and to a lesser extent, grains) there is a wide variety of products, *each* of which is quite often purchased from a different supplier after shopping around. For example, in fruits and vegetables, virtually all items must be purchased from a different supplier. Thus, a *tienda* operator handling five fruits and vegetables would typically make 125 transactions a month to acquire them. The data in Table 2.33 show that the least frequent purchasing is every other day. For a retailer carrying a fairly wide assortment, the time demands are substantial. Although the larger supermarket operations utilize a broker to make fruit and vegetable purchases, his ability to obtain desired quality and quantity is severely restricted by the number of wholesalers who must be contacted and the degree of inspection and bargaining required. Indeed, the weekly task of checking the broker's performance must be quite time-consuming for the manager of the supermarket.

TABLE 2.33 AVERAGE NUMBER OF PURCHASES PER MONTH PER ITEM WITHIN PRODUCT GROUP BY TYPE OF RETAILER, CALI, FEBRUARY 1969

	Self-Service	Personal Service	Public Market
Grains	3.0	3.2	4.0
Processed Staples	2.5	3.2	3.0
Fruits and Vegetables	15.0	25.0	20.0
Meat	20.0	25.0	30.0
Poultry and Eggs	7.0	6.0	9.0
Milk	30.0	30.0	-

SOURCE: PIMUR, Retailer Survey, 1969.

Retailer procurement of grains and processed staples is, of course, less of a problem than fruit and vegetable procurement. It is possible to consolidate purchases of grains and major staples. But since the large wholesalers specialize in a few products, as do food processors, their customers must still make many transactions per week in order to fulfill all needs. The smaller retailers who purchase from the wholesaler-retailers tend to consolidate their

purchases, apparently both to minimize purchase time and to maximize the possibility of receiving credit. The larger personal service stores and self-service stores, on the other hand, buy from the specialized wholesalers and tend to split their purchases.

Small and frequent purchases increase the costs of transportation, as well as transaction costs. Wholesalers deliver only large volume orders, generally by re-routing a truck bringing supplies to them. This service is clearly available only to the largest retailers. The principal means of transportation used are push-carts, horsecarts and motorscooters. These small-scale transporters are used by 80% of personal service stores and 95% of the public market operators, while 69% of self-service stores use trucks. Taxis are used by 12% of the personal service retailers.

Given the high frequency of purchase, storage periods for most products are very short. Self-service stores generally have a small area in the back of the store for this purpose, while other retailers keep most of their merchandise on shelves in the selling area.

Services Offered by Wholesalers

Grain and processed goods wholesalers are generally not aggressive in their sales efforts. Only four of the wholesalers interviewed had salesmen who visit clients regularly. As for the rest, the owner-manager occasionally makes customer contacts, but for the most part retailers are forced to come into the wholesaler's store.

Customer services provided by wholesalers are limited, reflecting in great part the small-scale nature of retailing. The specialized wholesalers, who deal with the larger retailers, offer more services than do the wholesaler-retailers, who service *tiendas* and *graneros*. For example, while 86% of the specialized wholesalers reported giving credit on about 50% of their sales, 62% of wholesaler-retailers gave credit on only 26% of their total sales. Credit was extended an average of 27 days by wholesalers, compared with an average of 13 days by wholesaler-retailers. Thirty-eight percent of specialized wholesalers provided delivery to their largest customers, while only 10% of the wholesaler-retailers offered delivery service.

Fruit and vegetable wholesalers provide fewer customer services than grain and staple wholesalers. (Table 2.34.) Grading by wholesalers is practically non-existent. Produce is usually bought and sold by the box, sack or basket without being opened. It appears, then, that the major function performed by fruit and vegetable wholesalers is that of providing a physical link between producers or country assemblers and the urban retailer.

Beef and pork wholesalers purchase live animals in the Medellín cattle market or on farms, which are then custom slaughtered at the Cali Municipal

Slaughterhouse. The meat is sold mostly to wholesaler-retailers and public market stall operators in whole carcass units, while the byproducts such as hides, viscera, horns, etc., are sold to other buyers. Delivery of the fresh slaughtered meat is made directly to the public markets and *famas* by EMSIRVA. Credit is usually given for one to three days, which is ample, since most wholesaler-retailers and public market butchers sell the total quantity the same day.

TABLE 2.34 DELIVERY AND CREDIT PRACTICES OF FRUITS AND VEGETABLE WHOLESALERS, CALI, FEBRUARY 1969

	Potatoes	Tomatoes	Plátanos	Others
Percentage providing delivery	15%	9%	3%	5%
Percentage of sales on credit	69	37	16	42
Number of days credit	14	5	6	4

SOURCE: PIMUR, Fruit and Vegetable Survey, 1969.

Forranea beef and pork suppliers, on the other hand, purchase selected cuts at the slaughterhouses in nearby towns. Although the customers of these wholesalers are usually only large institutional buyers and self-service stores, their service is presently of considerable value because of their handling of selected cuts.

Wholesaler-retailers of beef and pork provide little service to the retailer other than selling in less than whole carcass quantities. It should be noted that they do not sell by specific cuts, but in packages of mixed cuts (*revuelta*), thus forcing the retailer to take a mixture of items. Neither credit nor delivery are provided by the wholesaler-retailer.

In general, egg wholesalers do little more than buy and sell. Grading on a regular basis is done only by AVIVALLE. Candling and washing are practically unknown, while storage is limited by the lack of adequate facilities. On the other hand, egg wholesalers do provide delivery services to their customers.

Although the wholesalers, as described above, provide rather limited services to retailers, they do perform a vital role in the overall food marketing process. The specialized wholesaler contributes substantially to price formation and the process of equating market supply and demand. He is continually evaluating market information to identify opportunities to buy more cheaply and to take advantage of short-term price maladjustments. In so doing, the wholesaler group contributes to the efficient allocation of products between markets and between time periods. In carrying out his operations, the wholesaler assumes substantial risks due to unfavorable shifts in market prices and product losses. He continually operates under the discipline of impersonal market forces. Hence, over a period of time his windfall gains tend to be counterbalanced by windfall losses. His success depends significantly upon his skill in evaluating market information and taking appropriate buying and

selling actions so that the gains exceed the losses. The other important function of the food wholesaler is to assemble products in large lots and then resell in small lots in a convenient location for his retailer clientele. The wholesaler-retailer serves the small retailer by assembling a group of products, thus saving the retailers much valuable time in the procurement of his supplies. Thus, wholesaling functions are important in the efficient operation of a food system, and become increasingly important as an economy becomes more urbanized and production-distribution activities become more specialized.

Wholesaler-Supplier Relationships

Since specialized grain and staple wholesalers normally handle large volumes of only a few products, their suppliers are most frequently large rural assemblers or food processing firms. On the other hand, wholesaler-retailers are most frequently supplied by the specialized wholesalers, although the larger ones do make some direct purchases from processors in Cali. The majority of both specialized wholesalers and wholesaler-retailers purchase regularly from the same suppliers. (Table 2.35.) Because of the lack of accepted grading practices and market information, wholesalers must be able to trust their suppliers.

TABLE 2.35 PERCENTAGE OF WHOLESALERS PURCHASING FROM REGULAR SUPPLIERS BY TYPE OF WHOLESALER, CALI 1969

	Specialized wholesalers	Wholesaler/Retailers
Percent that usually purchase from same suppliers	78%	69%
Principal reason:		
Price	35%	49%
Credit	24%	35%
Quality	31%	14%
Others	10%	2%

SOURCE: PIMUR, Wholesaler Study, 1969.

Specialized wholesalers usually make product purchases once or twice a month, while wholesaler-retailers purchase more frequently--two to three times per month. Thus, grain and staple wholesalers have a fairly high rate of inventory turnover. This is probably due to three factors: 1) limited storage space; 2) risk of price fluctuations; and 3) the extent of supplier credit received.

Sixty-two percent of the specialized wholesalers make their purchases F.O.B. their supplier's warehouse and therefore must accept the risk and cost of transportation. On the other hand, only 29% of wholesaler-retailers use this method, for their suppliers either provide delivery or re-route incoming trucks to unload the necessary goods in the client's place of business.

Some general data on the relationship between fruit and vegetable wholesalers and their suppliers are shown in Table 2.36. There appear to be two main supply sources: 1) direct from the farmer; and 2) assemblers operating in rural villages and assembly points. For potato wholesalers, assemblers outside of Cali are by far the major supply source. Truckers and assemblers in Cali were important secondary supply sources for all but potato wholesalers. The data suggest, then, that intermediaries play a major role in supplying fruits and vegetables and that a sizeable proportion of these intermediaries operate in other areas and send their produce on some sort of contractual basis to wholesalers in Cali. The data also show the degree to which purchasing is done directly by wholesalers from farmers, either at the farm level or in the wholesale market at Cali.

TABLE 2.36 SUPPLIER RELATIONSHIPS OF FRUIT AND VEGETABLE WHOLESALERS, CALI 1969

	Potatoes	Tomatoes	*Plátanos*	Other
Major Supply Sources:				
Direct from farmers	10%	30%	38%	32%
Negociantes outside Cali	83	31	37	43
Negociantes in Cali	7	-	-	7
Truckers in Cali	-	21	15	9
Other	-	18	10	9
Percentage buying from one supplier	8	28	39	22
Average number of suppliers talked to before buying	3.2	3.0	3.0	3.6
Percentage of purchases on which credit is obtained	76	83	82	89
Average number of days credit received	9.6	3.5	4.6	5.2

SOURCE: PIMUR, Wholesaler Study, 1969.

The majority of fruit and vegetable wholesalers do not buy from only one supplier. *Plátano* wholesalers are most likely to buy consistently from one supplier, and potato wholesalers least likely. Wholesalers reported talking to an average of three suppliers before making their purchase decisions; these contacts were either by telephone or face-to-face. Over three-fourths of the wholesalers' purchases were made on a credit basis, with potato wholesalers least likely to obtain supplier credit and wholesalers of "others" most likely. In general, credit was extended for less than a week. Wholesalers reported holding products less than three days, with the exception of *plátanos*, where the average was 5.5 days. Thus, wholesalers turn their inventory rapidly, and this is reflected in the credit terms afforded them.

Variability in price and quality was seen as a major problem in purchasing. Quality differences, of course, are a function of the lack of grading in the system. *Plátano* wholesalers specifically listed a lack of credit and working capital; although 83% received credit, over half received only one or two days'

credit. Potato wholesalers were generally dissatisfied with the necessity to conduct much of their business during the early morning hours.

The Economics of Food Wholesaling

The material presented thus far indicates that the principal services provided by wholesalers are price formation and physical handling of products moving from rural producer or assembler to urban retailer. In nearly all cases, the wholesaler does not provide transportation from his place of business to the retail store. With these service elements in mind, we consider the margins, costs and profits associated with food wholesaling. The largest wholesalers in the system are those handling grains and staple processed goods. As noted earlier, two major categories within this type of wholesaler can be distinguished, *i.e.*, the "specialized wholesaler" and the "wholesaler-retailer." Monthly income statements for specialized wholesalers of grains and processed goods are shown in Table 2.37. Three size categories are shown for specialized wholesalers. These breaks are made to facilitate analysis of the effect of scale on costs.

Specialized wholesalers at the three sales levels take similar margins, with middle-sized wholesalers having a somewhat lower margin. The effect of scale is best seen in a comparison of expenses as a percentage of sales, which range from 1.8% for the largest specialized wholesaler to 3.0% for the smallest volume wholesaler group. On the other hand, profits as a percent of sales were much higher for the large wholesalers than for the medium and small wholesalers.

It should be noted that the type of operation, as well as the sales level, affects the economics of specialized wholesaling. For example, the largest wholesalers do a considerable volume of business outside Cali, selling to large volume customers in other cities. In these cases the wholesaler often delivers orders directly from his supplier so that the merchandise does not move through his Cali warehouse. Furthermore, there are differences in terms of products handled, with some wholesalers carrying only a few fast-moving items, and others handling a broader line. Therefore, the data in Table 2.37 must be viewed with some caution. Nevertheless, it appears that reduced costs accompany scale. Further, it is clear that the absolute level of profits gained by wholesalers are greater than those obtained in the retail sector. (Tables 2.20, 2.21 and 2.22.)

It would seem that reduced margins and prices should be attainable through programs designed to reduce the number of specialized wholesalers and increase their scale of operations. But it should be noted that the major activity of these wholesalers is watching the markets of each of the products he handles, anticipating price movements, and deciding when and where to place orders.

TABLE 2.37 MONTHLY INCOME STATEMENTS - SPECIALIZED WHOLESALERS AND WHOLESALERS-RETAILERS, CALI FEBRUARY 1969

	Specialized Wholesalers						Wholesaler-Retailers			
	Large		Medium		Small		Large[a]		Small[b]	
	$	%	$	%	$	%	$	%	$	%
Total Sales	2,975,000	100	1,241,150	100	360,455	100	536,189	100	231,605	100
Purchases	2,868,205	96.4	1,206,294	97.2	347,220	96.3	517,642	96.6	216,087	93.3
Gross Profit	106,795	3.6	34,856	2.8	13,235	3.7	18,547	3.4	15,518	6.7
Expenses:										
Rent	3,986		4,090		2,715		3,427		2,815	
Utilities	2,000		1,430		1,000		1,100		800	
Salaries and Fringe Benefits	13,108		6,447		4,905		3,345		3,575	
Transportation	21,700		4,338		1,195		1,904		135	
Delivery	3,375		5,100		360		900		335	
Bad Debts	2,485		2,685		505		690		800	
Depreciation	540		374		-		334		287	
Insurance	500		140		135		150		-	
Packaging	-		-		-		-		-	
Maintenance	-		-		-		-		-	
Miscellaneous	5,000		-		-		-		-	
Total Expenses	52,694	1.8	24,604	2.0	10,815	3.0	11,850	2.2	8,747	3.8
Profits before Taxes	54,101	1.8	10,252	0.8	2,420	0.7	6,697	1.2	6,771	2.9

[a]60% of sales at wholesale, 40% at retail.

[b]60% of sales at retail, 40% at wholesale.

A factor which tends to limit the size of each wholesaler's operation is his individual skill at this activity.

Monthly income statements for wholesaler-retailers are shown in Table 2.37. Two size categories are shown. Differences in gross margins reflect the scale and type of operation. The larger volume wholesaler-retailers make over 60% of their sales at wholesale, while the smaller volume firms make less than 40% of their sales at wholesale. The larger operations have faster turnover and fewer transactions, and this is manifested in their reduced costs per dollar of sales. There are undoubtedly also economies of scale associated with higher volume. In terms of absolute profits, wholesaler-retailers have a greater return than retailers, although they also have more capital invested in their business.[34]

The net profits to wholesalers represent returns to capital and the owner's management skills. The major investment is product inventory, which can be fairly large for some of the grain and processed foods wholesalers. Inventories are typically small for wholesalers of meat, fruits and vegetables, who carry only about one to three days' stocks at any given time. Even for large wholesalers the investment cost of carrying inventories is often shifted toward the supplier by deferred payment for merchandise. It was estimated that the average inventory for the specialized wholesalers ranged from $865,000 for the large wholesalers to $545,000 for the medium-sized operators and $140,000 for the small firms.

Table 2.38 presents the monthly income statement for meat wholesaler-retailers. These dealers sell approximately 85% of their total volume to other retailers and provide few services other than breaking up whole carcasses into smaller lots. Little or no segregation into different-priced cuts is done, and the retail buyer is usually forced to take a mixture of different quality meats (*revuelto*). Net profits of 12% appear high when compared to other types of wholesaling and retailing operations.

Monthly income statements for wholesalers of fruits and vegetables are also shown in Table 2.38. Margins are high compared with other types of wholesaling and volume per firm is low. Spoilage losses are relatively low because transactions are usually in boxes, bags or baskets and most of the spoiled products are usually not sorted out until these units are opened by the retailer. Although profits before taxes are high when considered as a percentage of sales, the actual net return to labor and capital could not be greatly reduced by current operators and still remain in operation. Nevertheless, there appear to be potential savings in increased scale--at least for the more

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[34] We were not able to obtain data on total capital invested by either specialized wholesalers or wholesaler-retailers. However, the inventory investment alone of wholesaler-retailers is greater than the total invested capital of any retailer class.

TABLE 2.38 MONTHLY INCOME STATEMENTS - MEAT, POTATO, *PLÁTANO*, TOMATO, FRUIT AND VEGETABLE WHOLESALERS
CALI, FEBRUARY 1969

	Meat		Potatoes		*Plátano*		Tomatoes		Other Fruits and Vegetables	
	$	%	$	%	$	%	$	%	$	%
Total Sales	109,408	100.0	66,700	100.0	32,800	100.0	23,500	100.0	25,000	100.0
Purchases	93,544	84.5	58,696	88.0	28,864	88.0	19,975	85.0	21,250	85.0
Gross Margin	15,864	14.5	8,004	12.0	3,936	12.0	3,525	15.0	3,750	15.0
Expenses:										
Rent	1,040		1,780		325		300		300	
Utilities	-		-		-		-		-	
Salaries and Fringe Benefits	832		480		45		-		100	
Transportation	200		1,675		1,085		530		500	
Delivery	-		195		-		-		-	
Bad Debts	250		-		-		-		-	
Depreciation	8		20		2		2		2	
Insurance	-		-		-		-		-	
Packaging	200		-		-		300		400	
Maintenance	-		-		-		-		-	
Miscellaneous	200		-		-		-		-	
Total Expenses	2,730	2.5	4,150	6.2	1,457	4.4	1,132	4.8	1,302	5.2
Profits Before Taxes	13,134	12.0	3,854	5.8	2,479	7.6	2,393	10.2	2,448	9.8

important products that have a fairly organized production and assembly system. In the remainder of the fruit and vegetable products, small-scale operations will probably continue until greater rationalization takes place in production and/or assembly. This rationalization could be fomented by either a larger-scale wholesaler being able to impose some discipline on his supply sources and/or by changes in the production sector.

The Existing Cali Food Distribution System: A Summary

In looking at the urban food distribution system which services Cali, one is struck by the resemblance to a pure competition model. The structure is one of atomistic competition with generally easy entry and exit for the large number of small-scale retail and wholesale units. There is little evidence of excess profit being taken by any one retail or wholesale group, and there appears to be a strong tendency for marginal revenue to equal marginal cost.[35] Public market retailers, *tienda* operators, and fruit and vegetable wholesalers, who comprise by far the largest number of urban marketers, make little more on their marketing activity than the minimum wage of $15 per day.

Simple analysis of gross margins, as well as considerations of net returns to labor, might be taken as an indication that the conditions of static competitive efficiency are met and that the system should be maintained as is. However, it is important to consider the services provided relative to margins and to take into account the coordination of product flow through the system. While existing marketing participants are operating competitively within the constraints of the present system, their productivity is extremely low. The services they provide are minimal, and are more costly than could be achieved through a more rationalized system.[36] The small scale of most retailers forces an additional step in the distribution channel, that of the wholesaler-retailer, adding extra cost to the system. Further, given the lack of locational convenience of many types of retail outlets, there is excessive movement of consumers around the city as they perform their shopping chores.

In evaluating the present urban food distribution system, principal emphasis must be placed on services provided to residents in Areas 5 and 6. Not only does the largest segment of the population reside in these *barrios*, but they are also the poorest. PIMUR data show that the highest food prices in the city are found in the neighborhood *tiendas* and *graneros* serving these lower

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[35]The major exceptions to the pattern sketched are the self-service retailers and meat wholesalers.

[36]Comparison of the existing and a proposed system is made in the next section.

income areas, and over 40% of the food purchases of Area 5 and 6 families are made in these neighborhood stores.

While the public market system offers the lowest prices and the best assortment of products, especially fruits and vegetables, it nevertheless supplies only 20% of the food needs of the city.[37] It should also be noted that the cost of transport to and from these lower-priced public market areas adds 6.2% and 13.8%, respectively, to food purchases made by shoppers from Areas 5 and 6. Thus, the price advantage of the existing public markets are offset to a great extent by transport costs, not to mention the time and inconvenience associated with shopping there. For the city as a whole, we calculate that consumer transport costs associated with food shopping trips aggregate to at least 2.5% of the total monthly food bill in the city.

There is also a hidden social cost of the public market system, for the municipality has been subsidizing these markets by failing to make adequate rental charges to amortize the costs of building and equipment. Rentals for public market stalls are barely covering EMSIRVA's operating expenses, and are *not* providing funds for either renovation of existing facilities or expansion of the public market system into the new residential areas springing up on the city's periphery. This expansion is necessary if EMSIRVA is to adequately service this segment of the population.

There appear to be distinct possibilities for increased productivity in personal service retailing. The data show that reduced margins are possible with increased scale as a result of more efficient utilization of space, capital, and employees. (Tables 2.21 and 2.23.) Unfortunately, most of the larger-scale, more efficient personal service outlets are presently located in the Central Market area, rather than in the residential areas where they could provide much needed service. It should also be emphasized that, in addition to their operating efficiencies, the larger retailers purchase direct from specialized wholesalers, whereas the *tiendas* and small *graneros* utilize an extra intermediary--the wholesaler-retailer. Thus, the existence of small-scale retailers adds this additional cost to the system as a whole. With a shift to larger-scale retailing, the wholesaler-retailer step could be eliminated.

Since many *tiendas* are located in a garage or room, the owner typically does not include in his cost calculus a rental or, quite often, a utility charge. To the *tienda* operator, there may be no cost, in an opportunity sense, of utilizing an extra room in his house or apartment. He may be, and apparently

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[37] Although 42% and 37%, by value, of Areas 5 and 6 food expenditures are made in the area of the public markets, they are not all made in the public market facilities.

is, quite willing to "squeeze" his living space. In a public sense, there is a cost to the system of additional construction to support the *tienda* operations. Presumably, without *tiendas* there would be a reduction in construction needs.

The food wholesale sector is also in need of change. While grain and staple good wholesaling is reasonably efficient, given the constraints of a fragmented retail structure, there appear to be opportunities for increased scale and rationalization in the wholesaling of such key perishables as beef, potatoes, *plátanos*, and tomatoes.

However, the necessity for change in food wholesaling lies not so much in the internal economics of existing firms as in the services provided by those firms within a more rational overall system. A major impediment to large-scale, full-line retailing is the lack of a wholesale system which will provide nearly one-stop shopping for retailers, delivery service, and short-term credit on purchases. Presently, a full-line retailer must supply himself from a multitude of wholesalers, visually inspect most purchases, and arrange for his own transport. The time required to purchase substantially restricts the effort he can put into retail store management and merchandising. Thus, there is a great need for wholesalers to perform a more complete set of services associated with supplying the retailer.

Based upon the PIMUR diagnostic studies, we find the existing urban food system deficient in providing low prices and shopping convenience to the low and lower-middle income consumers who are the bulk of Cali's population and in providing clean, high-quality products to all consumers. Opportunities for greater economic efficiency and improved marketing services exist in the retail and wholesale sectors, but to achieve these a major step must be made to reorganize and coordinate the units in these two sectors. In the next section of this chapter, we turn to a detailed analysis of the feasibility of a more modern urban marketing system responsive to the needs of a rapidly growing city.

Opportunities for Change

Environmental Pressures

As part of its efforts to prepare the city for the 1971 Pan American games, the municipality has torn down the Calvarios market and has closed the Galeria Central.[38] The two public market structures in the Central Market area are no longer open for retailing and stall operators have been reassigned

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[38]These actions were carried out after the field research had been completed for this study. The Galeria Central closing occurred in February 1970 as the final revision of this report was being completed.

to the other public markets. It is not yet clear how consumers will respond to this major change in the retail system. Since the satellite markets are not as conveniently located for some shoppers or as well served by bus lines as the old Central Market, it seems likely that consumers will shift their purchasing toward the more conveniently located neighborhood outlets. Thus, the problem of high prices and limited product assortment in neighborhood outlets is likely to be intensified.

The closing down of the Galeria Central and Calvarios is also expected to have major impact on the large personal service retailers located in the Central Market area. As consumer shopping patterns shift to either greater patronage of neighborhood outlets, satellite *plazas*, or some combination, the large *graneros* and wholesaler-retailers will have to relocate. A movement of these outlets to neighborhood locations would greatly improve the service now offered in these areas. Some of the large personal service outlets will probably relocate from the Central Market area to locations adjacent to major satellite *plazas*. While such a movement would tend to disperse food retailing into the neighborhood areas it is only a small step toward decentralization of market activities, since the satellite markets are generally inconvenient shopping areas for most lower income residents. Also, further clustering of retail operations around existing satellite markets would tend to downgrade the residential areas immediately surrounding the existing *plaza* markets and, over time, will create some of the same conditions which existed in the Galeria Central area.

While the restructuring of consumer shopping patterns as a consequence of the closure of the Central Market is a major event, the long-term trend in consumer shopping behavior must also be considered. Most available data show that Cali is growing rapidly, and that population increases are being absorbed in the periphery of the city. That is, the city is expanding outward. The present public market system can serve these outlying areas only at the expense of substantial investment and operating expenditures for consumer transport. And, we have already seen the heavy expense borne by Areas 5 and 6 residents in making shopping trips to public market areas.

Thus, we see that the closing of the Galeria Central provides an opportunity for realignment of consumer shopping patterns. But, the full potential of such a shift cannot be realized if emphasis is placed only on strengthening the existing satellite markets. A major effort must be made to move low-cost, full-line retailing into residential areas, especially those on the periphery of the city.

Concurrent with the closing of the Galeria Central, consideration is being given to transferring the food wholesaling function out of the center of the

city. Since close coordination with that major section of food retailing which had taken place at the city's center is no longer possible, a center city wholesale operation is no longer necessary.

Further, in addition to elimination of the Galeria Central, the city is in the process of widening one of the principal streets in the wholesale area. The widening of this street will force the tearing down of a number of buildings currently being used by wholesalers, while the construction operations will cause problems for other wholesalers by making it virtually impossible to receive or ship out their products. The difficulties and uncertainties due to these actions have already caused a small number of wholesalers to look for new locations near the satellite *plazas*, mainly Alameda and Cristobal Colon. This movement may accelerate if the remaining businesses are adversely affected. If wholesalers decide to relocate, many of the pricing and coordinationg functions of a central market will be lost and cost increases can be expected, not to mention the probable degeneration of areas around the public markets.

For several years there have been growing pressures for moving food wholesaling out of the center of the city. The need to relocate these wholesale businesses stems from two main types of considerations: (a) those directly affecting the food distribution system; and (b) other economic and social considerations affecting the development of Cali.

Many of the problems directly relating to the food distribution system are the result of the physical characteristics of the area. Most of the buildings which are currently being utilized as warehouses by wholesalers are old houses and buildings which have been partially transformed to serve for their current purpose. Because of this they usually do not permit efficient handling and storage of food products. Because of the lack of adequate loading and unloading areas, there are substantial delays and losses associated with these operations.

To some degree a more important factor is the lack of possibility for expansion in the area, either for current operators who would want to expand their own operations or for new wholesalers who would want to enter the area. The increasing volumes of food products which will have to move through the system in the future may be severely limited by the lack of physical space.

As has been pointed out, this area is located in the downtown section of the city, which means that all incoming and outgoing vehicles to the area must pass through highly congested areas. The extra costs or delays and excess handling are considerable and are increased by product loss due to pilferage and physical deterioration.

Mention has been made previously of the lack of proper sanitary conditions in the area. The large volume of refuse, produced mainly by the fruit and vegetable operations; the general state of disrepair of the buildings and

streets which makes effective cleanup operations virtually impossible; and faulty drainage attract large numbers of insects and rodents. These conditions may account for substantial deterioration of food products, while at the same time they present serious health problems.

The host of activities, dirt, congestion and disrepair of the area make it a highly visible and sensitive sector of the downtown area. For a number of years public opinion has been pressuring the local authorities to "do something" about this area. At present these pressures are even stronger, since the Pan American games to be held in 1971 are expected to cause a large influx of visitors from other parts of the country and abroad.

In many respects, the Central Market area has acted as a barrier to the expansion of other commercial activities of the downtown section. It has also resulted in a great deal of traffic congestion because of the large number of vehicles converging on the area.

What are the advantages to be gained by establishing a new central wholesale market facility?

First, there is the obvious but economically intangible benefit of sanitizing the center of Cali.

Second, a well-planned facility will increase the ease and efficiency with which trucks can be moved into, unloaded and moved out of the wholesaling area.

Third, the physical handling of products can be reduced and rationalized. Properly designed facilities will permit the eventual use of more capital-intensive material handling equipment. While such equipment is not used nor probably needed at the present time, the eventual development of large broad-line wholesalers will make its use possible and economically desirable.

Fourth, there will be greater physical security for inventories from insect, rodent and other types of damage, as well as pilferage. At present this last type of security is a constant problem.

Fifth, the market is expected to facilitate rationalization of transport between wholesalers and retailers. The wholesalers themselves may provide delivery services, or independent trucking firms with offices within the center may independently provide this service.

Sixth, the removal of wholesaling from the city's center will aid in providing a climate of acceptance for dispersal of retail operations throughout the city.

While a physical relocation of wholesaling is desirable, the authorities should go further than merely putting up brick and mortar. Strong efforts should be made, through capital and technical assistance, to encourage the development of broad-line, full-service wholesalers. If larger-scale retailing is to develop in the neighborhood *barrios*, it is requisite that they have access

to wholesalers who can supply them at low cost. At present, a disproportionate amount of retailers' time is spent on purchasing activities, with a subsequent diminution of effort in store management and merchandising. Thus, the construction of a new wholesale facility and the relocation of wholesalers should be accompanied by a program to rationalize wholesale operations.

Suggestions for Urban Marketing Reform

There is an opportunity to substantially improve food retailing in Cali. Largely through technical assistance and improved wholesaling operations the existing *tienda*-superette-supermarket system serving middle and upper income families could be helped to provide much better services and lower prices. But, the more important and more difficult task is to improve marketing services and reduce food prices for low income families.

We have indicated that full-line, larger-scale retailing is feasible in Areas 5 and 6 *barrios*. At this point, we turn to analysis of the economics of such an operation. These neighborhood stores should be within convenient walking distance of their customers. We have assumed that three blocks is easy walking distance and have therefore taken this as the radius of influence for the proposed outlets.[39] A location with a radius of three blocks gives a total area of 18 square city blocks. (Figure 2.2.)

Table 2.39 shows average monthly family food expenditures by socio-economic area and product group. Table 2.40 presents the average number of families per square block in the various socio-economic areas and the total demand existing in an 18-block area within each of the socio-economic groupings. It is unlikely that the proposed outlets would obtain 100% of the market within the 18-block area, and we have therefore assumed product group shares as follows: (a) grains and processed 90%; (b) meat 90%; (c) fruits and vegetables 75%; (d) poultry and eggs 90%; and (e) dairy products 54%. The average market share obtained would thus be 84%.

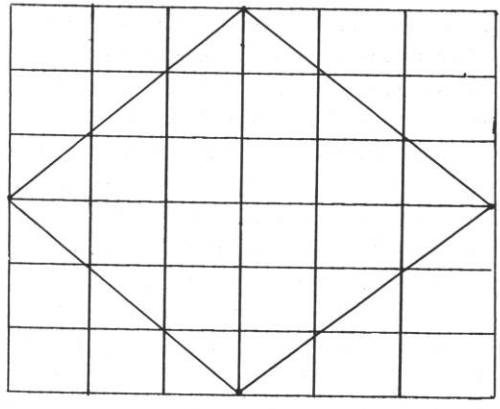
TABLE 2.39 MONTHLY FAMILY FOOD EXPENDITURES BY SOCIO-ECONOMIC LEVEL AND PRODUCT GROUP, CALI 1969

	Area 1	Area 2, 3, 4	Area 5	Area 6
Grains and processed	775	496	300	257
Meats	735	422	221	169
Fruits and vegetables	451	234	113	98
Poultry and eggs	147	77	36	21
Dairy	336	190	82	47
TOTAL	$2,444	$1,419	$752	$592

SOURCE: PIMUR, Market Basket Study, 1969.

[39] It will be realized, of course, that most people would probably be willing to walk somewhat more than three blocks, but our analysis will be based on three blocks as an outer limit.

FIGURE 2.2 POTENTIAL MARKET AREA FOR NEIGHBORHOOD STORES



The area within the diamond, comprising 18 square blocks, comprises the area of influence of a store located at the center of the diamond. To get to the store, nobody within the area has to walk more than three lineal blocks.

No soft or alcoholic beverages have been included in the sales volume projections. These are high-margin items and would increase the profitability of the store. Nonfood items such as personal care items, household maintenance articles, health products, etc., should be carried, but are not included in our projections. These nonfood items would add approximately 10% to projected sales volumes shown in Table 2.40.

TABLE 2.40 NUMBER OF FAMILIES AND TOTAL MONTHLY FOOD EXPENDITURES IN AN 18-BLOCK AREA BY SOCIO-ECONOMIC LEVEL

Socio-Economic Level	Families Per Block	Food Expenditures 18-Block Area	Market Share of Proposed New Retailer
1	15	$660,000	$554,000
2, 3, 4*	25	640,000	537,000
5	35	474,000	400,000
6	30	320,000	270,000

*Since these areas are similar, they have been grouped together for ease of presentation.

Pro-forma income statements and investment requirements at different sales volumes are shown in Tables 2.41 and 2.42. Outlets of 300 square meters are recommended in Area 5 *barrios* and 200 square meter outlets are suggested for Area 6 *barrios*. Market potential and analysis of existing comparable operations in Cali suggest that outlets of these sizes are amplé. The store may be either rented or specifically built; wherever possible we recommend the latter, since the store can then be made to conform to desired operations. The economic data in Tables 2.41 and 2.42 are based on constructing a store building. However, depreciation and target return on investment are approximately equal to rental rates; therefore, the analysis does not vary under conditions of either rent or build.

The model stores have been budgeted to include refrigeration equipment to facilitate the handling of perishables, especially meat and milk. Cash registers are also included, but lower-cost adding machines and cash boxes could be substituted in the lowest income areas. The stores should be equipped so they are both attractive and functional but have relatively few frills that will add unnecessary costs.

Inventory requirements were calculated on the basis of two days' meat supply, two weeks' stock of grains and staples, three days' stock of fruits and vegetables, poultry, dairy products, and three weeks' supply of nonfoods. Cash on hand is assumed to be two days' sales.

A target rate of 30% return-on-investment has been set. This rate corresponds to the present private lending rate; it is felt that the proposed operation must return this level of profit on capital if entrepreneurs are to be induced to invest funds. The gross margins shown in Table 2.41 are adjusted to attain the desired return-on-investment.

TABLE 2.41 PROJECTED INCOME STATEMENTS OF NEIGHBORHOOD SELF-SERVICE OUTLETS AT VARYING LEVELS OF MONTHLY SALES, CALI 1969

	SALES LEVELS			
Sales	$300,000	$350,000	$400,000	$450,000
Purchases	270,925	319,760	363,585	413,285
Gross Margin	29,075	30,240	36,415	36,715
Expenses				
Manager/Owner	5,000	5,000	5,000	5,000
Meat Manager	2,500	2,500	2,500	2,500
Perishables Supervisor	1,250	1,250	1,250	1,250
Cashier @ $1000	1,000	1,000	2,000	2,000
Casual Labor @ $600	3,000	3,600	4,200	4,200
Fringe Benefits	5,100	5,340	5,980	5,980
Total Payroll	$17,850	$18,690	$20,930	$20,930
Utilities	1,500	1,500	2,000	2,000
Insurance	250	250	250	250
Depreciation	1,300	1,300	1,835	1,835
Transportation	200	200	200	200
Packaging	575	650	725	800
Supplies and Maintenance	300	350	400	450
Miscellaneous	500	500	600	600
Total Expenses	$22,475	$23,440	$26,940	$27,065
Profit Before Taxes	6,600	6,800	9,475	9,650
Profit After Taxes	$ 6,350	$ 6,500	$ 9,100	$ 9,250
Overall Gross Margin	9.6%	8.6%	9.1%	8.2%

TABLE 2.42 PROJECTED INVESTMENT REQUIREMENTS OF NEIGHBORHOOD SELF-SERVICE OUTLETS AT VARYING LEVELS OF SALES, CALI 1969

Sales Level	$300,000	$350,000	$400,000	$450,000
Fixed Equipment				
Display refrigerator	16,000	16,000	16,000	16,000
Self-service refrigerator	13,000	13,000	13,000	13,000
Meat *banco* and equipment	5,000	5,000	5,000	5,000
Scales	2,000	2,000	2,000	2,000
Cash Register	19,000	19,000	38,000	38,000
Shelving	25,000	25,000	40,000	40,000
Adding Machine	3,600	3,600	3,600	3,600
Office Equipment	5,000	5,000	5,000	5,000
Total fixed equipment	$ 88,600	$ 88,600	$122,600	$122,600
Working Capital				
Inventory	89,900	105,000	120,000	134,800
Cash on hand	20,000	23,300	26,600	30,000
Less supplier credit	75,000	87,500	100,000	112,500
Total working capital	$ 34,900	$ 40,800	$ 46,600	$ 52,300
Land and Building				
Land @ $100/M^2	20,000	20,000	30,000	30,000
Building @ $550/M^2	110,000	110,000	165,000	165,000
Total land and building	$130,000	$130,000	$195,000	$195,000
Total Investment Needed	$253,500	$259,400	$364,200	$369,900

SOURCE: PIMUR, Retailer Study, 1969.

Depending on sales volume, each neighborhood self-service outlet would provide employment for 9 to 11 people. A salary of $5,000 per month has been included for the administrator, who will, in most cases, also be the owner. Rather than make the owner's salary a residual payment, it has been included as a distinct cost of the operation, thus permitting an analysis of the actual return on invested capital. By making the administrator's salary a clear cost, a potential investor in a chain of outlets has a precise picture of operating costs. A salary of $2,500 per month is suggested for the meat manager to ensure obtaining a qualified person. The meat operation should *not* be leased out, as it is essential for store management to have complete control over quality and price policy for this critical product. Also, the gross profit contribution from beef is an important element in the profit picture.

Given the estimated operating expenses, a gross margin of 8% to 10% is required to produce the desired net return-on-investment of 30%. The availability of managerial talent to properly manage the proposed outlets is an important issue. The stores must be tightly run, and perhaps more important, imaginative merchandising will be essential to success.

At the present time, one of the major barriers to development of full-line, neighborhood self-service outlets is the difficulty in obtaining supplies of adequate quality with a minimum input of managerial time and effort. The high degree of wholesaler specialization, together with the small scale of most operations, imposes the necessity to work with a large number of suppliers. The task of coordinating the transport of purchases is also complicated by the fragmented wholesaling system. This points up the need for larger-scale, broader-line, service wholesalers to assume a critical role as system coordinators.

An organizational alternative that seems capable of providing the needed system coordination is the voluntary chain. In this type of organization the wholesaler would arrange a contractual relationship with 10 to 15 neighborhood self-service stores. The wholesaler agrees to be the primary supplier for the retailer and to provide merchandising and store management assistance. The costs to the retailer and the percentage margins to be charged for wholesaling services are specified. In turn, the retailer agrees to buy through his wholesaler and to follow specified management practices. The desired retailer-wholesaler coordination might also be achieved through a fully integrated corporate chain or a retailer cooperative. Initially, we see the voluntary chain as being the preferred form of organization to initiate this program in low income areas.

These new wholesalers should act as channel captains for 10 to 15 neighborhood self-service stores, two or three of which might be located in the

upper income areas (*barrios* in socio-economic levels 1, 2, 3, and 4) and the remainder in the lower income *barrios* of socio-economic levels 5 and 6. By including a range of income levels to be served within his store group, the wholesaler can perform the highly important grading and sorting function with little loss. Until the supply channel is more highly organized, the wholesaler is in the best position to handle grading and sorting.

These channel-coordinating wholesalers should carry meat, grains, processed goods, and the high volume fruits and vegetables. It is highly important that they carry meat, as this product alone will account for over one-third of their sales and one-half of their gross profit. A substantial wholesale carcass-breaking operation -- 15 to 25 per day -- is required. Large amounts of technical assistance will be needed to institute the meat section and make it efficient. Although fruits and vegetables will not initially be a major sales or profit item, they should be handled in order to provide needed service to related retailers. Further, the imposition of a large wholesaler in the channel with its subsequent demands for consistent quality should help rationalize the channel.

Little in the way of modern handling equipment is needed for the grains and processed food items; these can be handled efficiently with present hand labor methods. Equipment to package grains in consumer-sized packages is needed, but very simple equipment can be used. Investment in meat cutting equipment and a chill room are required, at an estimated cost of $85,000.

Very little investment appears needed to handle fruits and vegetables. Although the wholesaler will have to do some grading and sorting, this is essentially a labor-intensive operation. Delivery service should be provided by the wholesaler, but we recommend that this be handled, at least in the early stages, by contract arrangements with local truckers.

Although the wholesaler serving a chain of retail stores should act as their principal supply coordinator, it would not handle 100% of the retailer's needs. We estimate that the proposed wholesaler would handle directly some two-thirds of its affiliated retailers' supplies. More specifically, the envisioned wholesaler would supply 75% of the grains and staples, the remainder to be handled directly by processors or their independent distributors; 90% of the meat; and 80% of the fresh fruits and vegetables (probably tomatoes, potatoes, onions and *plátanos*), with the remainder to be supplied through specialized brokers and wholesalers. Poultry and eggs, dairy products, soft drinks and liquor, and nonfoods would, at the start, be handled by existing channels.

It is expected that the wholesaler will supply one week's credit to his affiliated retailers. In turn, the wholesaler could expect, conservatively, one or two weeks' credit on grains and processed staples, two days' credit on

meat, and no credit on fruits and vegetables. Inventory is estimated at two weeks' stock of grains and processed goods, two days' supply of meat, and three days' supply of fruits and vegetables.

A *pro-forma* income statement and an estimate of investment requirements are shown in Tables 2.43 and 2.44. As in the case of retailers, a target rate of return of 30% per annum is utilized. Monthly salary for the manager is set at $15,000. It is felt that a high wage is needed, given the managerial requirements of the job. Three relatively well paid supervisors are also included -- an operations manager, a meat supervisor, and a fruit and vegetable buyer. Other operating expenses are estimated on the basis of existing wholesale operations. Delivery will be through leased truck operations. It is expected that these full-line wholesalers will be located in the suggested new wholesale center.

TABLE 2.43 PROJECTED INCOME STATEMENT OF A BROAD-LINE SERVICE WHOLESALER SERVING 10 SELF-SERVICE NEIGHBORHOOD RETAILERS, CALI 1969

Sales	$2,738,000
Purchases	2,602,500
Gross Margin	$ 135,500
Expenses	
Manager/owner	15,000
Meat Supervisor	5,000
Perishables Supervisor	5,000
Operations Manager	5,000
Butchers @ $2,000	4,000
Secretary	1,500
Bookkeeper	2,000
Casual Labor @ 600	6,000
Fringe Benefits	17,400
Total Salaries	$ 60,900
Rent	6,000
Utilities	3,000
Transportation (incoming)	4,500
Delivery	8,000
Insurance	1,000
Packaging	12,000
Depreciation	1,600
Maintenance	1,000
Bad Debt Loss	5,000
Miscellaneous	2,500
Total Expenses	$ 105,500
Profit before Taxes	$ 30,000
Profit after Taxes	$ 25,000

TABLE 2.44 PROJECTED INVESTMENT REQUIREMENTS FOR A BROAD-LINE SERVICE WHOLESALER SERVING 10 SELF-SERVICE NEIGHBORHOOD RETAILERS, CALI 1969

Fixed Equipment	
Grains - cleaning and packaging	$ 30,000
Meat - cold room	80,000
cutting equipment	5,000
Fruits and Vegetables - washing sorting, and packing	15,000
Scales, Balances	30,000
Office Equipment	33,000
Total Fixed Equipment	$ 193,000
Working Capital	
Inventory:	
Grains and processed	612,000
Meat	38,000
Fruits and Vegetables	50,000
Total Inventory	$ 700,000
Accounts Receivable	700,000
Cash on Hand	100,000
Less: Accounts Payable	
Grains and processed	612,000
Meat	75,000
Total Accounts Payable	$ 687,000
Total Working Capital	$ 813,000
Total Capital	$1,006,000

The Benefits of Urban Marketing Reform

In the preceding section an economic analysis was made of the margins, costs, and profits of neighborhood full-line, full-service retail outlets, together with a relatively full-line wholesaler to service them. At this point we turn to consideration of the costs and benefits of instituting such a food distribution system relative to the costs and benefits of the existing system. It must be realized, of course, that any such analysis can never be complete. It is impossible to predict fully the multiplier effect of investment in a key sector such as food. In our analysis, we are concerned with the probable effect of a proposed system on prices in Areas 5 and 6, employment, and capital utilized.

As a benchmark, we have attempted to estimate the demand for food in a 100 square block sector from the various retail outlets.[40] Given the distribution of demand, we then calculate the gross margin (cost added) for each

[40]The demand pattern is based on that found in Table 2.15.

outlet to determine a total cost added at the retail level. In addition, purchases of the various retailers from the different types of wholesalers are determined on the basis of PIMUR data, and cost added is determined for these marketing institutions. Thus, we can aggregate the cost added at retail, wholesale-retail, and wholesale to supply a 100 square block section in Area 5 and Area 6. In addition to determining cost added, the number of employees, fixed equipment, inventory investment, and construction investment are calculated. Employment, equipment, and inventory data are derived from PIMUR surveys, while construction investment is determined on the basis of $650 per square meter of space utilized in non-public market retailing and wholesaling and $5600 per stall for public markets.

Tables 2.45 and 2.46 present data on existing system operations for Area 5 and Area 6 *barrios*, respectively. Data on the specialized wholesaling of meats, dairy products, and poultry products are not included. These functions are not expected to change with the institution of a new system, and hence can be eliminated from this particular analysis.

Table 2.47 provides a comparison of the existing system and the proposed new system for Area 5 and Area 6 *barrios*. The proposed new retail outlets in Area 5 and 6 *barrios* are expected to have monthly sales volumes of $450,000 and $300,000, respectively. As previously noted, we have assumed that the new outlets will obtain 84% of the market potential in Area 5 and 6 *barrios*, with the remaining 16% going through the traditional outlets. For the existing system costs we have included consumer transport costs, which are expected to drop substantially with the opening of the suggested new retail outlets. It can be seen that the reduction of consumer transport costs is a major cost-saving element in Area 6 *barrios*. The data in Table 2.47 indicate a reduction in the effective price of food (*i.e.*, including the cost of consumer transport for shopping) of approximately 6%. Since Area 5 and 6 residents expend 50% and 60% of their income, respectively, on food, these are significant cost savings.

An important system saving is elimination of the wholesaler-retailer under the proposed retail-wholesale chain alternative. The gain from bypassing this link in the channel is particularly apparent in the case of meat. However, it is the *total* gain in the system, *i.e.*, reduction in consumer transport, elimination of the wholesaler-retailer, and establishment of the retail-wholesale chain, which makes the proposed alternative attractive.

In looking at the establishment of full-line neighborhood retailers, the first critical issue is that of consumer acceptance. Analysis of consumer attitudes toward various retail outlets strongly suggests that these new outlets will be accepted. They combine the locational convenience which consumers desire with assortment, lower prices, and cleanliness. Experience in other

TABLE 2.45 COST ADDED, EMPLOYMENT AND INVESTED CAPITAL FOR URBAN FOOD DISTRIBUTION IN A 100 SQUARE BLOCK SECTION OF AREA 5 (000's of $)

	Sales Volume	Cost Added	Employment	CAPITAL Equipment	Building	Inventory
At Retail						
Self-service	$ 158	$ 18	6	$ 70	$ 65	$ 38
Neighborhood personal service	1081	121	180	423	1320	162
Non-neighborhood personal service	388	31	15	59	120	88
Public markets	716	90	110	37	357	28
Specialty outlets	290	43	32	393	n.a.	9
Sub-total	$2633	$303	343	$982	$1862	$325
At Wholesale-Retail						
Meat	$ 487	$ 73	8	n.a.	$ 5	$ 32
Grains and Rice	246	7	2	n.a.	98	59
Fruits and Vegetables	17	3	1	n.a.	n.a.	1
Poultry and eggs	6	1	-	n.a.	n.a.	1
Sub-total	$ 756	$ 84	11		$ 103	$ 93
At Wholesale						
Grains and processed	$ 925	$ 32	5	n.a.	$ 90	$370
Fruits and Vegetables	339	51	10	n.a.	20	23
Sub-total	$1264	$ 83	15		$ 110	$393
SYSTEM TOTAL		$470	369	$982	$2075	$811
Cost Added As Percentage of Retail Sales Volume = 17.9%						

TABLE 2.46 COST ADDED, EMPLOYMENT AND INVESTED CAPITAL FOR URBAN FOOD DISTRIBUTION IN A 100 SQUARE BLOCK SECTION OF AREA 6 (000's of $)

	Sales Volume	Cost Added	Employment	CAPITAL Equipment	Building	Inventory
At Retail						
Self-service	$ 107	$ 12	4	$ 47	$ 44	$ 26
Neighborhood personal service	817	91	136	319	1000	122
Non-neighborhood personal service	231	19	9	35	71	52
Public markets	426	54	65	22	212	17
Specialty outlets	195	29	21	266	n.a.	6
Sub-total	$1776	$205	235	$689	$1327	$223
At Wholesale-Retail						
Meats	$ 328	$ 49	6	n.a.	$ 4	$ 10
Grains and processed	166	5	2	n.a.	65	40
Fruits and Vegetables	11	2	1	n.a.	n.a.	1
Poultry and eggs	4	1	-	n.a.	n.a.	n.a.
Sub-total	$ 509	$ 57	9		$ 69	$ 51
At Wholesale						
Grains and processed	$ 624	$ 22	3	n.a.	$ 61	$250
Fruits and Vegetables	229	34	7	n.a.	13	15
Sub-total	$ 853	$ 56	10		$ 74	$265
SYSTEM TOTAL		$318	254	$689	$1470	$539
Cost Added As Percentage of Retail Sales Volume = 17.9%						

TABLE 2.47 SYSTEM COST COMPARISON FOR EXISTING AND PROPOSED URBAN FOOD DISTRIBUTION FOR AREAS 5 AND 6

	Area 5	Area 6
Existing System		
Sales Volume at Retail	$2,633,000	$1,776,000
Cost Added at Retail and Wholesale	470,000	318,000
Consumer Transport Cost for Food Shopping	63,000	90,500
Total Cost Added	533,000	408,500
Cost Added as % of Sales Volume	20.2%	23.0%
Proposed Retail-Wholesale Chain		
Sales Volume Through New Outlets	$2,210,000	$1,490,000
Cost Added at Retail and Wholesale	291,000	216,000
Sales Volume Through Existing Outlets	421,900	286,000
Cost Added at Retail and Wholesale	75,100	51,000
Consumer Transport to Existing Outlets	11,000	14,600
Total Cost Added	$ 377,100	$ 281,600
Cost Added as % of Sales Volume	14.3%	15.8%

Latin American countries indicates that there should be little difficulty with consumer acceptance if prices are kept lower than those in *tiendas*. Of course, to get the full benefits shown, it will be necessary for the retail-wholesale chain to follow a high-volume, low-margin policy.

A second critical aspect, then, is the degree of managerial commitment to a policy of low prices and high volume and the degree to which competition will force low prices. With regard to the former, strong efforts will have to be made by the public agency sponsoring development of retail-wholesale chains to choose and train managers to follow the desired policy. A key force for low retail prices and higher volume can be the wholesaler, who will act as a coordinative and guiding element in merchandising policy.

While some faith can be put on managerial response to the desired policy, competitive pressures will also have to play their part. Since the food distribution system will not change overnight, existing outlets will provide a level of competition which will force the new outlets to at least meet existing price, assortment and quality standards. However, if the new outlets are to be viable given proposed capital investment and overhead, they will have to be more than equivalent to existing outlets. Further, the public agency which will foment the proposed system should place new outlets in such a way as to force them to compete for customers living at the outer edge of their zone of influence, *i.e.*, three blocks from outlet.

Thus, while there is no way to guarantee desired performance, it should be possible through training, coordination of the retail-wholesale chain, and placement of the new retail outlets to gain the hoped-for results.

What are the costs of instituting a series of retail-wholesale chain operations compared to the existing system? The data in Table 2.48 show the employment and capital investment inputs to be considered. As expected, there is a substantial employment effect, with the retail-wholesale chain alternative providing about one-third the employment of the existing system. The major employment effect is on *tienda* operations. While the prospect of increasing unemployment is not a welcome effect in a city with 20% unemployed, a number of related factors must be considered.

TABLE 2.48 EMPLOYMENT AND CAPITAL INVESTMENT IN EXISTING AND PROPOSED URBAN FOOD DISTRIBUTION SYSTEMS FOR AREAS 5 AND 6

		Existing System	New System
Area 5			
	Employment	369	122
	Capital:		
	Inventory	$ 811,000	$1,155,000
	Equipment	982,000	863,000
	Buildings	2,075,000	1,572,000
	Total Capital	$ 3,868,000	$3,590,000
Area 6			
	Employment	254	95
	Capital:		
	Inventory	$ 539,000	$ 888,000
	Equipment	689,000	550,000
	Buildings	1,470,000	1,144,000
	Total Capital	$ 2,698,000	$2,582,000

A changeover to the new system will necessarily be a slow process. Thus, the total number of people employed in urban food distribution will probably not be reduced in absolute terms. Also, as has been mentioned, there is rapid turnover in *tienda* operations, suggesting that these outlets do not provide a stable employment base. Finally, it must be kept in mind that beverages account for 18% of sales, but 34% of gross profits of *tiendas*. Thus, the *tienda* is likely to become a beverage and refreshment parlor with the advent of larger-scale food retailing, as happened in Puerto Rico.[41]

Interestingly, capital requirements for the new system are less than for expanding the existing system. While higher inventory levels are projected for the new system, principally to ensure assortment and availability of goods, equipment and building costs are lower. There is a substantial amount of poorly utilized space and equipment in the present system, particularly in *tienda* operations. Thus, the proposed retail-wholesale chain operations are 7% less capital-intensive than the existing system in Area 5 and 4% less capital-intensive than that in Area 6.

[41] John R. Wish, *Food Retailing in Economic Development: Puerto Rico 1950-65*. Unpublished Ph.D. Dissertation, Michigan State University, East Lansing, Michigan, 1967.

It appears, then, that the proposed retail-wholesale chains could reduce the price of food by over 5% in Area 5 and 6 *barrios*, at a cost of some employment but with savings in capital. The effect of reduced food prices on standards of living and demand for manufactured goods must also be taken into account. While not quantifiable, there are undoubtedly strong multiplier effects from investment in modern urban food distribution.

Recommendations

1. *We recommend the establishment of a public agency to foment a more efficient system of urban food distribution in the city of Cali.*

The proposed agency should not become directly involved in food marketing enterprises, but rather should assist private and public entities within the food distribution system to function more effectively. Its principal objective should be the modernization of the urban food distribution system in Cali through the implementation of the PIMUR recommendations for the wholesale and retail sectors. This action will also require the agency to become involved in a series of coordinating activities such as:

a) conducting the necessary feasibility studies so that these recommendations can be put into practice as soon as possible;

b) securing the necessary technical assistance in order to effectively achieve the desired results and maximum returns to these programs and act as the institutional base for the technical assistance personnel;

c) securing the necessary resources to implement these programs;

d) monitoring program activities so that the success or failure of an activity can be evaluated and appropriate adjustments made.

A number of public agencies involved in the fomenting, regulating, and financing of agricultural production have effected increases in the productivity of this sector. Other public entities are involved in price support and direct intervention within the food marketing system. It seems logical that a fomenting agency might have beneficial affects on the productivity of food distribution activities.

The Promotora de Abastecimientos de Cali, Ltda. is an autonomous public agency, initially formed by IDEMA and EMCALI (and now includes EMSIRVA and CVC) with the objective of planning, fomenting, financing and constructing a central wholesale food market facility in Cali. It appears that this entity is particularly well suited to be transformed into the proposed agency. This would require some minor changes in its present statutes. Also, there would be some advantages in expanding the number of supporting agencies to include INCORA, Caja Agraria, ICA, etc., and some representation from the private sector.

The increased responsibility of the Promotora could be handled by the present staff and approximately three additional technicians. This, of course, does not include the personnel that would be acquired for the technical assistance programs that would be contracted for specific programs and financed out of overall program funds. The additional operating costs for this agency are presented in Chapter 8. The following programs should be given a high priority in implementation.

2. *We recommend the construction of a central wholesale food market located on the periphery of the city of Cali.*

We have already described the principal characteristics of the existing Central Market area, and have pointed out that approximately 70% to 80% of the total volume of food products entering Cali passes through wholesalers located in this Central Market area. The need for a new wholesale market has been justified in the preceding sections of this chapter.

At the present time the Promotora de Abastecimientos de Cali, Ltda. is completing a detailed feasibility study for this market, based upon the characteristics recommended by PIMUR in its Preliminary Report, which was presented in October, 1969. The principal characteristics recommended were as follows:

a) *The facility should be for wholesaling operations only; retailing should not be permitted.*

If retailing is permitted, the city runs the risk of merely establishing another central market area with all its attendant problems of centralized retailing, excessive consumer transport costs, small scale, dirt and congestion. Zoning laws will have to be established and strictly enforced for the area in the immediate vicinity of the wholesale center.

b) *The corporation operating the market should rent space to all types of food wholesalers.*

Seven major categories of food products should be included from the start of the operation, *viz.*: 1) grains and staples; 2) fruits and vegetables; 3) fresh meats; 4) fish; 5) poultry and eggs; 6) dairy products; and 7) processed foods. Initially, the meat wholesaling section would be primarily a hot meat system designed to meet the present needs of retailers accustomed to buying a variety of products almost daily in a central location. However, the meat section should be flexible enough to adjust to future demands for refrigerated meat. Most poultry and egg products, as well as milk, will in the short run continue to be wholesaled as at present. Nevertheless, over the longer run, space should be provided in the central market for those who may desire to operate there.

c) *Space should be available to other businesses which are complementary to food wholesaling.*

A number of complementary services currently exist which facilitate the

activities of food wholesalers. Adequate space should be provided or reserved for the following types of businesses.

Distributors of Packing Materials - At the present time, packing materials such as sacks, boxes and baskets are reused a number of times. The handling of these containers is often difficult and costly, and businesses that buy and sell new and used packing materials serve an important role in facilitating marketing processes. At the present time most of these businesses are located in the Central Market area and it is advisable to keep them in close proximity to food wholesalers.

Transport Services - The trucking of food products involves a considerable proportion of the truck pool serving Cali. The PIMUR transportation study concluded that there is poor coordination between transporters and their customers. The result is an inefficient utilization of equipment, high costs and poor service. We therefore recommend that space be set aside for rental to trucking firms. This would probably require storage areas as well as office space. The wholesale center would thus serve as a concentration point for trucks, with brokerage service provided by the trucking firms.

Shifting the location of the wholesale market from the center of the city to nearer the outskirts will require a substantial change in the intra-city transportation used for moving products from wholesalers to retailers. Although this poses some definite problems, it also affords the opportunity for a rationalization of this service. The current lack of full-line wholesalers makes delivery of small lots by wholesalers costly. On the other hand, independent transport secured by retailers--as is usually the case at present--is also costly, as efficiency is low. The change of location would probably aggravate this situation.

It therefore appears that until broad-line service wholesalers develop, some kind of intra-city consolidated delivery service will be needed. If private firms do not initiate this service, the agency administering the wholesale market should give serious consideration to fomenting transport services.

Bonded Warehouses - Although at the present time wholesalers are unable to get bank loans on products deposited in bonded warehouses, most large processors are able to do so. The new wholesale market facilities would be attractive to the processors and distributors, while it is hoped that wholesalers will shortly be given access to these facilities and financing in order to increase the volume of urban-based inventories.

Auction Facilities - Public auction of shipments of food products is not practiced in Colombia. Nevertheless, this method has definite possibilities of reducing transaction costs and could be used initially for such products as potatoes, *plátanos* and possibly tomatoes. In the initial stages it may be necessary for trucks to be unloaded to allow visual inspection due to the lack

of grading. Nevertheless, *plátanos* are often already sold by the truckload and should be easy to auction on trucks. Promotion and educational campaigns may be needed to show traders the advantage of an auction exchange.

Refrigerated Warehouses and Packing Facilities - Although these facilities are not needed immediately, we recommend that space be reserved so that they may be constructed later.

Other space requirements to be considered are for service facilities such as administration, information, banks, restaurants, service stations, etc., all of which would be revenue-producing facilities.

d) *Location of the Wholesale Facility*

The location of the proposed facility should be considered carefully. We suggest that the following general criteria be used in deciding on the final location:

1) ease of access to railroads and major highways leading into Cali;
2) minimal movement of heavy vehicles through the center of the city;
3) convenient access to all major residential sections of the city;
4) limited consumer access to discourage the establishment of retail operations in the immediate vicinity;
5) sufficient available land to accomodate growth requirements for the next 25 years.

Care must be taken to facilitate both large and small incoming lots as well as outgoing transport of smaller quantities to retailers. Bus routes can be regulated so that consumer transport to the area is difficult, thus helping to reduce the possible establishment of retailing operations adjacent to the wholesaling function.

e) *Characteristics of Buildings*

We recommend that special efforts be made to construct facilities which are sufficiently flexible in design so that they can be adapted as the marketing system evolves. Care must be taken to allow for flexibility in the size of wholesale operations. Partitions between wholesalers should be movable to permit the more successful wholesalers to expand their operations.

Although capital-intensive material handling equipment is not being utilized at present, the construction should not preclude mechanization in the future. Thus, floor load capacity should be adequate to permit the use of fork-lift trucks. Ceiling heights should be ample for future palletized stacking. Indeed, grains are already being stacked to heights of approximately 20 feet.

Possible changes in transportation methods and practices should be anticipated and taken into consideration when designing and laying out the wholesale center. A large variety of small trucks and vehicles are presently being

used, but as scales of operation increase, incoming shipments will probably be arriving on much larger trucks.

We consider that the construction of the center should be based on a three-stage approach to be carried out over a period of about ten years. Although there may be some difficulty in specifying the space requirements for the first stage, we would suggest that calculations be based on 75% of the population of grain and staple wholesalers in Cali and a similar proportion of fruit and vegetable wholesalers. Also to be taken into account are the increases in food volumes to be handled in the next five to ten years.

The second and third stage construction plans should be based on re-evaluations of future space requirements after the market is put into operation. We are presently able to offer projections of total volumes of food flowing through the wholesale systems for the Cali population in the years 1979 and 1989 (Table 2.7). Nevertheless, there are a number of unknown factors which should be taken into account, such as the probable reduction in the relative number of wholesalers, greater space utilization efficiency, and the larger volumes of food moving through Cali if this market becomes more important as a regional distribution center.

Based on the preliminary results of the feasibility study being completed by the Promotora de Abastecimientos, the total land area required is 50 hectares. The investment cost for the three-stage project is 85 million pesos. The first stage would cost about 44 million; the second, 22 million and the third about 18 million pesos.[42]

During the final months of construction of the first stage and the first two years of operation, we would strongly recommend that technical assistance be provided for wholesalers who rent space in the market. We foresee that substantial operational changes will be necessary in the new facilities, and it is imperative that wholesalers be helped so that the new market will be a success. Further quantification and discussion of the technical assistance requirements are presented in Chapter 8.

3. *We recommend the development of larger-volume, full-line retail stores in the barrios and the concurrent development of broad-line, service wholesalers.*

The data presented on the existing food distribution system in Cali show it to be high-cost within the context of the services performed, and point out the possibilities for improving services through more modern, efficient operations. More specifically, the material presented in the previous section

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[42]For details on the design, functioning and financing of the market, see *Estudio de Factibilidad para la Central de Abastecimientos del Valle del Cauca*, prepared by the Promotora de Abastecimientos de Cali, Ltda., Cali, 1969.

suggests that overall food prices can be lowered 6% in Area 5 *barrios* and 7% in Area 6 *barrios*, while providing a better assortment of quality products at more convenient locations.

An integrated program is needed, however, to obtain the benefits indicated above. In order to achieve lower costs at the retail level, changes in wholesaling will have to occur. Also, new (to Cali) management techniques will have to be introduced. Finally, under existing conditions there are no readily available sources of financing for the commercial sector. Given the great need for retailer-wholesaler coordination, the lack of managerial skills, and the need to develop new financing sources, it is recommended that a pilot project be instituted to provide needed insight into the fomentation and implementation of a more modern food distribution system.

Over the next two to three years a voluntary chain of 10 to 15 retailers should be fomented, to be located primarily in Areas 5 and 6 *barrios*, with a few outlets in Areas 2, 3, and 4. Concurrently, this voluntary chain should be complemented by the establishment of a broad-line service wholesaler to supply these new retail outlets. The main objectives of the pilot project would be to permit the development agencies involved, as well as the retailers and wholesalers, to:

1) evaluate the actual potential of larger-volume retail stores in the low income *barrios*, including consumer reaction and management and merchandising problems;
2) test the feasibility of broad-line wholesaling in conjunction with a voluntary chain of retailers;
3) train personnel in the operation of modern food distribution units; and
4) gain experience in the adaptability of new forms of modernized food distribution.

Further expansion of the proposed retail-wholesale system would be contingent upon evaluating the pilot project.

While some variation in operating characteristics will undoubtedly occur as the project is implemented, it is recommended that the retail and wholesale operations have the basic characteristics described in the previous sections of this chapter. Investment funds for the pilot project should be administered by the Promotora de Abastecimientos. Financing for buildings could be covered by a special line of credit from the Banco Central Hipotecario, the Caja Agraria, or possibly from the Corporacion Financiera. At present, financing for certain types of commercial buildings appears to be in short supply, hence the need for developing new lines of credit. Financing for equipment can be secured from equipment manufacturers, but this is typically high-cost credit. It is hoped that a line of credit can be developed for commercial operations similar to that now enjoyed by the industrial and agricultural sectors. Inventory investment can be financed partly from food processors and suppliers.

Finally, the entrepeneur himself should finance 25% of the investments required. As he gains experience in the suggested new forms of retailing and wholesaling progresses, the entrepreneur can be expected to finance approximately 50% of the required capital. In the early stages when risk is high, however, the public sector should be willing to provide debt financing. Thus, we expect that in the pilot phase the entrepreneur will provide 25% equity and various private and public sources will supply the remaining 75%.

One of the greatest barriers to efficient larger-scale coordinated retailing and wholesale operations is the lack of adequate management talent as well as competent lower level personnel. We strongly recommend that the pilot project include a highly operations-oriented training and technical assistance program for managers of both the wholesale and retail operations as well as for some of the personnel within these operations. The foreign technical assistance staff would be composed of a retail/wholesale operations specialist, a specialist in the handling of fruits and vegetables, and a meat specialist. The foreign specialists would be complemented by at least two Colombian counterparts who would be receiving practical training and who would be able to take charge of the technical assistance program during the second stage.

4. *We recommend the development of a limited number of specialized retail meat stores.*

Although we see significant opportunity to raise the standard of living in Cali through the development of voluntary retail-wholesale chains, it is clear that the full development of such a system will not occur immediately, or even in the next five to ten years. We therefore feel that it is essential to take immediate, interim steps to improve the existing food distribution system.

Analysis of the present distribution system shows that a significant part of the cost build-up can be attributed to the linkage between meat wholesaler and retailer, *i.e.*, the wholesaler-retailer (*fama*). As long as a major portion of the food purchased at retail moves through the *tiendas* and small *graneros*, it will not be possible to completely eliminate this linkage. It is possible, however, to make this step in the channel more efficient. Accordingly, we recommend the development of neighborhood meat specialty stores, which will operate at both retail and wholesale. The economic and operating characteristics of these stores are presented in detail in Chapter 3. Financing and technical assistance should be coordinated by the Promotora de Abastecimientos along the lines suggested for the retail-wholesale chain pilot project.

5. *We recommend that* EMSIRVA *consider the development of neighborhood shopping centers as an alternative to expanding the existing public market system.*

The closing of the Galeria Central provides a unique opportunity to change consumer shopping patterns for both foods and nonfoods. As part of an effort to disperse retailing into selected residential areas, we suggest that a series of neighborhood shopping centers be established. These centers would serve as a focal point for consumer shopping and should be located for convenience in consumer travel time. At present, the large satellite *plazas* are not conveniently located for most lower income families. Smaller shopping centers could, however, be placed to provide greater locational convenience.

Four major types of retail outlets would provide the nucleus for the shopping centers: 1) the previously recommended neighborhood full-line, self-service retailers; 2) a mass merchandising outlet of the Ley, Tia, or Jota Gomez type; 3) a specialized meat store, such as suggested above; and 4) a small *plaza* containing 15 to 20 *puestos*, which would provide a needed complement to existing and proposed retailers in the marketing of fruits and vegetables. In addition, clothing, footwear, pharmacy, etc., outlets would be located in these centers. A shopping center which included the above units would provide a highly visible focal point for shoppers in the *barrios*, multiplying the drawing power of the individual units. Properly located, these shopping centers will provide competitive balance to either the existing food system or the proposed retail-wholesale chains.

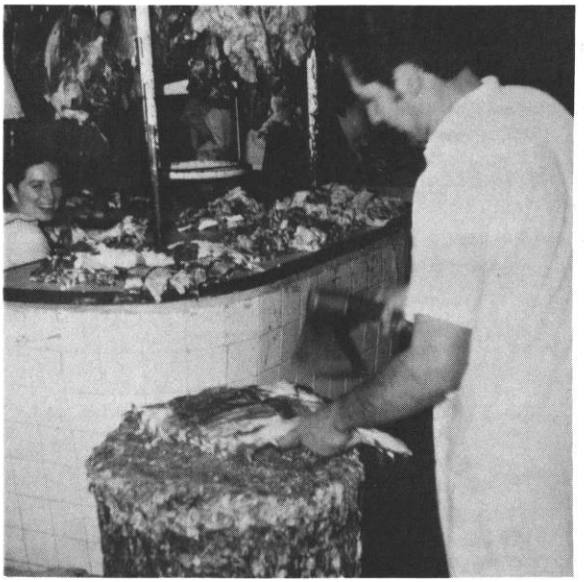
The mechanics of promotion and development require further research and study. One approach to be considered is that used in Puerto Rico, where a publicly owned commercial development corporation assumed responsibility for locating, building and leasing the physical facilities. EMSIRVA might well take the lead in shopping center development, as an adjunct and extension of the present public market system. The Municipal Planning group should, however, play an integral role in determining the location of shopping centers and developing zoning requirements.

6. *We recommend a re-evaluation of public intervention in urban food distribution and the special privileges afforded some of the food system participants.*

The preceding diagnoses and recommendations have stressed the fomenting and regulatory functions of government in bringing about a more efficient system of urban food distribution.

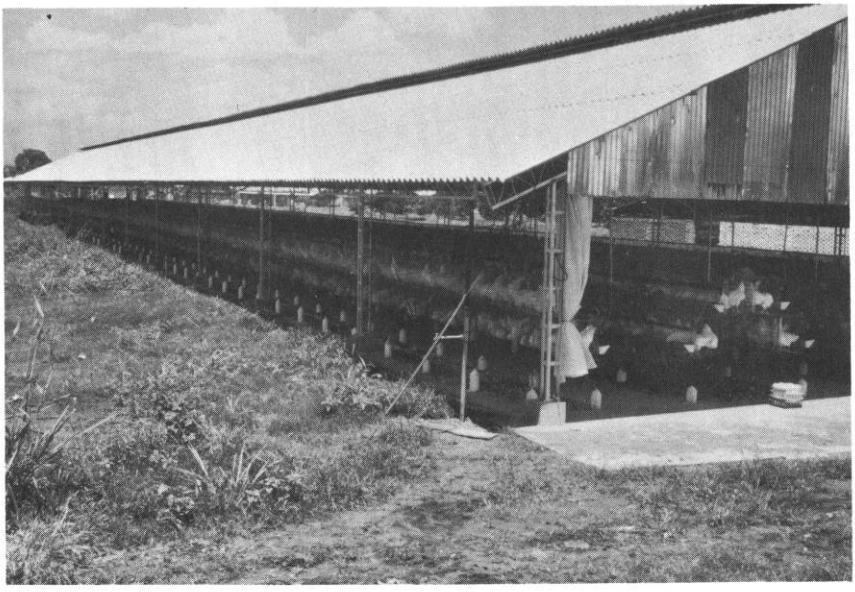
Currently, public policies appear to reflect strong anti-intermediary attitudes, and a number of special privileges have been extended to some market participants such as cooperatives, Cajas de Compensacion Familiar and the retail food operations of IDEMA. These are discussed in Chapter 6 in the section dealing with laws and regulations. From the viewpoint of private enterpreneurs, these special privileges represent unfair competitive advantages and can serve as deterrents to entry and investments in modern food wholesaling and retailing

operations. Also, it can be observed that the privileges extended to cooperatives and Cajas de Compensacion are benefitting mostly middle and upper income families. Only the IDEMA retail trucks operate in low income *barrios*. Therefore, it is suggested that public officials re-evaluate existing policies and programs concerning direct intervention in urban food distribution activities and the special privileges afforded particular market participants. The goal of such a re-evaluation should be to create and maintain a favorable environment for an efficient and progressive food distribution system. It is important that the rules of the game not serve as barriers to desirable patterns of change.



A beef stall in the Alameda public market. The chopping block is a section of a tree trunk.

A *viscera* stall in the Alameda market.



A large commercial laying house, producing eggs for the Cali market.

A specialized poultry and egg store located near the Alameda public market. Eggs are priced by size and color. Dressed poultry is displayed in a refrigerated case.

Raw milk being poured into a consumers' container. Small trucks such as this collect and distribute nearly one-half of the fresh milk sold in Cali.

Small lots of fruits and vegetables being loaded on a *chiva* that will carry both passengers and produce to the Galeria Central area in Cali.

A bag storage facility for grain in Buga, operated by INAGRARIO, a public agency.

Silo grain storage facilities owned by a Colombia bank and located in Cali.

CHAPTER 3

THE PRODUCTION AND DISTRIBUTION OF SELECTED FOODS IN THE CALI AREA

Introduction

The food system in the Cali area consists of several commodity sub-systems, each of which includes a set of vertically related stages of activity. The stages of activity include the acquisition of technical farm inputs, farm production, assembly of products, processing of some products, wholesaling and retailing activities in urban centers. These various stages of economic activity are usually performed by specialized firms although in some commodity sub-systems, such as poultry and eggs, individual firms may perform several stages of the production-distribution process.

The commodity sub-systems included in the PIMUR study were meat, poultry and eggs, milk, fruits and vegetables and grains. In 1969, Cali consumers were spending 76% of their total food outlay for these basic food groups. (See Table 2.4, Chapter 2). The other 24% of their food expenditures were for processed foods, many of which are derived from the basic commodities studied. The study did not include coffee and sugar which are important commodity sub-systems in the Cali area but are oriented toward national and international markets and have distinct and rather well developed marketing systems.

For each commodity sub-system, except meat, the research included field surveys with farmers, assemblers, processors, wholesalers, retailers and consumers. The meat study was limited to the Cali slaughtering and distribution system with some consideration of assembly market activities. The data collection for the commodity studies was closely coordinated with the urban studies reported in Chapter 2.

The supply areas for the Cali market were determined through the use of secondary data and information from a check-point study of trucks entering Cali and through interviews with food wholesalers. For many commodities the Cauca Valley is the principal supply area while on others, such as potatoes and platano, the supply sources extend well beyond the Valley (Table 3.1). The specific supply areas are further described in commodity sub-sections of this chapter. The sampling procedures for the various surveys of farmers and intermediaries are summarized in Appendix A. Detailed information on research methodologies appears in the Technical Reports prepared for each of the commodity groups studied. The farm survey data on production activities and purchase of technical farm inputs is summarized in Chapter 4 and Technical Report No. 4.

The field surveys have provided detailed descriptive information on the structure of the existing food production-distribution sub-systems serving Cali.

On the basis of these data detailed market channel diagrams have been prepared for each product studied. Marketing services provided at different stages in the market channel are described and related to marketing margins.

Market coordination problems are diagnosed and ways of achieving improved productivity in commodity production-distribution systems are identified. In formulating recommendations emphasis has been placed, not only on reducing costs of production and distribution, but also on improving product quality and related marketing services. In addition there were underlying concerns that the increased productivity of the system be shared equitably among the participants--consumers, intermediaries and farmers, that consumer preferences are accurately transmitted to farmers and that unnecessary market risks are eliminated.

TABLE 3.1 COMMODITY SUPPLY AREAS FOR THE CITY OF CALI AS SPECIFIED FOR THE PIMUR STUDIES, 1969

Commodity	Supply Area Studied
Grains:	
Corn, red beans, soybeans, sorghum, rice	The flat part of the geographic area of the Cauca Valley extending from Cartago in the north to Puerto Tejada in the south.
Fluid Milk	The Cauca Valley as far north as Bugalagrande and Bolivar and as far south as the state of Cauca south to just below Popayán. Parts of the states of Huila bordering on Cauca also form part of this milk shed.
Poultry and Eggs	The geographic area of the Cauca Valley.
Fruits and Vegetables:	
Plátano	The states of Valle, Cauca and the production zone centered around Armenia in Antigua Caldas.
Potatoes	The state of Nariño, and Manizales in Caldas.
Tomatoes	The geographic area of the Cauca Valley.
Oranges	The geographic area of the Cauca Valley.
Pineapple	The municipio of Dagua, Valle, and the production zone centered around Pereira, Risaralda.

SOURCE: PIMUR Technical Reports Nos. 11, 12, 13, 14 and 15, 1969.

Meat[1]

Introduction

The meat slaughtering and distribution system in Cali remains much the same as it was many years ago. Cattle and hogs are slaughtered at night in a municipal slaughterhouse. The hot meat is transported to market stalls in the various public markets or to wholesale establishments in the Galeria Central area. Most of the meat moves to consumers without refrigeration.

This study has focused on the marketing processes beginning with the activities of the live animal buyers, and follows the product through to consumers. Detailed data were obtained from the *matadero* operated by EMSIRVA. Personal interview surveys were conducted with representative samples of livestock buyers, meat wholesalers, retailers and consumers in Cali. These investigations were closely coordinated with the urban food marketing studies summarized in Chapter 2.

Meat is the most important product group in the Cali consumer's food budget. Among all consumer income groups nearly 30% of the family food budget is spent on meat and meat products (see Table 2.4 , Chapter 2). Seventy-five percent of this expenditure is for fresh beef; the remainder is spent on pork and processed meats. Beef consumption is much higher than pork at all income levels (Table 3.2). Consumption of both products increases as incomes increase. Income elasticities of demand for both products are relatively high, though pork is higher than beef at all income levels.

TABLE 3.2 PER CAPITA MONTHLY CONSUMPTION OF BEEF AND PORK BY PER CAPITA MONTHLY INCOME IN CALI, FEBRUARY, 1969

Per Capita Monthly Income in Pesos	Per Capita Monthly Consumption in Kilos[a]		Income Elasticities of Demand	
	Beef	Pork	Beef	Pork
1-125	1.59	0.08		
126-240	2.23	0.21	0.76	1.19
241-500	2.23	0.26	0.56	1.20
501 or more	3.81	0.64	0.43	0.77
All Income Groups	2.40	0.26		

[a]Retail weight of purchases as reported by consumers in a household survey.
SOURCE: PIMUR, Consumer Study, 1969.

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[1]Based upon Technical Report No. 13, *Slaughtering and Distribution of Beef and Pork in Cali* , PIMUR, 1969.

Beef

The average monthly consumption of beef in the city of Cali was estimated to be 2,224 tons in 1969 (Figure 3.1). The municipal slaughterhouse handled 79% of this total volume while an additional 20% entered the city as *forranea* beef, (beef slaughtered in other municipal slaughterhouses and allowed to enter Cali through licensed dealers).

It is estimated that about 1% of the beef sold in Cali is *clandestine*, (beef slaughtered in rural areas and brought to the city by unauthorized dealers). Thus, as much as 21% of the Cali beef supply is being slaughtered with little or no veterinary inspection to protect consumers from the sale of meat from diseased animals or unsanitary slaughtering procedures.

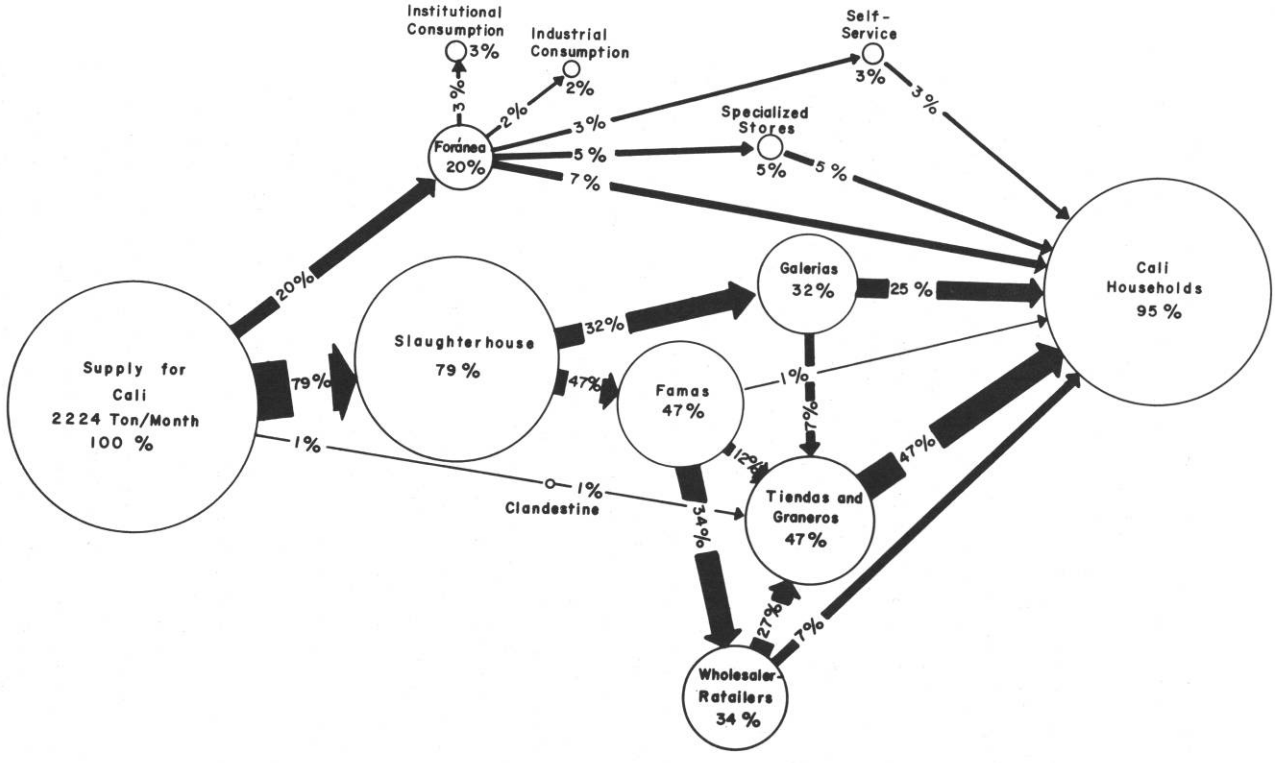
Cali is highly dependent on live cattle in-shipments from distant production areas. More than one-half of the cattle slaughtered in Cali are shipped directly from the Medellin market after having been assembled there from North Coast production areas. Most of the remaining supply is assembled from within Valle with small percentages arriving from nearby departments.

There are two principal distribution channels for beef slaughtered at the municipal *matadero*; one through the public market retail stalls and the second through wholesalers in the Galeria Central area and from there to personal service stores in the *barrios* (Figure 3.1). A secondary channel exists for *forranea* beef which moves largely through supermarkets, specialized meat stores, restaurants and institutional outlets. A more detailed description of the organizational structure and functioning of the Cali beef slaughtering and distribution system is summarized below.

There are 40 assemblers who are members of ASADEGA, a cattle buyers association. Ten of these individuals were not buying cattle at the time of the PIMUR survey. The average volume of business for the 15 assemblers surveyed ranged from less than 1000 head to more than 6000 head for the year 1968. Fifty-three percent handled between 3000 and 5000 head.

The supplier group seems to be quite stable. Most suppliers have been in business for many years (73% of them for over 15 years). New entrants to the business are few; the latest entrants were five years ago. Capital requirements and contacts in both buying and selling are barriers to entry, though neither is a strong barrier.

The assembler's functions are to buy live animals, transport them to the Cali slaughterhouse, arrange a transaction with a wholesaler or retailer, have the animal custom slaughtered at the municipal slaughterhouse and then pay the slaughterhouse for delivering the carcass to the buyer. The transaction between the assembler and the meat wholesaler or retailer usually takes place in the livestock corrals adjacent to the slaughterhouse. The buyer observes



MARKETING CHANNELS FOR BEEF, CALY, 1968

Fig. Nº 3.1

the live animal and buys on the basis of a carcass price per kilo. When the animal is slaughtered the hides and viscera are retained by the assembler who has prearranged sales for them. The identity of each animal is maintained throughout the slaughtering process and until each carcass is delivered to the buyers located in the Central Market area or in the public market retail stalls.

The carcass weight is taken at time of delivery as a basis for transaction settlement. It is a common practice for the buyer to delay payment for about three days.

The assembler's gross margins averaged 11.6% of sales which amounts to about $250 to $270 per steer, depending upon its weight. On shipments from Medellin to Cali, the assembler pays a commission fee plus transport costs which total $65 to $90 per head. In Cali, the assembler pays a custom slaughtering and delivery charge of about $140 per head for male animals and $190 for females. (There is a special national tax on female slaughter to stimulate retention for breeding purposes.) Other operating costs include the buyer's transportation, losses due to weight shrinkage, death and crippling of animals, interest charges and bad debts. After taking these costs into consideration, the assembler's average gross margin does not appear to be excessively wide for the services rendered.

The Cali slaughterhouse is more than 30 years old but it has been remodeled from time to time. Since early 1968, it has been operated by EMSIRVA. The facility includes well constructed livestock holding pens where buying and selling takes place. These holding facilities are capable of handling much larger volumes of livestock than are currently passing through them. The slaughterhouse is a rather minimal facility, but sanitary conditions are much better than in the wholesaling and retailing phases of the distribution system. However, conditions in the slaughterhouse could be improved substantially by remodeling and installation of additional equipment. At the present time there is no storage space for dressed meat, either refrigerated or non-refrigerated. A by-product processing facility is part of the slaughter plant operation. However, the plant is currently under-utilized and some additional equipment is needed to improve the efficiency.

During 1968, the average daily slaughter volume was 288 cattle, 154 hogs and 30 calves. The plant operates six days a week, usually beginning about 6:00 p.m. with the slaughtering activities completed between 11:00 p.m. and 1:00 a.m. Because of the night operation, Colombian labor laws require the payment of a 35% premium over daytime wage rates. Ante-mortem and post-mortem inspections are made of all animals under the supervision of a veterinarian. As the carcasses move off the kill floor they are accumulated in a holding area and then loaded onto EMSIRVA trucks for transport to the Galeria Central area

and the satellite public markets. This movement takes place between 10:00 p.m. and 2:00 a.m. The slaughterhouse trucks deliver about 60% of the beef to six *famas* (specialized wholesale outlets) located in the Galeria Central area, with the other 40% going directly to the public market meat stalls (Figure 3.1). More than half (56%) of the volume going to the public markets goes to the Galeria Central meat stalls.

The six *famas* in Galeria Central area serve as transfer points for carcasses that are moved on to 39 other wholesale-retail meat establishments in the central market area (Table 3.3). This second stage movement occurs during the early morning hours (2:00 to 4:00 a.m.). About 70 percent of the beef delivered to the *famas* moves through to other wholesalers; the other 30 percent is merchandised by the 44 meat stalls in these six *famas*.

There are 75 *bancos* (meat stall operators) in the 39 wholesale-retail establishments mentioned above. These *bancos* sell about 80 percent of their volume at wholesale and the remaining 20 percent at retail.

The principal meat wholesaling operation takes place in the Galeria Central area between 4:00 and 8:00 a.m. Retailing operations begin about 7:00 a.m. and are largely completed by mid-day. Public market meat stalls serve as wholesale suppliers for many small *tiendas* and *graneros* although their principal volume is sold to consumers.

TABLE 3.3 NUMBER AND SIZE OF BEEF WHOLESALING AND RETAILING OUTLETS, CALI, 1969

Type of Outlet	Number of Places of Business	Number of Individual Units	Average Volume Per Month (kilos) Wholesale	Retail	Total
Famas	6	44	6522	725	7247[a]
Other Wholesaler-Retailers	39	75	7746	2000	9746
Tiendas and *Graneros*	959	959	-	532	532
Rented *Bancos* in *Tiendas* and *Graneros*	607	607	-	893	893
Public Market Stalls	6	172	1104	3075	4179
Forranea Wholesalers	42	42	6000	-	6000
Supermarkets	27	27	-	2926	2926
Specialized Meat Stores	12	12	-	8333	8333
Total	1698	1938			

[a]Does not include beef carcasses that are delivered to the *famas* for transhipment to other wholesalers and retailers.
SOURCE: PIMUR, Meat Study, 1969.

It is a common practice for wholesalers to sell retailers an *arroba revuelto* (a representative 25-pound bundle of different cuts from the carcass). In this way the wholesaler can simplify his selling activities and can minimize the risk that some of the carcass parts will remain unsold at the end of the day.

There is no well developed system of wholesale and retail beef cutting in the Cali market. Cuts from different parts of the carcass are roughly classified into three "quality" groupings. This system has evolved as a trade practice and has no official status.

The arranging of transactions at all stages in the marketing chain is geared to personal inspection of the product. This is relatively costly as compared to sales by description that can be effected with more precise systems of product identification.

The average monthly sales for beef wholesale-retail firms was $109,408. They appear to be operating on a gross margin of about 14.5% based upon wholesale and retail price relationships and estimated carcass cut-out relationships devised by the PIMUR staff. After deducting cash expenses their average net income per month was estimated to be over $13,000 (see Table 2.38, Chapter 2). This seems unnecessarily high and may reflect a lack of effective competition, although it is difficult to pinpoint why this condition can exist.

The 172 public market stall operations are uniformly small, handling from one-half to a whole carcass daily. Using very rudimentary cutting methods and only a knife and a short handled axe, they divide the carcass into retail cuts. Cutting blocks are sections of tree trunks that became fertile sources of bacterial contamination, since there is no adequate means of keeping them clean.

Two-thirds of the public market stall operators had been in business more than six years, reflecting a relatively stable situation. Sixteen percent have been stall operators for more than 20 years. Entry is limited by the number of stalls in the markets although in only two of the six public markets (Galeria Central and Alameda) were all the meat stalls rented. The entrance fee for a stall operator varies between $415 and $1000 among the different markets.

Average monthly sales per stall operator was estimated to be $45,325. Average gross margins were estimated to be 14.5%. After deducting costs of operation (stall rent, hired labor, transportation) the net returns to the operator for labor and management were estimated to average $4,773 monthly. (See Table 2.22, Chapter 2). This seems relatively high as compared to net returns for other types of retailing. Also, the margin seems wide in terms of the amount and quality of services rendered.

About one-half of the beef reaches consumers through personal service stores (*tiendas* and *graneros*) scattered throughout the city (Figure 3.1).

The meat stalls in these stores may be operated by the store owner or leased to someone else. Wholesale purchases are made in the Central Market area and are transported to the store by small motor carts, or hand carts. The meat may be packaged in burlap bags or plantain leaves. The smaller meat retailers often buy from larger retailers or public market stall operators. There are approximately 1566 beef retailing operations in *tiendas* and *graneros* in Cali. Very few use refrigeration in handling meat. Purchases are limited to quantities they are reasonably sure they can sell during one day.

The gross margins on beef moving through *tiendas* or *graneros* was estimated to be between 8 and 9%. This is considerably less than the 14.5% margin estimated for public market stall operators. However, there is much less meat cutting service in the *tiendas* and *graneros* since they often buy small wholesale cuts or bundles of meat cuts (*revueltos*). But it should be noted that meat prices in *tiendas* and *graneros* were 10 to 15 percent higher than in the Galeria Central meat stalls. This occurs because the *tienda* and *granero* operators buy from wholesalers who have margins of about 15%. The aggregate margin for this wholesale-retail movement is more than 20%.

There are several specialized meat stores and a few supermarkets which handle beef and use refrigeration. Some of these outlets provide special cutting services and a broad line of fresh meat and processed meat products to attract the higher income consumers of the city. This more modern retail channel currently handles between 15 and 20% of total retail beef sales. Some of these outlets buy *forranea* beef in order to get a higher proportion of high quality cuts (loins, rounds, etc.). The lack of an effective beef wholesaling system in Cali provides an incentive for these *forranea* purchases. The main reasons given for buying *forranea* beef were better quality, lower prices and freedom to make varied selections.

The average gross margin for beef in 27 self-service (supermarkets) stores was 10.4%. This low margin probably reflects their practice of purchasing wholesale cuts which require less in-store processing than does carcass beef, and their higher proportion of high valued cuts. The average gross margins for the specialized meat stores was estimated at about 14.2% which was about the same as for public market stalls.

There are retail price controls on beef administered by a municipal office. However, there are serious limitations to the effectiveness of these controls. First, it is extremely difficult to check prices on unstandardized products such as retail beef cuts. Second, the limited resources of the control agency make it impossible to keep a close surveillance over hundreds of meat retailers with small, relatively untrained staffs. At the time of the PIMUR study, actual retail prices in the Galeria Central area were $0.50 to $1.50 a pound above

official prices for 3 of 10 retail cuts checked. But this is an inadequate comparison since retailers have weighing and merchandising tactics which can be used to vary effective prices to consumers.

Some concluding observations and recommendations concerning the beef slaughtering and distribution system will be presented following a short descriptive analysis of pork marketing in Cali.

Pork

The average monthly consumption of pork in the city of Cali was about 275 tons in 1969. This represented about 11% of the total carcass weight of red meats (beef and pork). About 93% of the pork moved through the municipal slaughterhouse, another 6% was *forranea* and approximately 1% was from clandestine sources (Figure 3.2).

About 80% of the hogs arriving at the Cali slaughterhouse in 1968 were from the Department of Valle, with the other 20% coming from Caqueta, Nariño, Huila and Cauca. During the past ten years there has been a substantial increase in hog production in Valle and a noticeable improvement in the quality of the product being marketed.

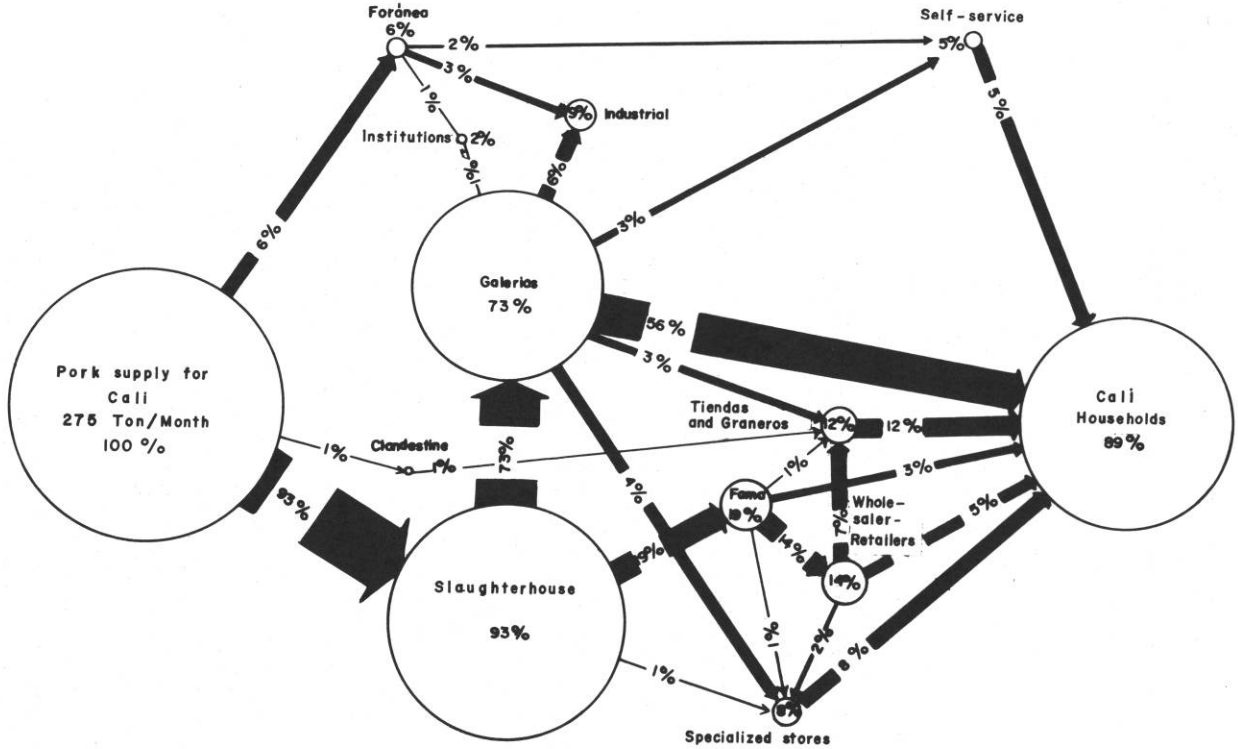
There are nine hog assemblers operating through the Cali *matadero*. The scale of operation among the five assemblers interviewed varied from 80 to 1000 head per month. It appears that three or four assemblers handle most of the hogs for the Cali market.

The hog assemblers operate in the same manner as do the cattle assemblers. The assembler buys on the farm and pays the transport costs to Cali. He sells the animal to a wholesaler or retailer and maintains ownership of the commodity until the carcass is delivered to the buyer.

The gross margins of the hog assemblers were estimated to be about 8.5%, or approximately $65 to $70 per head, depending on the animal's size. This percentage margin is less than the 10.3% estimated for beef assemblers. The difference is largely because of lower transport costs for hogs, since the bulk of the supply comes from Valle. More than half of the beef supply comes from Medellin.

Nearly three-fourths of the Cali pork supply moves through the public market meat stalls (Figure 3.2). This is in sharp contrast to beef where only 32% of the total supply moves through the public markets. The public market stalls and the pork stalls in the central market *famas* sell both at wholesale and retail. *Tiendas*, *graneros* and specialized meat stores retail about 20 to 25% of the total pork moving to consumers (Figure 3.2). The movement of *forranea* pork is relatively unimportant.

The gross margins for pork wholesaling and retailing were lower than for beef (Table 3.4). The public market stalls were realizing a 9.2% margin for



MARKET CHANNELS FOR PORK,
CALI, 1968

Fig. Nº 3.2

pork compared to 14.5% on beef. The wholesale-retail operations in the Galeria Central area were obtaining 12.2% margin as compared to the 15.5% for comparable beef operations.

TABLE 3.4 ESTIMATED GROSS MARKETING MARGINS FOR BEEF AND PORK TYPE OF OUTLET, CALI, 1969

	Beef Percent	Pork Percent
Wholesale-Retail Outlets	15.5	12.2
Tiendas and *Graneros*	8.3	9.5
Public Market Stalls	14.5	9.2
Self-Service Stores	10.4	8.1
Specialized Meat Stores	14.2	14.0

SOURCE: PIMUR, 1969

Conclusions and Recommendations

The diagnostic study has indicated the need for several improvements in the Cali meat distribution system. The sanitary conditions in livestock slaughter and meat handling at both wholesale and retail endangers the health of consumers, reduces the eating qualities of the product and makes consumer food shopping a disagreeable task. At least 20% of the beef supply comes from slaughterhouses with little or no veterinarian inspection of the livestock slaughtered. The warm climate of Cali coupled with the lack of refrigeration and extremely unsanitary conditions in most wholesaling and retailing establishments leads to rapid product deterioration, although complete spoilage is uncommon. A sudden change in the existing hot beef system seems impractical since it would probably raise consumer prices, especially those in the low income groups. However, significant short-term improvements could be made in the present hot beef system with a major shift toward a refrigerated distribution system over a period of five to ten years.

Although a detailed industrial engineering study was not made at the municipal slaughterhouse, preliminary analyses indicate that modest structural changes and additional equipment could reduce costs and increase the recovery value of by-products. EMSIRVA, the public agency operating the slaughterhouse, has already requested AID financial and technical assistance to modernize the existing facilities. Consideration is also being given to longer-run needs which might require a new facility large enough to handle all the livestock slaughtered for Cali and nearby *municipios*.

The wholesale and retail margins on beef appear to be relatively wide when evaluated in terms of services performed and the net returns to owner-

operators of existing firms. Transaction costs and intra-city transport charges could probably be reduced by introducing a more rational system of wholesaling, including an improved system of product description and more standardized carcass cutting procedures. Increased scale of operations at both wholesale and retail could also cut costs, making it possible to achieve greater sales per man-day and more effective use of the buying and merchandising skills of managers.

Also, the existing system of retail price control is extremely difficult to administer and is a deterrent to the development of a wholesale-retail system that would better rationalize the distribution of meat among the different segments of the market. A more flexible pricing system would permit relatively higher prices on the better cuts and qualities of meat and lower prices on the less desirable cuts. This should be advantageous to both low and high income families and would generate carcass price differentials that would give greater stimulation to livestock producers to adjust to actual market demands.

There are two goals to guide our recommendations for improving the meat distribution system. One is to foment a system that will present a more desirable product to the consumer at more convenient locations charging the same or lower prices. For the low-income segment of the market, emphasis is placed on lower costs. A second goal is to create a system that will generate greater price differentials between different cuts and qualities of beef and pork so that price incentives to producers will more accurately reflect consumer preferences.

A suggested strategy is to direct immediate attention to improvement in the existing hot beef distribution system, and to initiate a longer-run program directed towards a modern system using more refrigeration.

The following recommendations suggest improvements in the present system for slaughtering and distributing beef and pork.

1. *Impose stricter control over the movement of "forranea" beef and pork into Cali from other slaughterhouses.* Meat from slaughterhouses that do not have ante-mortem and post-mortem inspection comparable to that performed in the Cali *matadero* should not be permitted to enter the Cali wholesale-retail market. If it is impractical for the nearby slaughterhouses to meet these sanitary requirements, an alternative arrangement would be to propose that the Cali *matadero* become a slaughtering center serving nearby *municipios*.
2. *Modernize the existing slaughter plant through a modest investment to increase operational efficiency, to improve sanitary conditions and to achieve a more complete utilization of by-products.* The detailed description of these changes is described in PIMUR Technical Report No. 13. The costs of equipment and plant improvements were

estimated to be approximately $800,000. Although less urgent, it is also recommended that a 150 square meter chill room be added to the *matadero* to facilitate the development of a refrigerated meat distribution system. This would cost approximately $900,000. In the short run a refrigerated holding room would help even fluctuations in meat supplies which occur when the *matadero* is closed on Sundays and holidays. This would discourage the inflow of *forranea* beef to meet these supply deficiencies. For longer run planning it should be kept in mind that the installation of sufficient refrigeration capacity to chill a full day's slaughter would make it possible to slaughter during the daytime and avoid the 35% wage premium now required for night operations.

Before any actual investment is made in a new slaughter facility for Cali there should be a careful evaluation of the possibilities for carcass beef shipments from Medellin by refrigerated trucks to replace present live animal movements. The development of refrigerated meat wholesale-retail facilities in Cali and improved highways will enhance the economic feasibility of carcass beef importations from the surplus areas in northern Colombia. Consumer resistance to refrigerated beef is not likely to be a major barrier if the product can be delivered in good condition. However, the resistance of local livestock and meat dealers and the potential loss of municipal tax revenue from cattle slaughter may be more serious barriers to this change.

Also, to be considered in longer range planning are the potentials for Cali as a slaughtering point for beef which might be exported to Peru. The costs of moving carcass beef by water or air from North Coast surplus production areas to Peru are probably lower than can be achieved by moving live cattle to Cali for slaughter and transhipment of carcass beef to Peru.

3. *Provide space in the new central wholesale market facility for five to ten firms that would each handle from 15 to 30 beef carcasses daily (or the equivalent amount of pork and beef).*

These firms would be the core of a new hot-beef wholesale distribution system. The new central wholesale market should provide adequate floor space with suitable water, electrical and sewerage connections. The meat wholesalers could then adapt this space to their needs, making their own investment in partitions and equipment. The basic facilities in the central wholesale market should be planned so that these meat handlers could eventually install refrigerated coolers. These wholesalers would be the principal suppliers of beef and pork for existing *tiendas*, *graneros* and the new full-line, neighborhood food stores that were recommended in Chapter 2. Ideally, some of the meat wholesalers would become directly affiliated with the new full-line wholesale operations that will serve groups of these larger neighborhood food stores.

Consideration was given to the establishment of meat wholesaling facilities in conjunction with the existing slaughterhouse. This should be further considered, especially if there is a substantial delay in constructing the new wholesale market facility.

Foment the establishment of specialized meat stores located in shopping centers about the city. These outlets can play an important role in the transformation of the existing meat distribution system. They can be large enough to achieve scale economies in procurement and improved labor efficiency in meat cutting and selling activities. Also, substantial improvements in sanitation and merchandising practices could also be achieved.

These stores could be located near existing public markets or in new shopping center locations that are planned as part of a general program to develop commercial services for the newer areas of the city. It would be advisable to avoid locating these stores where they might be in close competition with the large, full-line food stores that have been recommended for neighborhood locations.

In addition to handling beef, these stores could also sell pork, dressed poultry, eggs and processed meats. Preliminary projections of sales and costs indicate that these outlets could be profitable while operating on gross margins significantly below the 14.5% currently being charged by public market stall operators and the even higher margins for meat moving through the Central Market wholesalers and on to *tiendas* and *graneros*.

The investment in capital equipment needed to run such a store is shown in Table 3.5. It appears that $136,000 will buy necessary equipment. This does not include land and the building which could probably be rented for approximately $3,000 monthly. Most of this equipment can be financed for periods ranging from 15 to 20 months. The down payment on equipment would be about $21,000 and the monthly installments about $3,600 (Table 3.6). These stores would need to sell at least $300,000 per month to be profitable, assuming a 10% gross margin. At a $500,000 sales volume, profits would be very attractive (Table 3.7).

These specialized meat stores are designed with refrigeration. Arrangements should be made for direct delivery of carcasses from the slaughterhouse by EMSIRVA trucks or if necessary by other hired vehicles. Initially, these stores could serve as wholesale suppliers for some of the smaller *tiendas* and *graneros* in the immediate vicinity. Over the longer run (10 to 20 years) these specialized meat outlets would be expected to become less important as well-run meat departments become an integral part

TABLE 3.5 CAPITAL INVESTMENT NEEDED FOR SPECIALIZED MEAT STORE

Meat tables and adaptation of local	$ 10,000
Installation of light, water, telephone	2,000
Meat grinder	1,300
Small Scales - 10 kilograms	975
Large Scales - 500 kilograms	20,000
Hand Saws	2,000
Cash register, Hugin Model K-36	19,325
Knives	500
Refrigerated showcase (Icasa TEV-06-3)	18,479
Cold storage room, 2.2 x 2.2 x 1.8 meters	45,000
Office Equipment and Supplies	
1 Desk and Chair	2,500
1 Table and Four Chairs	1,200
Typewriter	5,000
Calculator	6,000
File Cabinet	1,200
Office Supplies	500
Total Investment	$135,979

TABLE 3.6 AMORTIZATION OF EQUIPMENT PURCHASED ON TIME FOR SPECIALIZED MEAT STORES

Equipment	Total Cost	Down Payment	Balance	Months to Pay	Monthly Payments
	$	$	$		$
1 Scale 500 kgs.	20,000	4,000	16,000	16	1,000
1 Cash register	19,325	3,864	15,459	15	1,030
Refrigerated showcase.	18,479	2,339	16,149	20	807
Cold Room	40,000	8,000	32,000	18	180
Office Equipment	15,400	3,080	12,320	20	616
TOTAL		$21,283			$3,633

TABLE 3.7 PROJECTED OPERATING RESULTS FOR A SPECIALIZED MEAT STORE AT VARYING LEVELS OF MONTHLY SALES

Monthly Sales	$300,000	$400,000	$500,000
Cost of Goods	270,000	360,000	450,000
Gross Margin	30,000	40,000	50,000
Expenses			
Salaries			
Administrator	5,000	5,000	5,000
Accountant	2,000	2,000	2,000
Cashier	1,500	1,500	1,500
Sales Clerks	3,600	3,600	3,600
Meat men	1,800	1,800	1,800
Watchmen	600	600	600
Prestaciones	7,250	7,250	7,250
Sub-Total	$21,750	$21,750	$21,750
Rent	3,000	3,000	3,000
Depreciation	1,140	1,140	1,140
Utilities	1,000	1,000	1,000
Packaging	500	500	500
Supplies	300	300	300
Maintenance	300	300	300
Miscellaneous	500	500	500
Total Expenses	$28,490	$28,490	$28,490
NET RETURN	$1,510	$11,510	$21,510

of the larger, full-line retail food stores. Over the next 10 years these specialized stores appear to offer significant benefits through reduced costs and improved consumer services.

5. *Eliminate or revise retail price controls on beef.* In our diagnostic summary some of the weaknesses and undesirable effects of retail price controls on beef were presented.[2] It is recognized that price controls on basic food products may be justified as a deterrent to general price inflation. But, retail beef cuts are in a heterogeneous group of products and there are many ways retailers can circumvent the controlled price. To the extent that existing controls are effective they can cause some undesirable distortions in the coordination of consumer demands with the farm production and distribution of beef. Therefore, it seems desirable to at least modify existing regulations by lifting controls on "first quality" beef. Consideration should also be given to removing all controls on an experimental basis in the Cali market.

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[2]For a more comprehensive consideration of the price control problem see Chapter 6 of this report and PIMUR Technical Report No. 10, *Laws and Regulations Affecting Market Coordination in the Cali Area.*

6. *Strengthen the enforcement of existing regulations to protect consumers from short weights and unsanitary meat handling practices.*

Municipal agencies are inadequately staffed to do a thorough job of enforcing existing regulations. However, without substantial increases in the budgets of these agencies it should be possible to achieve more effective checks on the accuracy of retailer's scales and on sanitary conditions. The existing meat handling regulation appears to be realistic.[3] However, only 121 of the 1500 neighborhood stores which sell meat have obtained the required licenses. An improvement in regulatory functions of municipal agencies requires administrative pressures on the enforcement agency, budgetary consideration and some technical training of personnel.

7. *Organize a technical assistance and training program for meat wholesalers and retailers as part of the comprehensive food distribution program described in Chapter 2.*

A specialist in meat wholesaling and retailing is needed to organize educational programs to acquaint meat operators with improved methods of cutting, handling and merchandising meat. The possibilities for these training programs should be explored with SENA. This specialist should also provide technical assistance to the managers of the Central Wholesale Market, the *matadero*, and the public markets and to individual wholesalers and retailers interested in improving their operations. The major objectives of the meat specialist would be to foment the development of an efficient system of meat distribution and to stimulate the adoption of more sanitary methods of meat handling.

The implementation of the above recommendations could greatly improve the performance of the Cali meat distribution system. A more desirable and safer product can be delivered to consumers at prices equal to or less than present prices. More flexible pricing and merchandising practices could also provide greater incentives to cattle growers to produce more desirable types of livestock.

There is a great deal of inter-dependence among our recommendations. Substantial improvements in meat handling practices at one stage in the system, such as the *matadero*, could be nullified by a continuation of present wholesaling and retailing practices. A general attack on sanitary practices is required through the actions of EMSIRVA, the organizers of the new Central Wholesale Market, and the Municipal Health Authorities. The Urban Food Marketing

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[3]Article 90 of Resolution No. 000917, Ministry of Public Health, August 28, 1963.

Technical Assistance group recommended in Chapter 2, can serve as a fomenting and coordinating function in implementing the meat recommendations.

The direct investment costs of the meat program are not large. The slaughterhouse improvements are estimated to cost about $1,700,000. The basic meat wholesaling facility is part of the Central Wholesale Market project. Individual wholesalers will invest in their own equipment within the wholesale center. Financing for a few specialized retail meat stores was included in the pilot food distribution project recommended in Chapter 2. Before any large investments are made in a new slaughtering facility, a detailed feasibility study should be made, taking into consideration some of the major changes that may occur in the national market for livestock and meat.

Poultry and Eggs*

Introduction

During the past 15 years, the poultry industry in the Cauca Valley has become highly commercialized. Modern production began in about 1951 with the importation of chicks and feed concentrates from the United States . Since 1956, the availability of feed concentrates has expanded rapidly. Currently there are many large firms which produce uniform, high quality poultry products. Some of these firms have integrated vertically into product distribution, feed manufacturing and chick hatcheries.

Per capita monthly consumption of poultry products in Cali during February, 1969, was very small among low-income families (see Table 3.8). However, the upper income groups consume much larger amounts of both broilers and eggs. This strong positive relationship between per capita consumption and per capita income indicates that demand for poultry and eggs will continue to increase as incomes rise. The price elasticity of demand for broilers is also believed to be high. Two-thirds of the consumers interviewed in the PIMUR consumer survey said they did not buy broilers because of the high price compared to beef. Thus, lower broiler prices would probably contribute to a significant increase in consumption. Lower egg prices would also stimulate greater egg consumption, although probably proportionally less than for broilers. Greater merchandising efforts by producers and distributors and improved distribution procedures could probably stimulate demand for both products. The PIMUR study indicates that the poultry industry has the capability of achieving the lower cost production and distribution necessary to significantly reduce product prices to consumers.

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*Based upon PIMUR Technical Report No. 14, *Poultry and Production and Distribution in the Cali Area*, 1969.

TABLE 3.8 MONTHLY CONSUMPTION PER CAPITA AND INCOME ELASTICITIES OF DEMAND FOR BROILERS AND EGGS BY LEVELS OF FAMILY INCOME, CALI, 1969

Product	Levels of Family Income Per Capita				Average
	I up to $125	II $126-240	III $241-500	IV More than 500	
Consumption					
Broilers (lbs.)	0.03	0.11	0.29	1.34	0.40
Eggs (each)	2.30	5.48	6.81	16.59	7.25
Elasticities					
Broilers	1.70	1.76	1.22		
Eggs	1.30	0.34	0.81		

SOURCE: PIMUR, Consumer Study and Market Basket Study, 1969.

Poultry and Egg Production

In this study, "commercial" poultry and egg producers were defined as units specialized in the production of broilers or eggs with an installed capacity for at least 500 birds. The population included 220 egg producers and 47 broiler producers, all of which were located in the state of Valle. These producers supply the Cali market and ship to other markets. There are no significant inshipments to Cali from other producing areas. A relatively small percentage (less than 10%) of Cali's poultry and egg supply comes from "non-commercial" production.

Commercial poultry and egg producers are typically well educated with an average of 10 years of schooling. Their main occupation is poultry and egg production, although 44% of broiler and 30% of egg producers have other occupations. Seventy-eight percent of the broiler and 70% of the egg producers own their own farms. The land area owned by these producers is small because of the intensive nature of the business (an average of 12 *hectares* for broilers and 17 *hectares* for egg farms). The size of production units varies considerably for both broilers and eggs. (Table 3.9.) However, large-scale units produce a large proportion of the commercial output of poultry and eggs. Only 12% of broiler producers had over 10,000 birds each at the time of the survey, but they accounted for 38% of total production by sample farms. One fourth of the sample egg producers had more than 10,000 birds and accounted for 68% of the production. Thus, production is becoming more concentrated among large firms, especially in egg production.

Most of the commercial poultry and egg producers are recent entrants to the industry. One-half of the broiler farms had been in business only 2 years, the oldest since 1957. Among egg producers, 57% have been in business less than 6 years, the oldest since 1951. In recent years the turnover among firms has been large, especially among small producers. This became apparent when it

TABLE 3.9 SIZE OF POULTRY FARMS IN THE SAMPLE AREA IN THE CAUCA VALLEY

Size	Broiler Producers		Egg Producers	
Number of birds at the time of the survey	Number of Respondents[a]	Total Monthly Production (Birds)	Number of Respondents[b]	Total Monthly Production (Eggs)
0-1,000	8	4,990	7	102,984
1,001-2,000	3	3,800	8	200,312
2,001-5,000	6	12,156	18	761,921
5,001-10,000	5	22,006	7	520,131
10,001-20,000	2	9,700	7	733,884
More than 20,000	1	17,417	6	2,693,086
TOTAL	25	70,069	53	5,012,318

[a]Two producers did not provide this information.

[b]Four producers did not provide this information.

SOURCE: PIMUR, Poultry and Egg Producer Survey, 1969.

was found that over 70% of the 503 poultry and egg farms listed on the Poultry Census by the Crop and Livestock Zone of Valle in 1965 were no longer in business in the fall of 1968. Many new firms were found to have entered the market to replace those which had left. Thus, barriers to entry are low, thereby reducing the market power of the large firms.

Improving feeding efficiency could lower average production costs, since feed costs make up 57 percent of broiler farm production costs and about 77 percent of egg production costs. Feed to meat conversion rates in broiler production currently average about 3:1 while some producers have ratios as low as 2.25:1. If all producers could achieve the 2.25:1 ratio, it would be possible to reduce broiler feed costs by about 27 percent. The feed conversion ratio among commercial egg producers averaged 2.67 kilos of feed to one dozen eggs. This compares with a production ratio of 2 kilos per dozen eggs which Purina has established as an efficiency goal.

Production costs were much lower for the large broiler and egg farms than for the smaller farms. (See Tables 3.10 and 3.11.) The total cost of producing one egg for firms having over 19,000 birds was nearly half ($0.33 vs. $0.65) that of firms having less than 5,600 birds. The total cost of producing a pound of broiler meat for firms having over 4,000 birds was $5.30, while the total cost for firms with less than 4,000 birds is $5.94 a pound. It is not entirely clear how much of this cost advantage is due to scale and how much is due to better management. That part of the cost advantage derived from improved management could also conceivably be achieved by the small firms. There are, however, certain cost savings such as quantity discounts in purchasing inputs which the small firms cannot presently obtain.

TABLE 3.10 RELATION BETWEEN SIZE OF PRODUCTION UNIT AND COSTS OF PRODUCTION PER POUND OF LIVE BROILER, CAUCA VALLEY, 1969

Size Number of birds at time of survey	Variable Costs per lb. (pesos)	Fixed Cost per lb. (pesos)	Total Cost per lb. (pesos)
100 - 4,000	5.26	0.68	5.94
4,001 -45,000	4.87	0.43	5.30

SOURCE: PIMUR, Poultry Producer Survey, 1969.

TABLE 3.11 PRODUCTION COSTS PER EGG BY SIZE OF PRODUCING UNIT, CAUCA VALLEY, 1969

Size Number of birds at time of survey		Peso Cost Per Egg	
	Variable Cost	Fixed Cost	Total Cost
300 - 5,600	0.51	0.14	0.65
5,601 -19,000	0.49	0.06	0.55
19,001 -48,000	0.31	0.02	0.33

SOURCE: PIMUR, Egg Producer Survey, 1969.

The modern technology required for commercial poultry production is easily available in Valle. Producers reported buying 7 different specialized breeds of broilers and 11 different breeds of layers in 1968. Seven different feed manufacturers have a wide range of specialized feed concentrates available for raising chicks, fattening broilers, and feeding laying hens. Several chemical companies have an ample supply of drugs needed for effective control and prevention of diseases.

Producers most frequently complain about the poor quality of blood lines in day-old chicks, which could have been a problem from 1963 to 1965 when imports of breeding stock were stopped. Breeding stock can now be imported and has been centralized by the hatchery association (INCUBAR). Occasional shortages of hatching chicks now seem to be the most important problem, arising from poor coordination among all the hatcheries with market demands.

The poultry producers also complain about the quality and cost of feed concentrates. Tests run by the Institute for Technological Research in 1967 indicated that quality control was a problem. Protein is generally well-controlled, but fiber and fat levels frequently are below the content levels specified on the sack.[4] Feed manufacturers admit to having quality control

[4]Teresa Salazar de Buckle, *La Industria de Alimentos Para Animales en Colombia*, Instituto de Investigaciones Tecnologicas, Bogotá, November, 1967, p. 11.

problems and also indicate that much of the difficulty is due to the variability in quality of raw materials. (For additional detail see concentrates section of Chapter 4 in this report.)

The cost of feed concentrate is high, due primarily to the high cost of raw materials. According to the PIMUR grain study, the prices of corn, and other grains in Colombia are significantly higher than world prices.[5] Also, during the period 1964-67, the domestic prices of the raw materials have increased faster than the price of the finished feed concentrate and the prices of eggs and broilers.[6] In addition, occasional shortages of raw materials also create shortages of feed concentrates. Thus, the grain sector becomes an important supplier for the poultry industry.

There were indications from the PIMUR study that some producers are using larger quantities of drugs than needed, while other producers wait until the animals are sick before buying drugs. Both of these management practices contribute to higher production costs.

Poultry and egg producers' working capital needs are adequately met through credit sales from feed manufacturers and hatcheries, and by commercial bank loans. Investment capital is available primarily from the Caja Agraria, though its upper limit on size of loan eliminates some of the larger commercial poultry producers.

Producers' vertical integration into product and input markets has already started and will likely expand as competitive pressures force change upon the industry. Four percent of the broiler producers and 19% of the egg producers now mix their own feed concentrates. AVIVALLE (*Avicultores del Valle*) and AVINOVA (*Avicultores del Norte de Valle*) are producer organizations handling egg marketing for producer members. Although broiler producers have not yet organized their own marketing association, some have integrated forward into product markets. Sixty-three percent own their own processing facilities, enabling them to slaughter and wholesale their birds. Some broiler producers also retail birds through their own outlets.

Forward contracting between producers and wholesalers or retailers is also a very common means of guaranteeing supply to the distributor. These contracts are generally verbal agreements.

Egg Marketing

Commercial egg production in Valle during 1968 was estimated at 20,812,000 eggs monthly with a farm value of $12,445,576 pesos (Figure 3.3). Cali consumes

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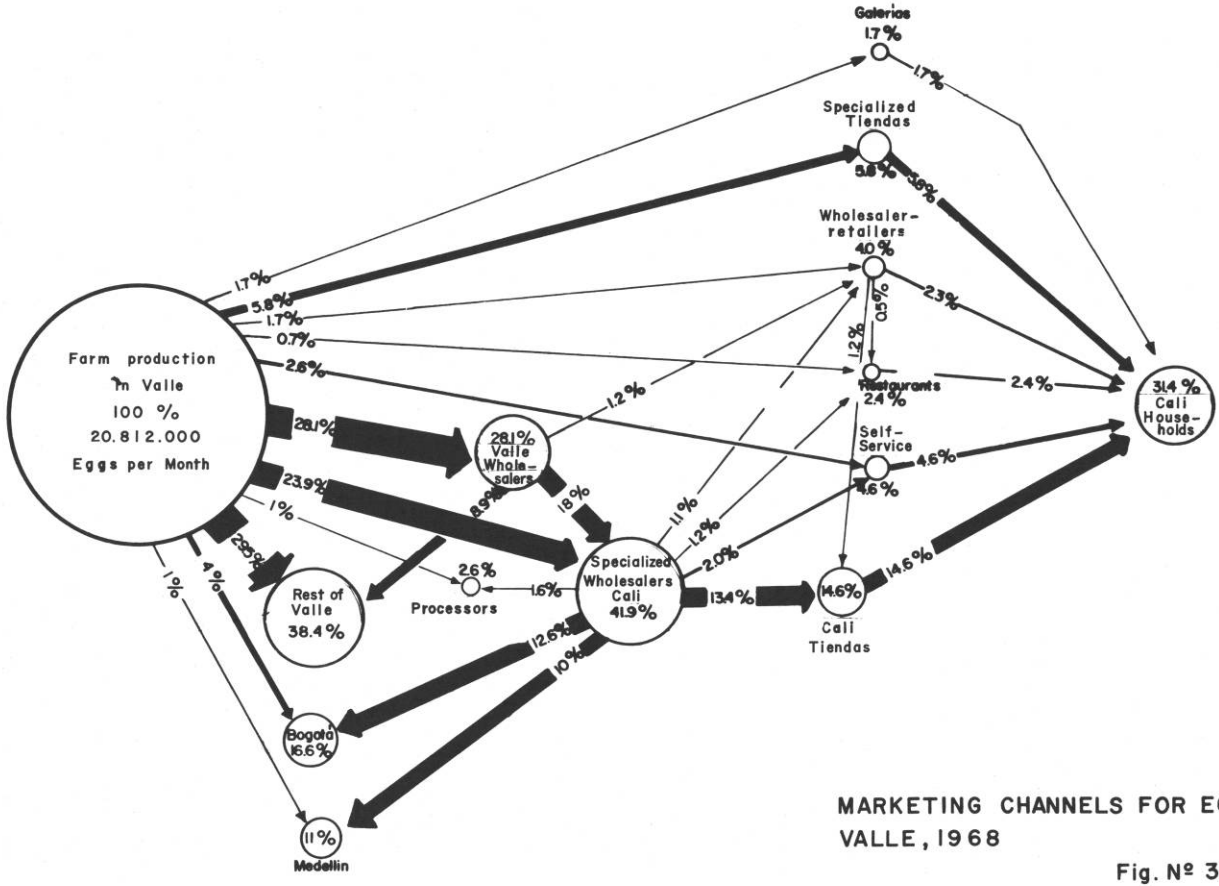
[5]PIMUR, Technical Report No. 11, *Grain Production and Marketing in the Cauca Valley*, 1969.

[6]Salazar de Buckle, *op. cit.*, p. 13.



MARKETING CHANNELS FOR EGGS, VALLE, 1968

Fig. Nº 3.3

about 31% of this volume, about 28% is exported from the area, and the rest is consumed in other parts of Valle. Total egg consumption for Cali in February, 1969, was estimated at 6,552,000 eggs with a total retail value of $4,128,000. Eighty-five percent of the eggs were consumed in households with the remainder going to institutional uses.

Cali has 22 specialized egg wholesalers who purchase more than 40% of the Valle egg production. These wholesalers handle an average of 396,190 eggs monthly. The smallest wholesaler handles 89,000 eggs monthly, while the largest, AVIVALLE (Avicultores del Valle), handles 2,000,000 eggs monthly. As in the case of broilers, the egg wholesalers are frequently producers who have integrated forward into distribution for the purpose of providing a stable outlet for their production.

The specialized wholesalers buy larger volumes from producers or from the Valle assemblers. They in turn sell primarily to Cali retailers and large distributors in other cities. They do not sell to Cali consumers. An estimated 77 egg wholesalers who operate outside Cali, but in Valle, handle some 28% of the production, with an average of 76,000 eggs monthly per firm. AVINOVA (Avicultores del Norte del Valle) is the largest in this group and handles about 901,500 eggs monthly, but little of their volume comes to Cali. These wholesalers buy from producers, frequently in small lots, for resale to the specialized wholesalers, the *plaza mercados*, or to retailers in the Valle. They do not sell to consumers in Cali.

The majority of egg wholesalers perform the single function of buying and selling eggs. They provide few other services at the present time. Only AVIVALLE and AVINOVA classify eggs by size and price them accordingly. Very few eggs are cleaned anywhere in the system before the consumer buys them. Candling is little practiced at the present time. Some egg storage occurs to meet peak demands at Easter and Christmas. Egg wholesalers do provide a transportation function mainly from the warehouse to the retail buyer. The producers usually deliver their eggs to the wholesaler, although some wholesalers do pick up eggs at the farms.

There are 46 firms at the wholesale-retail level in Cali who handle eggs as well as other products. They vary in size from 2000 to 25,000 eggs monthly, averaging 19,430 eggs monthly. The wholesale-retailer buys mainly from producers and assemblers. He sells primarily to consumers, but has some retailing customers.

Cali egg retailers have been divided into five major groups according to the number of stores and their respective market shares (Table 3.12). The most important retail outlets for eggs in both numbers of stores and market share are the personal service stores, with 51% of sales. Next come the

TABLE 3.12 ESTIMATED NUMBER OF RETAIL STORES IN CALI AND NUMBER SELLING EGGS WITH ESTIMATED MARKET SHARES AND GROSS MARKETING MARGINS

Type of Store	Total Number in Cali	Number Selling Eggs	Estimated Market Share	Gross Marketing Margin[a]
Self Service	54	42	14%	12.5%
Personal Service Stores	3553	2700	51%	13.5%
Plaza Market Retailers	2398	23	4%	15.0%
Specialized Egg Wholesaler/Retailers	46	46	6%	11.1%
Specialized Eggs Retailers	90	90	25%	11.1%
TOTAL	6141	2901	100%	

[a]Spread between purchase price and sale price as percent of selling price.
SOURCE: PIMUR, Wholesale-Retail Study and Egg Study, 1969.

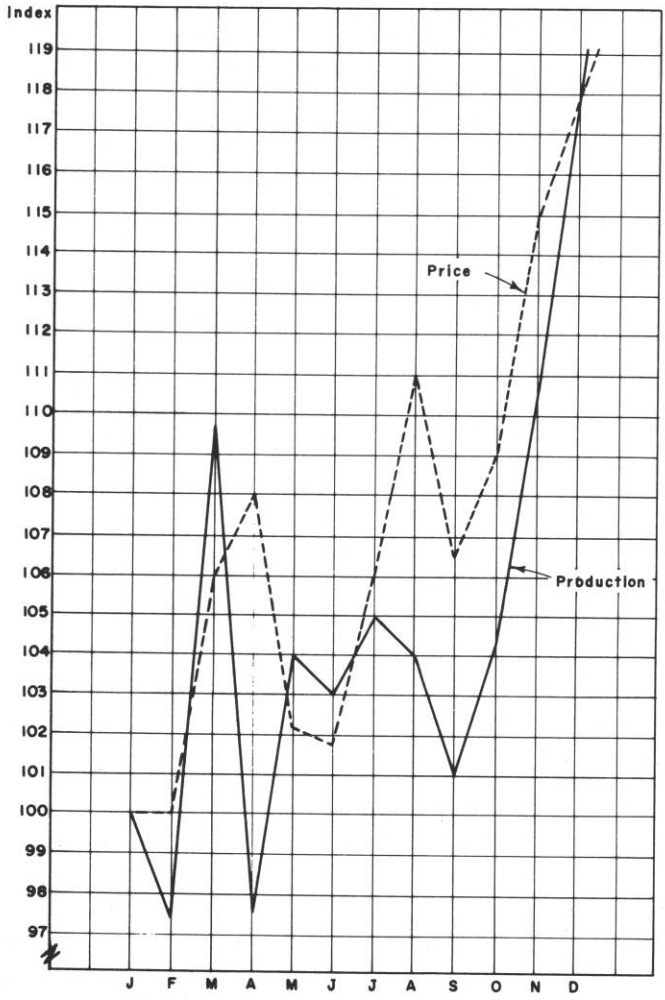
specialized retailers (25% of sales) which are essentially *tiendas* that listed eggs as their most important product.

Egg retailers perform only a buying-selling function. Eggs are not refrigerated or cleaned at the retail level. They are generally purchased in plastic cartons of 30 eggs each and are sold individually without packaging. No retailers sell packaged eggs, except for a few self-service stores which sell in special paper cartons of 10 or 12 eggs each.

The average price spread between producers and consumers was 14 centavos per egg, or 18.9% of the average consumer price in Cali. The plaza markets reported the highest margins (15%) while the specialized wholesale-retail stores reported the lowest margins (11.1%). Specialized wholesalers reported gross margins of 6%.

As seen in Figure 3.4, both egg prices and production fluctuated considerably during the year, with peaks in April, August and December. These peaks were closely related to the religious holidays - Easter and Christmas. Prices tended to fall sharply in the months immediately following these holidays. Egg production also varied considerably during the year as demand changed, however, responses were not rapid enough to smooth out the price fluctuations. During 1968 there was a Eucharistic Congress in Bogotá which attracted a very large number of people and caused a rise in egg prices during the month of August. This was not a regular seasonal pattern.

Only two organizations, AVINOVA and AVIVALLE, regularly sort eggs by size and price according to size. Other wholesalers may occasionally sort their eggs, but generally do not. However, the sorted eggs carry no identification



MONTHLY INDICES OF EGG PRICES AND PRODUCTION, VALLE, 1968, (JANUARY 1968= 100)

Fig. Nº 3.4

on the package or on the eggs. Neither the consumer nor the retailer can be sure whether or not the price paid is closely related to the size or quality of the product. It seems likely that classifying and grading would provide incentives to improve egg quality and would also make it possible to differentiate the product so as to reach a wider market. A pricing policy dictating that lower quality or smaller eggs be cheaper and vice-versa would probably increase total egg sales.

Broiler Marketing

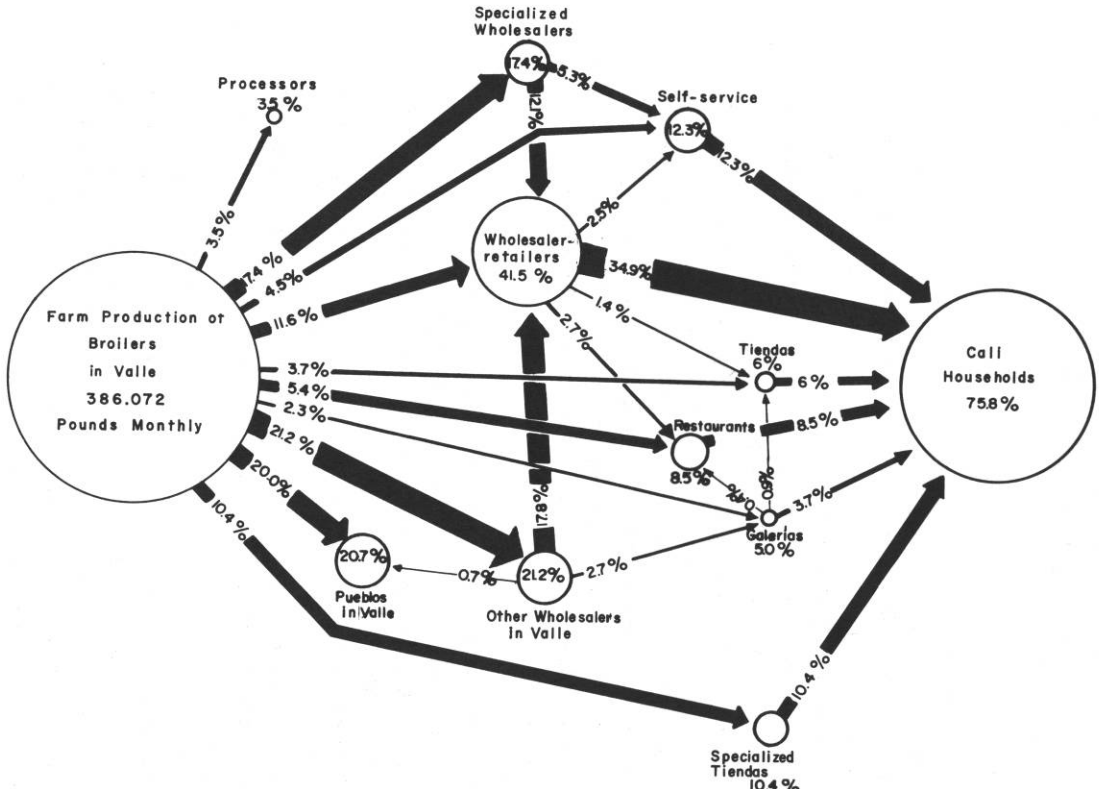
Commercial broiler production in Valle during 1968 was estimated at 386,072 pounds monthly for a total farm value of $2,586,682 pesos monthly (Figure 3.5). Cali consumes slightly over 76% of the Valle production; the remainder is consumed in other cities and towns of Valle. Total broiler consumption in Cali in February, 1969, was 293,000 pounds, with a retail value of $2,596,000. Home consumption amounted to 260,000 pounds, or 89% of total consumption, with the remainder in institutional consumption.

A major problem in broiler marketing seems to be the lack of adequate processing facilities. Cali has 20 processing plants, 10 of which do not have de-feathering machines, water heaters and refrigeration. The other ten have these facilities, but none of the firms can utilize the broiler by-products. In none of the plants are the birds inspected by a certified veterinarian, and sanitation is at a low level. Thus, it appears that better methods of slaughtering and handling could improve product quality and might at the same time reduce costs.

Cali has 16 specialized broiler processor-wholesalers who handle 17% of the Valle production. These wholesalers slaughter and sell an average of 4,200 pounds monthly, but vary in size from 2000 pounds to 25,800 pounds per month. The two largest wholesalers handle 50% of the entire volume for the group. These wholesalers are basically producers who have integrated forward into distribution. Their main purpose seems to be that of providing a stable outlet for their own production. They also buy birds from other farms, especially in periods when their own production is not adequate to serve their established market.

The estimated 10 wholesalers in the rest of Valle handle about 21% of the Valle production. They buy live birds and process them for sale to wholesale-retailers or sell live birds to retailers in the city-owned public markets.

The wholesaling functions consist mainly of volume buying and selling whole broilers which have been dressed, packaged, and frozen. The wholesalers' limited storage capacity makes possible only very short storage of frozen birds. They prefer to buy and sell in fairly large lots and generally have established a minimum size of transaction. These specialized wholesalers have their own



MARKETING CHANNELS FOR BROILERS, VALLE, 1968

Fig. Nº 3.5

processing plant either on the farm or in the city at their wholesale establishment. They do not sell to consumers, but rather to wholesale-retail stores and to other retail outlets. Fifty-eight percent buy on credit of about 8 days and sell on cash and credit. Gross marketing margins among wholesalers were 10.6% at the time of the study.

There are 46 wholesaler-retailer outlets in the city selling broilers as well as other goods. These 46 outlets handle 42% of Valle production. Only two of the wholesale-retail firms have their own processing plants. A few (16%) buy live birds, and the rest buy processed birds, either from producers or wholesalers. They also buy in smaller lots and sell to other retail outlets as well as to the final consumer. Generally, they buy on credit and sell on credit to other retailers, and on a cash basis to consumers.

As can be seen from Table 3.13, the specialized stores (retail and wholesale/retail) handle the largest share of the broilers sold in Cali. The total number of stores handling broilers was markedly less than the number of stores handling eggs (345 for broilers to 2901 for eggs). The largest difference was in the neighborhood stores, few of which handle broilers, but nearly all handle eggs.

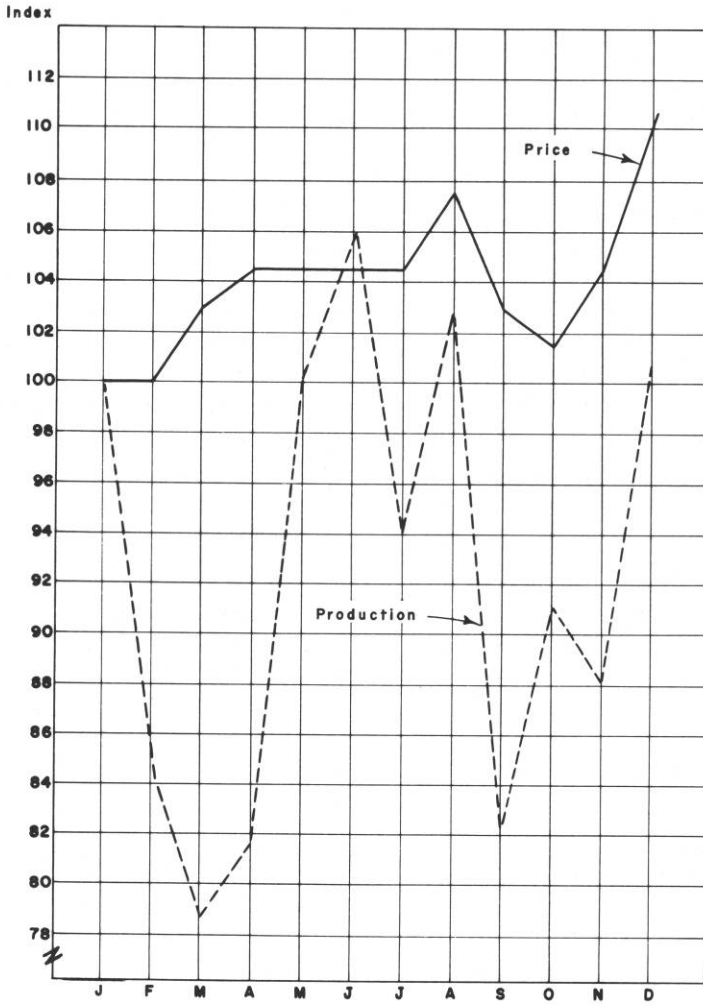
TABLE 3.13 ESTIMATED NUMBER OF OUTLETS RETAILING BROILERS IN CALI, ESTIMATED MARKET SHARES, AND GROSS MARKETING MARGINS

Type of Outlet	Number of Outlets Selling Broilers	Estimated Market Share	Gross Marketing Margin
Self Service	32	17%	9.2%
Personal Service Stores	142	9%	7.7%
Plaza Market Retailers	35	5%	3.2%
Specialized Retail	90	23%	10.3%
Wholesale/Retail	46	46%	10.3%
TOTAL	345	100%	

SOURCE: PIMUR, Wholesale-Retail Study, Broiler Study, 1969.

The total price spread between producer and consumer was $2.16 per broiler pound during February, 1969, which meant the producer was receiving about 76% of the price paid by consumers. The gross margins shown for broilers were quite similar among types of retail outlets, except for the plaza markets which had very low margins. The wholesaler-retailers reported the highest gross margins (10.3%). Their higher margins seem to be influenced by the fact that some (16%) do buy live birds and must therefore incur processing costs.

As seen from Figure 3.6, the price of broilers varied only slightly during 1968. Broiler prices are more stable than egg prices, however, broiler



MONTHLY INDICES OF BROILER PRICES AND PRODUCTION, VALLE, 1968 (JANUARY 1968 = 100)

Fig. Nº 3.6

production varies almost as much as egg production. Once again the production changes seem to occur in response to demand changes which are strongest during December. Because of the short production cycle (8-9 weeks), broiler production can be planned to meet seasonal changes in demand, thereby reducing the need for storage facilities. This, however, requires excellent coordination among broiler growers, hatcheries and feed manufacturers. Short-term storage of frozen, dressed broilers currently assists in maintaining a relatively stable price level.

Future Demand

As mentioned earlier, demand prospects for the poultry and egg industry seem good. Total Cali demand for broilers was estimated at $2.6 million pesos monthly in 1969. For 1979 and 1989, total monthly demand is estimated to be $7.2 and $15.0 million pesos at current prices. This increase would be due to expected population and income increases and does not reflect possible price reductions. Total Cali demand for eggs was estimated at $4.1 million pesos monthly in 1969. For 1979 and 1989 the projections are $8.4 and $15.7 million pesos monthly. Thus, demand for eggs in Cali is projected to more than double in the next ten years. Demand increases will also occur in other urban centers in Valle. Demand could grow much faster than the projected levels if consumer prices were lowered as a result of a more efficient production-distribution system. Such demand growth will pressure the industry to increase output. The poultry industry is capable of responding to such demand, but its ability to do so also depends upon other vital sectors, such as the feed concentrate industry and the feed grain producers.

Conclusions and Recommendations

On the basis of this study it appears that costs of production and egg distribution could be reduced sufficiently to lower real prices to consumers by at least 20% within the next few years. Most of this reduction would be in farm production costs. Broiler prices to consumers could probably be reduced by as much as 15% with improvements in farm production, slaughtering and distribution.

If these adjustments can be achieved, the volume of eggs and poultry marketed would increase substantially. The percentage increase in poultry meat consumption could rise very sharply as the price becomes more competitive with beef. Cost reductions, even greater than those conjectured above, could be achieved if feed concentrate prices could be reduced. And prospects for yield increases for corn and sorghum are promising. (See Technical Farm Inputs, Chapter 4.)

Reductions in production and distribution costs can be attained through better management of existing technologies, and through improved coordination of the market processes. Three interrelated recommendations are offered as a means of improving performance in the poultry and egg sub-system.

1. *It is recommended that increased technical assistance be provided to commercial poultry producers and to producer associations.* ICA should place a poultry and egg specialist in the Cali office to provide technical assistance to producers on both production and marketing management problems. This specialist should provide assistance, not only to producers, but also should give attention to market coordination problems for both inputs and products.

It is especially important that this ICA extension specialist provide technical assistance to the egg producers' associations (AVIVALLE and AVINOVA) to improve their merchandising and distribution of eggs and to strengthen their association. These associations could do much more to promote egg consumption, for instance, through grading and product identification. Also, the associations need greater producer commitment in order to stabilize their sales volume. Each member should be required to contract all his production to the association, as opposed to the present system in which the producer is free to sell wherever he wishes. The association might guarantee a minimum price to producers to encourage contracting.

2. *It is recommended that a poultry slaughtering and distribution facility be constructed in Cali.*

Significant improvements in the processing and merchandising of broilers could be achieved through a larger centralized facility. Inadequate processing procedures now contribute to poor product quality. No veterinary or sanitary controls are presently applied to poultry processing.

The processing plant could be organized and financed by a group of broiler producers who have enough production to guarantee a stable supply of birds for the plant. Using the processing plant as its base of operation, the producer group could perform several functions similar to those performed by AVIVALLE in egg production and marketing. It should process broilers for members or non-members on a purchase or fee basis. Processing on a fee basis might be desirable for producers who want to continue with their own private labels. All purchased birds could be marketed under the producer organization's label which would carry a quality guarantee. The producer organization would wholesale fresh, refrigerated as well as frozen birds, because many consumers prefer the refrigerated product to the frozen. This producer group could also begin merchandising chicken parts to gain a greater share of the market. The better, meatier parts could be sold at higher prices than other less meaty parts, enabling broiler producers to get more revenue per bird, and to offer consumers more appropriately priced chicken parts according to their income levels.

The distribution could be handled by a specialized transport firm using insulated trucks that might also deliver milk and eggs. Delivery might be made daily or every other day to the supermarkets, superettes, and large *tiendas*. Distribution of several commodities rather than just one can reduce the costs of urban distribution.

The proposed processing plant could process from 600 to 1200 birds per hour. Working one 8-hour shift daily for 26 days monthly, it could process from 124,800 birds monthly to 249,600 birds monthly. The former is slightly more than the Cali monthly consumption at the present time, and the latter almost equals a very conservative estimate of the projected demand in Cali for 1979. Thus, the plant could handle Cali's needs for the next ten years. If the plant could process broilers for neighboring towns as well as demand increases arising from lower broiler prices, it could process more than 600 birds per hour within a very short time.

The annual costs and returns for a plant processing from 600-1200 birds hourly is shown in Table 3.14. Assuming the present processing charge of $1.00 per bird, the plant is just above the break-even point at 600 birds per hour and becomes profitable when volume reaches the 900 birds per hour rate. At 1200 birds per hour the plant would produce an annual return of 39% on invested capital.

TABLE 3.14 A SUMMARY OF THE ANNUAL INCOME, COSTS AND RETURNS FOR A POULTRY PROCESSING PLANT WITH A CAPACITY OF 600-1200 BIRDS HOURLY IN CALI, 1969

	Number of Birds Processed Hourly[a]		
	600	900	1200
Annual Income[b]	1,497,600	2,246,400	2,995,200
Costs	1,480,488	1,823,292	1,993,332
Gross Profit	17,112	423,108	1,001,868
Annual Return on Invested Capital	0.7%	16.4%	38.8%

[a]The assumption used is that birds will be processed at the respective hourly rates for one 8-hour shift daily during 26 days every month.

[b]The income generated during the year is based on a charge of $1.00 per bird which equals the present processing rates.

SOURCE: PIMUR, Poultry and Egg Study, 1969.

The investment needs in pesos and dollars are shown in Table 3.15. The total investment is slightly over $2.5 million pesos. The financing for the plant could come from four different sources. The imported equipment could probably be financed through IFI (Instituto de Fomento Industrial) on an AID (Agency for International Development) loan at 7% interest annually for 7 years. The buildings might be financed through the Caja Agraria at 10% annually for

for 10 years. Vehicles and office equipment can be purchased on credit of 18-20 months and sometimes for longer repayment periods. Local banks can provide some of the working capital needed. Other capital needs would have to be provided by the group members building the plant. Membership capital need not exceed $1,000,000 depending upon the amount of bank financing available. Technical assistance would be required to plan the facility, to obtain financing and later to assist in putting the facility into operation. This assistance could be provided by an ICA extension specialist, although specialized foreign technical assistance might be required on some phases of the project.

TABLE 3.15 INVESTMENT REQUIRED FOR A POULTRY PROCESSING PLANT OF 600-1200 BIRDS HOURLY

Item	Peso Investment	Dollar Investment	Total Peso Investment
Imported Machinery and equipment		$52,000	$ 910,000
Colombian machinery and equipment	$292,432		
Vehicles	240,000		
Land and buildings	480,000		
Office equipment	57,321		
Costs of incorporation	12,000		
Containers for cold storage room	56,400		
Sub-total:		52,000	2,048,153
Working capital	301,388		2,349,541
Contingency 10%			234,954
Total Capital Needed:			$2,584,495

SOURCE: PIMUR, Poultry and Egg Study, 1969.

3. *It is recommended that a national poultry commission be organized consisting of members from the following private agencies: the broiler growers, the egg growers, the hatchery association, the feed concentrates association and the drug industry. Public agency representation should include ICA and possibly IDEMA.* The basic function of this commission would be to improve coordination and communication among all private and public agencies concerned with the poultry industry.

A characteristic of the poultry industry in Colombia as well as in other places, is the high degree of interdependence existing among several related but independent entities. The future success of the poultry industry will depend to a large extent on the ability of these entities to work together in the interest of the industry and the consuming public. Some of the main problems now facing the industry could be resolved through improved coordination and communication among the entities. Problems of product quality, scarcity

of feed and chicks and instability in production could be considered by such a commission. Such a commission could advise ICA (Instituto Colombiano Agropecuario) on the research and extension needs of the poultry industry.

The changes in the poultry industry that could be facilitated through implementation of the above recommendations would lower prices and improve product quality; thereby benefiting consumers, farmers, input suppliers and marketing firms through larger volumes and a more stable flow of income. This should stimulate a fuller utilization of cost reducing technologies and a more productive pattern of resource use. During the period of continued rapid adjustment in the industry, many of the less efficient firms will suffer financial losses and eventual elimination from the industry. Because of the market trend toward large-scale and vertically integrated firms, consideration should be given to public regulations or actions to maintain a progressive, workably competitive industry. However, care should be exercised to avoid restrictive actions inconsistent with the long-run interests of consumers. Above all it is important to maintain competition through potential entry of new firms. Barriers to entry can be kept low through publicly supported technical assistance and reasonable access to investment capital. A strong producer association could provide effective competition for large, vertically integrated firms that might emerge if feed concentrate firms attempt to dominate the industry.

Milk*

Introduction

Milk is a basic food product that enjoys a rather unique role in most food systems. It is widely recognized for its nutritional value in child feeding. However, because milk is highly perishable and serves as an excellent medium for the transmission of contagious diseases (*e.g.*, tuberculosis and undulant fever) producers and handlers are usually subjected to considerable control by public health agencies. Consumer concern about milk prices frequently leads to controls that are more closely supervised and are more politically sensitive than similar controls on other foods.

This study focused on the fluid milk production-distribution system serving Cali. Information was collected from the two milk pasteurizers, and a representative sample of 98 milk producers, 19 raw milk dealers and 15 specialized retail milk stores. In addition, data from the PIMUR consumer and retailer studies were utilized.

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*Based upon PIMUR Technical Report No. 12, *The Cali Milk Production and Distribution System*, 1969.

Consumption

Milk and milk products accounted for 11% of total consumer food expenditures in Cali in February, 1969.[7] The average annual outlay would probably be slightly higher since milk was in short supply seasonally when the study was conducted.

Total fluid milk consumption for Cali was estimated to be 164,971 liters daily during the February survey. About 95% of this milk was consumed directly, with the remainder going into ice cream and fluid milk products. The average daily per capita consumption was 0.16 liters (Table 3.16). Consumption ranged from 0.07 liters in the lowest income group to 0.31 liters in the highest income group. Powdered milk consumption was highest in the three lower income groups. For the city as a whole, powdered milk (liquid equivalent) consumption is less than 10% of total milk intake and is used primarily for infant feeding. Reconstituted powdered milk costs over $4.90 per liter while pasteurized milk sells for $2.78 a liter.

More than one-half (56%) of the Cali fluid milk supply is distributed as raw milk, with the other 44% being pasteurized. Raw milk sells for about 15% less than pasteurized milk and is extremely variable in quality.

The demand for fluid milk will increase rapidly with rising population and incomes. The income expenditure elasticity of demand is very high for the low income groups (Table 3.16). Based upon the PIMUR population and income projections for Cali (Tables 1.1 and 1.10, Chapter 1), total milk consumption will increase 104% over the next 10 years, assuming milk prices remain unchanged relative to other foods. It should be noted, however, that milk may encounter some competition from high protein foods derived from grains.

TABLE 3.16 PER CAPITA DAILY CONSUMPTION OF FLUID AND POWDERED MILK BY PER CAPITA INCOME LEVELS IN CALI, FEBRUARY, 1969

Per Capita Income Level Pesos Monthly	Per Capita Daily Consumption in Liters			Estimated Income Elasticities of Demand[a]	Per Capita Monthly Expenditures in Pesos for Powdered Milk
	Pasteurized Milk	Raw Milk	All Milk		
1-125	0.025	0.042	0.067	1.32	1.58
126-240	0.058	0.062	0.120	0.89	1.32
241-500	0.077	0.077	0.154	0.42	1.54
501 or more	0.119	0.195	0.314	--	0.98
Average all levels	0.069	0.087	0.156		1.37

[a]Income-expenditure elasticities based upon household food expenditure data for families grouped by level of per capita income. See Chapter 2.
SOURCE: PIMUR, Consumer Study, 1969

[7]PIMUR Technical Report No. 7, *The Cali Consumer: Incomes, Food Purchases, and Shopping Patterns*, 1969, Table 7.4.

Milk Production

The Cali milk supply area extends approximately 150 kilometers from the city. Geographically, it includes the Cauca Valley as far north as Bugalagrande and Bolivar and as far south as Popayán in the department of Cauca. A portion of the state of Huila bordering on Cauca also forms part of the area.

There were 590 herds of five or more cows in the Cali supply area at the time of this study (1969). There were also an unknown number of small herds (less than 5 cows) not included in the investigation. A random sample of 98 farmers were interviewed. Ninety of these were land owners averaging 10 years of schooling. Most (54%) consider dairy farming their main occupation, but many also have other occupations, some of which are professional positions.

Herd size averaged 52 cows on the farms interviewed, but varied widely (Table 3.17). Milk production per cow is low, averaging 5.17 liters per cow daily with most herds (62%) producing less than four liters daily (Table 3.18). Average production per cow is less than that in the Sabana of Bogotá, where production averaged 6 liters daily per cow in 1966.[8] However, 6% of the herds supplying milk to Cali averaged more than 9 liters daily per cow with a few herds as high as 13 liters. The problem of low productivity per cow is closely related to the poor quality pasture available and the fact that only 42% of producers use concentrate feed.

TABLE 3.17 VARIATION IN SIZE OF DAIRY HERDS IN CALI AREA, FEBRUARY, 1969

Number of Cows Lactating	Number of Herds	Percentage of Herds
1- 25	43	44
26- 50	29	30
51-100	16	16
100 or more	10	10
TOTAL	98	100

SOURCE: PIMUR, Milk Study, 1969

TABLE 3.18 VARIATION IN DAILY MILK PRODUCTION PER COW AMONG DAIRY HERDS IN THE CALI AREA, FEBRUARY, 1969

Liters Daily Per Lactating Cow	Number of Herds	Percentage of Herds
1 - 2	14	15
2.1 - 4	45	47
4.1 - 6	15	15
6.1 - 9	16	17
9.1 or more	6	6
TOTAL	96	100

SOURCE: PIMUR, Milk Study, 1969.

[8] Autonomous Regional Corporation of the Bogotá Savannah and of the Ubate and Chiquinquira Valleys, Rural Development Service, December, 1966.

Only 38% of the farmers interviewed milk their cows twice daily. One reason advanced for milking only once was that production per cow falls off sharply from the first to the second milking. This large drop in production is related to feeding and management practices. Also, a lack of on-farm cooling equipment (89% have no cooling equipment) reduces the incentive to milk cows twice daily. Only for the largest farms are transporters making two trips daily to pick up milk. Thus, even if the producer did milk his cows twice daily, he would have no suitable way of storing milk until it was picked up.

Wide seasonal variations in the milk supply create difficulties for all concerned with milk distribution. Pasteurizing plants managers report that milk production drops 20% or more from the rainy season to the dry season, while the PIMUR farm survey indicates a 25% drop in farm sales. On the other hand, consumer demand increases from the rainy season to the dry season because warmer temperatures create a demand for more liquids. Processors and distributors are therefore confronted with falling supply and increasing demand in the dry, hot season. Yet consumer prices do not change because they have been fixed at a pre-determined level by the Superintendent of Price Regulation. Thus, producers are given no incentive to increase production in the dry season when production costs tend to go up with higher rates of concentrate feeding and greater use of irrigated pastures.

Pasteurized Milk System

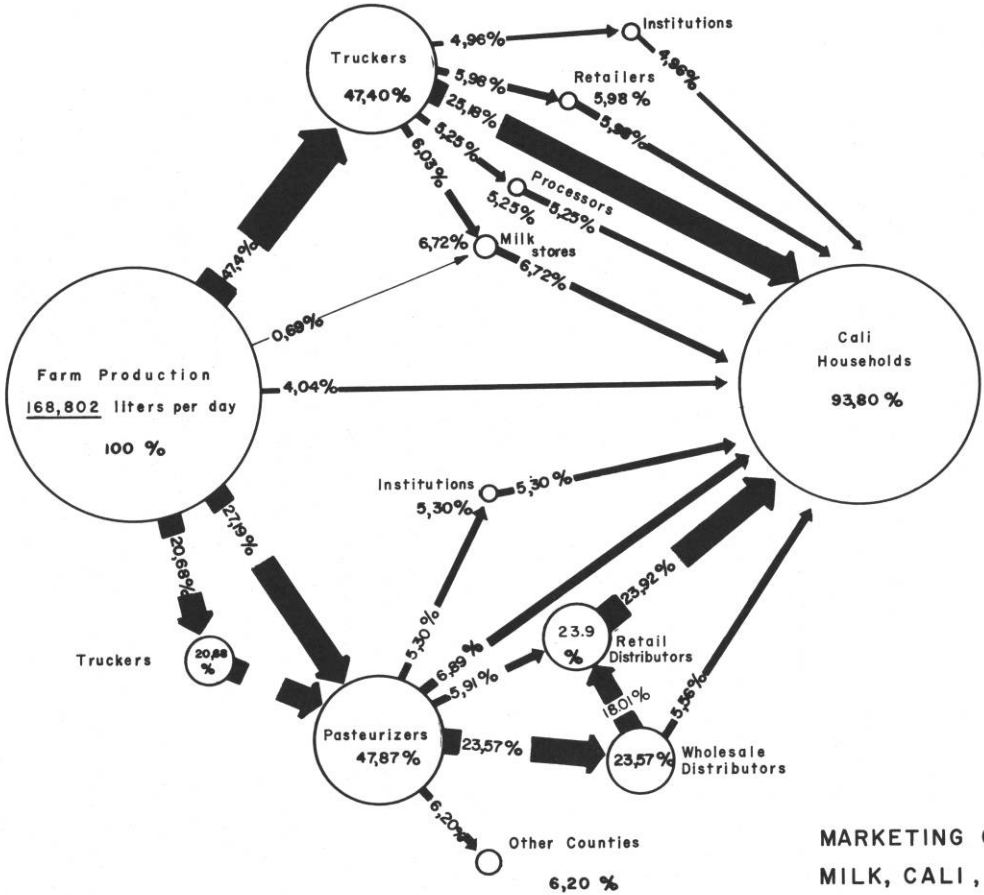
Milk marketing in Cali is divided into two rather distinct and separate channels of distribution. (Figure 3.7.) Pasteurized milk marketing is reasonably well-organized, centering around the two milk pasteurizing plants in Cali and their respective collection and distribution systems. Raw milk marketing centers around a large number of truckers who assemble and distribute raw milk.

TABLE 3.19 CAPACITY, PRODUCTION AND UTILIZATION OF CAPACITY IN MILK PASTEURIZING PLANTS IN CALI, 1957 AND 1969 (LITERS PER HOUR)

Plant	Installed Capacity		Production		Percent Utilization
	1957	1969	1957	1969	1969
Pasteurizer Cremex	360	3600	360	2592	72
Pasteurizer Valle	720	7920	720	3960	50
TOTAL	1080	11,520	1080	6552	57

SOURCE: PIMUR, Milk Study, 1969.

Both pasteurizer plants started in 1957 at capacity levels much less than they have today. (Table 3.19.) Pasteurizadora del Valle has a plant capacity of 7,920 liters per hour. Pasteurizadora Cremex is a family enterprise with present capacity of 3,600 liters per hour. Currently the plants operate at



MARKETING CHANNELS FLUID MILK, CALI, FEBRUARY, 1969

Fig. Nº 3.7

considerably less than full capacity for one eight hour shift. The excess capacity equalling 11,520 liters for each additional operating hour, is more than adequate to pasteurize all Cali's daily fluid milk consumption in less than 8 hours.

Pasteurizadora Cremex markets a single product, bottled milk branded under the name of "Cremex", while Pasteurizadora del Valle markets two products, a bottled milk with the brand "Salomia" and a carton milk named "San Fernando". Neither plant has diversified into new fluid milk products or into other milk by-products. Both plants are attempting to gain a greater share of the present fluid milk market at the expense of raw milk sales before diversifying into other milk products.

The milk collection system used by the two pasteurizing plants includes direct purchases from producers as well as purchases from intermediaries. For direct purchases one plant operates through contracted truckers, while the other plant owns and operates its own trucks.

The pasteurizers typically buy from a large number of small producers, as well as from some large producers. Twice daily purchases from some farms contribute to higher transport costs, but make possible higher quality milk. Both plants have installed cooling stations in an effort to reduce milk assembly costs.

The plants have verbal agreements to buy all a producer's production during a particular time period, at an agreed price. The farm price is determined by distance from Cali, type of road to the farm, and the quality of milk produced. The quality incentive is $0.02 per liter for each 0.25% of butterfat above 3.25%. Payment is made bi-weekly. One plant provides technical assistance and credit to their producers to facilitate purchase of better animals and other inputs, but the other plant has no such arrangements.

Milk handling is done almost entirely in cans supplied by the pasteurizers which are kept clean by daily washing and steaming. Bulk transport has had limited use, although one plant does receive milk daily from two tank trucks.

More than one-half of the pasteurized milk is distributed through personal service stores with another 31 percent home deliveries (Table 3.20). The distribution system within Cali varies only slightly between the two plants. Each plant has divided the city into zones and routes which each truck is to follow. Naturally, in these zones they compete with each other and with raw milk sales. Cremex has its own trucks, while Pasteurizadora del Valle contracts most of its distribution to a wholesaler, while at the same time distributing its top quality product, (Leche San Fernando), with firm trucks.

Seasonality of both supply and demand is a major problem for the pasteurizing plants. In attempting control supply shortages, they can look for new suppliers not currently selling to Cali, or divert milk from other towns

to Cali. One plant has an agreement with CICOLAC (Compañia Colombiana de Lacteas), to buy milk in times of shortage. None of these opinions, however, fully resolves the problem of seasonal supply fluctuations.

Another major problem for pasteurizers is the strong competition from raw milk distributors. The raw milk distributors have a competitive advantage over pasteurizers because they have no processing costs and can be less closely regulated on their handling practices. This makes it possible for them to pay more at the farm level and still undersell pasteurized milk at the consumer level.

TABLE 3.20 RETAIL DISTRIBUTION OF PASTEURIZED MILK BY TYPE OF OUTLET, CALI, 1969

Type of Outlet	Percent of Total Sales
Self-service Stores	a
Personal Service Store	57
Home delivery, truck	31
Institutional Users	12
TOTAL	100

[a]Less than 1% of total milk sales.
SOURCE: PIMUR, Retail and Milk Studies, 1969.

Raw Milk System

Cali has 190 truckers licensed by the municipal health authorities to transport and sell raw milk. These truckers sold an average of 640 liters daily in February, 1969. However, they vary greatly in size (Table 3.21).

TABLE 3.21 PERCENTAGE DISTRIBUTION OF RAW MILK TRUCKERS BY LITERS OF MILK SOLD DAILY IN 1969, CALI

Liters sold Daily	Number of Truckers	Percent of all Truckers
200-350	20	10.5
351-500	60	31.6
501-650	30	15.8
651-800	50	26.4
801-950	10	5.2
951 or more	20	10.5
TOTAL	190	100.0

SOURCE: PIMUR, Milk Study, 1969.

The truckers buy milk from producers (normally one or two per trucker) located within a 50-mile radius of Cali. The producer and the truckers usually have a verbal agreement through which the trucker agrees to buy all the production on

the farm. Most truckers make one trip daily to the farm, although 21% make two trips daily. The truckers pay producers on a weekly basis. They usually sell for cash (31%) or for credit of one week (53%). Unsold milk from one day's purchases is usually stored until the following day when, if it is not sold, the trucker transforms it into milk by-products.

Home delivery accounts for the largest part of raw milk retail sales, followed in importance by specialized milk stores and personal service stores. (Table 3.22.) The city has licensed 121 specialized milk stores (*expendios*) which sell raw milk brought to them by truckers. These specialized retail outlets sell only raw milk and often are located in a house or garage. Only 47% of them use refrigeration, and very little other equipment is needed. Many do not meet the minimum public regulation requirements. *Expendio* sales averaged 162 liters daily in February, 1969. Most *expendios* (60%) sell between 40 and 150 liters daily. Neighborhood stores are less important as distributors of raw milk than pasteurized (13% of raw milk sales vs. 57% of pasteurized milk sales. (Tables 3.20 and 3.22.)

TABLE 3.22 RETAIL SALES OF RAW MILK BY TYPE OF RETAILER, CALI, FEBRUARY, 1969

Retailer Type	Percent of Total Raw Milk Sales
Self-Service	a
Personal Service Stores	13
Home Delivery Routes	62
Specialized Milk Stores (*Expendios*)	15
Institutions	10
TOTAL	100

[a]Less than 1% of sales.
SOURCE: PIMUR, Retail and Milk Studies, 1969.

A major deficiency in raw milk marketing is the product's low quality when it finally reaches the consumer, arising from adulteration and lack of sanitation in handling. According to our estimates, the raw milk which comes into the city is often adulterated by more than 10% before reaching the consumer.[9] The milk is adulterated with water, and other products such as corn starch are sometimes added. If the adulteration level is as much as 15 percent, the real price of raw milk would be equal to the price of unadulterated pasteurized milk.

[9]This is based upon aggregate estimates of milk arriving in Cali from the Public Health Authorities as compared to consumer purchases plus other evidence that adulteration is a common practice.

Poor handling methods also contribute to lower milk quality. Most truckers do not adequately wash and sterilize their milk cans. Shade covers on the trucks are frequently in poor condition. The use of a dipper to measure the amount sold to each consumer is an unsanitary practice. The dipper also facilitates measurement cheating. No special consumer containers are provided by either truckers or the *expendios*. The milk is dipped out of cans and poured into the consumer's own container.

Raw milk truckers do not follow as highly organized delivery routes as do the pasteurizers. Rather, they seem to be quite independent and compete freely in all areas. It is not uncommon to find two or more truckers selling raw milk in the same area in competition with one or both brands of pasteurized milk. Such procedures add to the costs of distribution.

Conclusions and Recommendations

Price spreads between different stages in the distribution systems for raw and pasteurized milk are shown in Table 3.23. Raw milk truckers can pay higher producer prices and still sell milk to consumers for a lower price than pasteurized milk. The total price spread between producers and consumers is therefore less for raw milk than pasteurized milk. Three main factors account for this difference: 1) the cost of pasteurizing the milk; 2) the purchase of milk by pasteurizers at greater distances from Cali, lowering the average producer price; and 3) the adulteration of raw milk with water making possible a lower margin on raw milk. Costs of the pasteurized milk system could be reduced with fuller utilization of existing plant capacity. Distribution costs for both pasteurized and raw milk could be reduced with a greater rationalization of the assembly and delivery services.

TABLE 3.23 PRICE SPREADS BY STAGES IN DISTRIBUTION SYSTEMS FOR RAW AND PASTEURIZED MILK IN CALI, FEBRUARY, 1969

Type of Milk and Stage of Distribution	Selling Price Per Bottle[a]	Price Spread Per Bottle[a]	Percent of Final Price to Consumer
	$	$	
Pasteurized Milk			
Retailer (Consumer)	2.00	0.10	100
Wholesaler	1.90	0.18	95
Pasteurizer	1.72	0.68	86
Producer	1.04		52
Raw Milk			
Truckers (Consumer)	1.72	0.54	100
Producer	1.18		68

[a]A bottle of milk in Cali is equal to 720 cc.
SOURCE: PIMUR, Milk Study, 1969.

Prices are subject to government control of consumer prices of both raw and pasteurized milk. The law does not, however, allow for price differences according to retail outlet, reducing incentive for home delivery routes of pasteurized milk since it cannot be sold at a higher price than in retail stores. Neither does the law permit the seasonal adjustments in prices necessary to induce higher production in the dry season. Thus, the present price control regulation may be adding to the supply-demand imbalance rather than improving it.

In summary, milk consumption per capita in Cali is low, especially in the lower income areas. Seasonal variation in both supply of and demand for milk is a major problem and is aggravated by present price control policies. In addition, milk production per cow remains low because of the extensive nature of dairy farming.

Probably the greatest shortcoming of the Cali milk system is low quality, especially in raw milk, and the lack of progress in improving the situation. In other urban milk systems, the adoption of a coordinated milk control program has improved milk quality without a major increase in consumer costs.[10] The increased stability of the market, and the expanded demand for the product can induce the adoption of output expanding, cost reducing technologies in both production and distribution. This, of course, assumes that the level of fixed prices provides a reasonable incentive to producers and handlers.

Two alternative approaches for improving the milk production-distribution system are offered for consideration. One approach would be to require a rapid changeover to the compulsory pasteurization of all fluid milk sold for direct human consumption in Cali. An alternative approach would be to strengthen the enforcement of existing regulations for milk handling as a means of improving milk quality. We feel that the first approach offers the greatest opportunities for stabilizing milk markets, improving milk quality and, over the long run, lowering milk prices relative to other foods. But the pasteurized milk program is complicated and may encounter active resistance from industry groups as well as indecision and administrative inertia in the public sector. The second approach should encounter less resistance and is offered as an alternative which could serve as an initial step toward eventual adoption of a compulsory pasteurization program.

The specific recommendations are presented below. Where possible, projected performance of the new system is compared with performance of the existing system.

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[10] Kelly Harrison, *Agricultural Market Coordination in the Economic Development of Puerto Rico*, unpublished Ph.D. Thesis, Michigan State University, 1966.

As a first alternative, it is recommended that complete responsibility for milk marketing in Cali be placed in a milk regulation office. This office would have the legal powers to require pasteurization of all fluid milk sold in the city, to license milk producers, processors and distributors, to enforce sanitary regulations and to coordinate milk marketing in the Cali supply area. This area of supply includes the Cauca Valley north to Bugalagrande and south to Popayán. A part of the state of Huila bordering on Cauca is also included. This office would attempt to deal with the problems of production and demand seasonality, hazards of raw adulterated milk, and sanitary practices in handling milk between the farmer and the consumer.

It is suggested that the Planning Office of the Ministry of Agriculture take responsibility for promoting passage of federal legislation which would permit milk market regulations to be promulgated by IDEMA in metropolitan milksheds. The enabling legislation should provide that regional offices of milk regulation: 1) be supported, if necessary, by an assessment on milk sold in each region; 2) be authorized to promulgate specific market regulations; 3) have legal enforcement powers to implement those regulations; and 4) be given responsibility for milk price and sanitation control.

After passage of enabling legislation, IDEMA should appoint a well-qualified administrator for the proposed Office of Milk Regulation in Cali. He should begin promulgation of a specific milk regulation for the Cali market with a series of meetings and hearings offering an opportunity for the various interest groups (*e.g.*, farmers, processors, consumers, raw milk distributors, health officials, retailers, etc.) to state their views on the subject.

The recommended minimum provisions of the new milk regulations are: 1) sanitation and quality control; 2) classified pricing plan with seasonal adjustments; and 3) maximum and minimum prices at various levels of distribution.

One of the first steps taken by the regulation office would be to require that all fluid milk consumed in Cali be pasteurized. This is a large step and would require careful planning, but does appear to be feasible under present conditions. The two pasteurizing plants in Cali have the capacity to pasteurize all the milk currently consumed in Cali, by working an extra shift daily.

The milk regulation office would be responsible for establishing standards of hygiene to be met on farms producing and selling milk to pasteurizers. To encourage improvement in sanitary conditions, two types of licenses (A and B) should be granted. The grade A dairy farm would be required to cool the milk, store it in sterilized containers and meet strict sanitary requirements in all milk handling. As an incentive to invest in such sanitary improvements, grade A milk producers would be paid a higher price. The pasteurizer would be permitted to charge a correspondingly higher price for the higher quality product.

The cost of installing electric refrigeration tanks with a capacity of 1000 liters on dairy farms is estimated at $70,000. A less expensive system costing about $40,000 consists of cooling the milk down to about 5°C. by passing it over refrigeration coils. The milk is then placed in an insulated cold storage room until picked up by the plant. Either of these farmer investments could be financed under existing credit programs, *e.g.* , Law 26, INCORA, Caja Agraria, etc.

Grade B licenses would be issued to milk producers meeting minimum health requirements (initially this group would consist of most milk producers presently supplying Cali). The milk regulation office would enforce sanitary regulations for producers, pasteurizers, and distributors and provide sanctions for such violations as the sale of adulterated or spoiled milk at any point in the distribution system. Efforts should be made to gradually improve sanitary conditions at all levels.

If the milk regulation office is to do a good job of controlling milk quality and sanitary conditions, it must have a well-equipped laboratory in which the appropriate tests on milk quality can be made. Based on discussions with the local health authorities, the equipment needed for such a laboratory would cost approximately US$6800.

In order to promote market stability for both producers and pasteurizers, the milk regulation should require that once a purchase agreement is voluntarily reached the pasteurizer must accept all milk supplied by an individual farmer. Neither party would be able to break the agreement without showing just cause and obtaining approval from the office of milk regulation.

The classified pricing plan would be based on the existing market price for non-fluid milk, *e.g.*, milk used for manufacturing powdered milk, cheese, butter, etc. The farm price for grade A and B milk would be set above the level for manufacturing milk with wider differences during the dry season in order to stimulate farmers to increase production. For every two-week period, the office of milk regulation would determine how much milk was pasteurized and how much was sold as surplus. The office would then calculate a grade A and grade B blend price[11] to be used by pasteurizers in paying producers for all milk delivered to them.

Pasteurizers should be permitted to deduct transport costs from the farm to their plant at a fixed tariff per kilometer. In the event that pasteurizing plants receive less fresh milk on any given day than they can market, they

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[11]The blend price is a weighted average price arrived at by adding the value of milk sold for fluid consumption to the value of the surplus milk and dividing the sum by the total volume of milk received by the pasteurizers.

should be permitted to reconstitute powdered milk and blend it with pasteurized milk under supervision of the office of milk regulation. But this should be taken into account in calculating the blend price, so that the farm price is adjusted upward accordingly and pasteurizer margins are kept normal.

The office of milk regulation would set prices at different levels of distribution. Maximum wholesale prices for retail stores or independent distributors would be F.O.B. pasteurizing plant and could be adjusted upward if the processor provided delivery to the retailer. Maximum retail prices should be fixed at a higher level for home delivered milk than for sales at retail stores. In addition, higher fixed prices should be permitted at all levels of distribution for products of verifiably higher quality or service rendered (*e.g.*, higher fat milk, milk in paper cartons, etc.)

In order to broaden the market for fluid milk, it is suggested that pasteurizers be allowed to sell, in addition to the grade A pasteurized milk mentioned earlier, two different types of grade B milk. The first type of grade B milk might have 3.25% butterfat which would make it equal to most of the pasteurized milk now being sold. It would be sold at prices similar to and probably lower than present prices for pasteurized milk. The second type of grade B milk would have a lower butterfat content (2%) and would sell for a price lower than current prices of pasteurized milk. Pasteurizers would be given permission to remove or add butterfat in order to standardize all milk either to 3.25 or 2% butterfat. It has been estimated that this low fat milk could be sold for about 25 centavos per bottle less than present 3.25% pasteurized milk, making it competitive with present raw milk prices.

The advantages of following a pricing policy which differentiates the markets in this way are several. First, a higher quality product can be on the market for those people willing and able to pay for it. Secondly, by paying a higher farm price for grade A milk, producers have the incentive to invest money in order to produce a higher quality product. Thirdly, the marketing of a low priced, low fat milk enables a larger share of the low income consumers to buy an inexpensive, good quality pasteurized milk product. Thus, consumers who do not ordinarily buy milk are able to get a food product which still contains the essential proteins and minerals vital to their health.

The operating costs of a complete pasteurization program appear to be slightly less than the operating costs for the present milk distribution system. (See Tables 3.24 and 3.25.) This is possible only in the event that the collection and distribution systems are also reorganized. Total costs and average costs per liter are less in the complete pasteurization system than in the present system ($.36 vs. $.40 per liter). As demonstrated by Tables 3.24 and 3.25, total pasteurization costs go up, but cost per liter decreases. Assembly

and distribution costs are significantly less in the proposed system than in the present system. (Table 3.26.)

TABLE 3.24 TOTAL DAILY COSTS, PER UNIT COSTS OF THE PRESENT COLLECTION, PASTEURIZATION, AND DISTRIBUTION SYSTEM FOR FLUID MILK IN CALI, 1969

ITEM	Pesos					
	Raw Milk Truckers		Pasteurizers		Total System	
	Total Cost	Cost/ Liter	Total Cost	Cost/ Liter	Total Cost	Cost/ Liter
Collection	11,854	0.135	8,474	0.105	20,328	-
Pasteurizing	-	-	25,770	0.319	25,770	-
Distribution	15,390	0.163	6,413	0.092	21,803	-
TOTAL	27,244	0.298	40,657	0.516	67,901	0.402

SOURCE: PIMUR, Milk Study, 1969.

TABLE 3.25 TOTAL DAILY COSTS, PER UNIT COSTS OF THE RECOMMENDED COLLECTION, PASTEURIZATION AND DISTRIBUTION SYSTEM FOR FLUID MILK IN CALI, 1969 (PESOS)

ITEM	Pasteurizer Valle		Pasteurizer Cremex		Total System	
	Total Cost	Cost/ Liter	Total Cost	Cost/ Liter	Total Cost	Cost/ Liter
Collection	2,909	0.029	1,833	0.032	4,742	0.0296
Pasteurizing	24,784	0.243	14,395	0.250	39,179	0.2450
Distribution	9,079	0.089	5,077	0.088	14,157	0.0885
TOTAL	36,772	0.361	21,305	0.370	58,078	0.3631

SOURCE: PIMUR, Milk Study, 1969.

TABLE 3.26 NUMBER, SIZE, AND UTILIZATION OF VEHICLES IN THE PRESENT MARKETING SYSTEM COMPARED TO THE PROPOSED SYSTEM

ITEM	Present System				Proposed System			
	No. of Vehicles	Average Size Tons	Utilization of Capacity	Kms. Traveled	No. of Vehicles	Average Size in Tons	Utilization of Capacity	Kms. Traveled
Collection	165	1.8	67%	18,916	33	5.5	100	3,588
Distribution	228	1.4	74%	13,300	98	1.5	100	8,820

SOURCE: PIMUR, Milk Study, 1969

Milk distribution in the proposed system would provide the same amount of home delivered milk, roughly half of total consumption, as that found in the present system. The rest of the milk is delivered to retail outlets as in the existing system. Thus, no sacrifice of customer service is being made in the proposed system. The main reasons for the cost saving are a reduction in the

number of vehicles used, greater utilization of vehicle capacity, and a reduction in the number of kilometers traveled. (Table 3.26.) Thus, complete pasteurization is possible at lower cost only if the physical distribution system is concurrently reorganized. The reorganization is more feasible under the complete pasteurization plan than in the present system. As demonstrated by the tables, this reorganization consists mainly in redefining routes to eliminate cross-haul and duplication of routes making possible the use of larger vehicles.

Certainly it must be recognized that an assumption of 100% utilization of collection and distribution trucks may be high and reorganization of the collection and distribution system may not be immediately possible. Nevertheless, the foregoing does demonstrate that total collection, pasteurization and distribution costs potentially can be less than at present, even while improving milk quality significantly and stabilizing the market. Consumer prices under a regulated, all-pasteurized milk system should be less than present pasteurized milk prices though perhaps higher than present raw milk prices.

In the cost comparisons between the present system and the fully-pasteurized system, no account has been taken of possible adulteration of raw milk. Under the present system, raw milk prices are about 15% less than pasteurized prices. Thus, if adulteration of raw milk is as much as 15%, there is no real difference in price. Adulteration is difficult to estimate accurately, but some evidence exists which indicates that a 15% level of adulteration may not be an unreasonable estimate, especially in the dry season. If possible savings to consumers from eliminating adulteration are included, the full pasteurized system becomes considerably less expensive than the current one.

With the expected growth in demand in Cali (104% by 1979), pasteurizers may have to expand their capacity in the near future or new competition will enter the market. At least one of the pasteurizing plants has plans to expand in 1970.

Table 3.27 summarizes the immediate investment requirements for milk pasteurizers, assuming a complete changeover to pasteurized milk. Added bulk storage requirements would be two 20,000 liter tanks in one plant and one such tank in the second. The two plants would need about 320 square meters additional bottled milk storage space. Finally, each plant would require one additional bulk tank truck and two regular delivery trucks. The total investment for both plants would amount to only 2.9 million pesos. The major expense of transport equipment could probably be financed at low interest rates (5-8%) under the IFI-AID credit line for imported equipment. The pasteurizers should have little trouble in obtaining credit for the remaining investment.

TABLE 3.27 INVESTMENT REQUIRED IN MILK COLLECTION AND DISTRIBUTION UNDER PROPOSED MILK PROGRAM

In Plant Storage - Pasteurizers	Cost - Pesos
3 Bulk Tanks - Capacity each, 20,000 liters	$ 480,000
2 Bottled milk refrigerated storage rooms, 319.5 square meters total	401,175
Vehicles for Collection and Distribution:	
2 Insulated Bulk Tank Trucks, capacity each, 20,000 liters	1,328,700
4 Delivery trucks, capacity each, 5 tons	696,576
TOTAL	$2,906,451

SOURCE: PIMUR, Milk Study, 1969.

The anticipated benefits of following a complete pasteurization program will accrue to producers and consumers in the long run, only if the industry remains progressive and workably competitive. It is the responsibility of the public sector to see that the industry does act in the public interest. The recommended milk pasteurization plan places with the pasteurizers additional market power and additional responsibility for improving the industry. This additional responsibility can be advantageous if the industry is well regulated. It must be given incentives to act in the desired way rather than saddled with unnecessary restrictions inhibiting growth and progressiveness. A well-administered milk regulation office can maximize the desired results while minimizing the dangers which could develop from increased concentration in the industry.

In the event that it is not organizationally or politically feasible to make a rapid change to an all-pasteurized milk system, *it is recommended as a second alternative, that the office of milk regulation be established to control both pasteurized and raw milk distribution.* All aspects of the milk control program offered in the first alternative might be applied to pasteurized milk. Raw milk distribution would be permitted, but with more rigid sanitary requirements strictly enforced. Special efforts should be made to prevent raw milk adulteration, and public health agencies should attempt to educate consumers on the dangers of consuming raw milk. The office of milk regulation should also be given the authority to set and enforce raw milk prices.

It will be difficult to achieve rapid improvements in the production and distribution of milk following the second approach. The enforcement of price and sanitary regulations is more difficult when there are a large number of highly mobile raw milk dealers as compared to a system where all the milk flows through two or three pasteurizing plants. It has been suggested that some milk producers will probably prefer to sell to raw milk dealers, because

no accurate record is kept of the volume of milk sold. This has an advantage over selling to pasteurizers who are now required to keep accurate records of milk receipts by individual shippers. These records are available for review by income tax authorities.

Much of the cost advantage of shifting to a complete pasteurizing milk system accrues from a more efficient system of collecting milk from farms and distributing it to consumers. Without a complete change to pasteurization, the present system of collection and distribution will likely continue.

In order to complement either of the two alternative approaches offered above, *it is suggested that a milk producers' association be organized and that technical assistance for milk producers be increased.* The CVC already has a strong program in technical assistance to larger dairy farmers. It should be further expanded as should ICA's dairy extension program, with emphasis upon increasing production per cow through improved feeding of concentrates, forages, and pastures.

The benefits arising from the above changes will accrue to many. Consumers will benefit from more stable supplies of a higher quality, safer, more dependable product. The pasteurizing plants benefit from more stable supplies and increased sales of milk. The producers can benefit from more stable markets and remunerative prices enabling them to increase productivity and product quality. The market regulation will impose coordination and stability which will open the way to efficiency-improving actions or methods not feasible under the present system. These include more intensive production with accompanying real cost reductions, twice daily milking, bulk handling, farm refrigeration and less frequent pick-ups. Puerto Rico's experience with a similar milk market regulation has shown that indeed such benefits can be expected.[12] The net result is a more efficient, more progressive production-distribution system supplying higher quality milk products at equal or lower real prices.

If either of the alternative recommendations presented in this report are to be implemented, a highly competent milk marketing specialist should be engaged to assist in the further specification of the program. To be successful it will be important to enlist the support of the producers and pasteurizers as well as the existing regulatory agencies. This is a difficult task and should be carefully planned. However, potential benefits of this program suggest it should have a relatively high priority in the overall effort to improve the food system serving the city of Cali. If successful, this program could be expanded to include all the larger cities in the Cauca Valley. It might also serve as a model for milk market regulations in other Colombian cities.

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[12] Kelly M. Harrison, *op. cit.*

Fruits and Vegetables*

Introduction

The production-distribution systems for fruits and vegetables is more complex and is probably more difficult to rationalize than the sub-systems for other major commodity groups. In the Cali market, fruits and vegetables are a large, heterogeneous group of products including items as diverse as potatoes, tomatoes and papaya. Due to the biological characteristics of production, there are usually both seasonal and year-to-year variations in output associated with wide price fluctuations. Most of the fruits and vegetables are relatively perishable and as a result product losses in the marketing process are often substantial. These characteristics contribute to relatively high risks to both producers and intermediaries and to rather complex problems of organizing production and distribution.

According to the PIMUR consumer survey, fruits and vegetables are an important part of the Cali consumers diet, accounting for about 17% of total food expenditures among all income groups.[13]

Seven products were selected for special study. The main criterion for selection was the importance of the products in terms of expenditures by Cali consumers. A second criterion was to select products representative of the variety of fruits and vegetables available in the Cali market. The products selected were *plátano*, potatoes, tomatoes, oranges, pineapple, stem onions and cabbage. The expenditures on these products made up 61% of total consumer expenditures for all fruits and vegetables by the families in the PIMUR Market Basket Study (Table 3.28). *Plátano* and potatoes were the most important products accounting for more than 1/3 of total fruit and vegetable expenditures for the overall consumer sample and nearly 2/3's of the fruit and vegetable expenditures by low income families. Onions and cabbage are relatively unimportant and will not be discussed in detail in this summary report. (For more information on the marketing of these items see PIMUR Technical Report No. 15.)

High income families consume substantially larger quantities of fruits and vegetables per capita than do low income families (Table 3.29). This was true even for starchy products such as *plátano* and potatoes. This suggests that per capita demand for fruits and vegetables will continue to rise as income levels increase in the community.

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*Based upon PIMUR Technical Report No. 15, *Fruit and Vegetable Production and Distribution in the Cali Area*, 1969.

[13]See Table 2.4, Chapter 2 of this report.

TABLE 3.28 PERCENTAGE OF TOTAL FRUIT AND VEGETABLE EXPENDITURES ON SPECIFIC PRODUCTS, CALI, FEBRUARY, 1969

Products	Percent of Expenditure[a]
Vegetables	
Potatoes	17.59
Tomato	10.03
Yuca	5.77
Bulb Onions	4.05
Stem Onions	3.28
Cabbage	2.11
Carrots	2.13
Arracacha	1.45
Beets	1.31
Other Vegetables	4.62
Fruits	
Plátano	21.12
Oranges	4.60
Lulo	4.08
Banana	3.82
Pineapple	2.91
Mora	2.10
Mango	1.32
Limes	.85
Grapes	75
Other Fruits	6.11
TOTAL	100.00

[a]This expenditure pattern was based upon data collected during the month of February. Due to seasonality of production these patterns will vary during the year.
SOURCE: PIMUR, Market Basket Study, 1969.

TABLE 3.29 PER CAPITA MONTHLY CONSUMPTION OF SELECTED FRUITS AND VEGETABLES BY PER CAPITA INCOME GROUPINGS OF FAMILIES IN CALI, FEBRUARY, 1969

Product	Families Grouped By Per Capita Monthly Income				Average All Families
	$1-124	$125-240	$241-500	$501 or more	
	- - - - - - - - kilograms per capita - - - - - -				
Plátano	2.50	3.34	3.60	4.68	3.46
Potatoes	3.33	4.46	4.80	6.23	3.83
Fresh Tomatoes	0.37	0.62	0.56	1.71	0.77
Oranges	0.49	0.47	0.82	4.01	1.34
Pineapple	-	0.07	0.15	0.18	0.10
Stem Onions	0.30	0.36	0.41	0.53	0.40
Cabbage	0.01	0.01	0.01	0.03	0.01

SOURCE: PIMUR, Market Basket Study, 1969.

The Production and Distribution System

Some of the principal characteristics of the urban wholesale-retail distribution system for fruits and vegetables were described and analyzed in Chapter 2. The wholesaling function is centered in the Galeria Central Area. It was estimated that more than 450 fruit and vegetable wholesalers were operating in fixed locations in this area. The wholesaler's main function is to provide a linkage between the urban retailer and the country assembler. Most wholesalers handle small volumes of products and provide relatively few services to either buyers or sellers. There is a relatively high turnover of wholesalers with 50% of those interviewed having been in business less than two years.

The wholesaling activity in the Central Market Area takes place between 4:00 and 6:30 a.m. Stall operators from satellite markets and other retailers usually make daily visits to select their purchases and arrange for transportation to their places of business. The logistical problems of this operation were described in Chapter 2.

Cali consumers purchase more than one-half (52%) of their fruits and vegetables in the public markets from stall operators and street peddlers (*ambulantes*), (see Table 2.9 Chapter 2). Twenty-five percent of the fruit and vegetable purchases were made at personal service stores, (principally *tiendas* and *graneros*). The other 23% was bought at self-service stores or specialized retail outlets (see Chapter 2 of this report and PIMUR Technical Report No. 6 for detailed information on retailing functions).

According to wholesalers the variability in volume, quality and prices of fruits and vegetables were major problems in their operations. With a few exceptions, such as potatoes and tomatoes, there is little sorting and classifying of products at the farms or in assembly markets. Also, some products are poorly packaged and handled in transit. As a result there is much product sorting at the retail level by consumers in the urban markets with significant losses due to complete spoilage or reduced prices for low quality or damaged merchandise. These losses and price reductions contribute to the wide spreads between prices received by farmers and the prices paid by urban consumers.

The emphasis in this sub-sector study of fruits and vegetables was focused on the problems of coordinating production and assembly market activities with the demands of the urban market in Cali. Personal interview surveys were conducted with producers and assemblers in the areas identified as major supply sources for each of the seven selected commodities.[14] (Table 3.1.)

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[14]For survey methodology see Appendix A.

The production units for most fruits and vegetables are relatively small as compared to the grain and milk farms studied by PIMUR. The area devoted to products such as tomatoes, pineapple, onions and cabbage were very small reflecting the labor intensive nature of production and the need to diversify production enterprises due to high risks. With the exception of cabbage and onion farmers, a high percentage of the producers are land owners. (Table 3.30.)

A major problem in coordinating the fruit and vegetable sub-sectors is the large number of small-scale producers who are widely scattered geographically. This increases the costs of assembly and necessitates the existence of a large number of assemblers. Another major problem is the production seasonality which creates large fluctuations in both supply and prices in consumption centers. This seasonality is caused mainly by rainfall patterns. Additional price instability is caused by the difficulty of coordinating a market in which information is limited, production areas and producers are quite isolated, and where a large number of individuals are involved at every stage of the marketing system.

TABLE 3.30 SELECTED CHARACTERISTICS OF FRUIT AND VEGETABLE PRODUCERS WITHIN THE SUPPLY AREA OF CALI

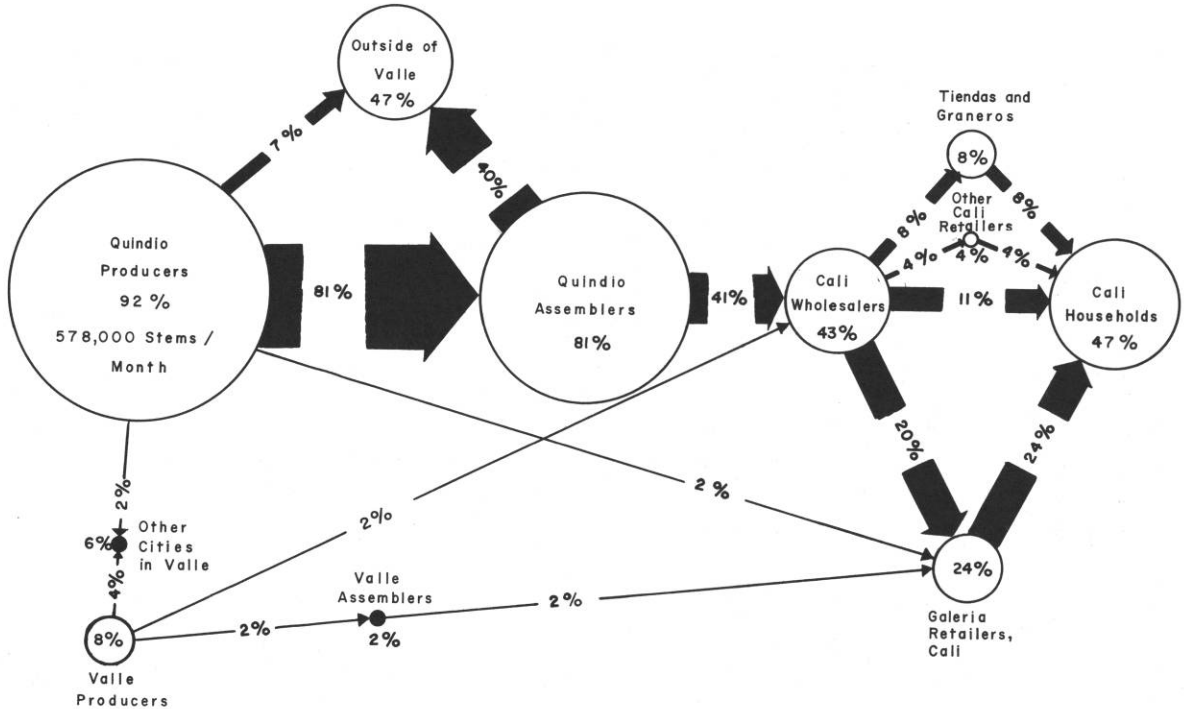
Commodity	No. of Farmers Interviewed[a]	Average Size of Farms (plazas)[b]	Area Devoted to Crop Being Studied (plazas)	Percent of Land Owners	Years of Education
Plátano	45	62.1	48.6[c]	93.3	5.9
Potatoes	33	57.9	27.1	88.0	-
Tomato	35	36.3	3.7	75.7	6.4
Oranges	34	74.6	2.6	94.0	7.0
Pineapple	30	31.6	8.2	90.3	5.4
Stem Onions	23	12.5	2.5	65.5	3.0
Cabbage	28	15.9	4.9	37.3	2.3

[a]See Table 3.1 for geographic location of production areas.

[b]One *plaza* contains 6400 square meters.

[c]Usually interplanted with coffee or cocoa.

Plátano - More than 90 percent of the plantain arriving in the Cali market is shipped from the coffee area in Quindio (about 200 kilometers from Cali). Small quantities are also supplied by nearby producers in southern Valle and northern Cauca. The flows of *plátano* from these areas toward Cali are shown in Figure 3.8. Specialized assemblers represent the main link in this channel between producers and wholesalers or retailers. The public markets are the most important retail outlets in Cali. There are an estimated 60 plantain assemblers in the Quindio area (Table 3.31). The volume handled by these assemblers averaged 8,458 bunches monthly in February, 1969. However, eleven



MARKET CHANNELS FOR PLATANOS, CALI, 1968

Fig.Nº 3.8

percent of the assemblers handle 35% of the total volume, while 45% handle only 9% of the volume. These assemblers are specialized in *plátano* and have been in business for many years (33% have been in business for more than 15 years).

TABLE 3.31. NUMBER AND SIZE OF PLATANO ASSEMBLERS IN QUINDIO, FEBRUARY, 1968

Volume of Stalks Monthly	Number of Assemblers	Percent of Assemblers	Total Volume Handled Monthly	Percent of Total Volume
Less than 200	7	11	4,060	1
200 - 1000	20	34	43,644	8
1000 - 3000	13	22	79,167	16
3000 - 7000	13	22	204,009	40
> 7000	7	11	176,604	35
TOTAL	60	100	507,484	100

SOURCE: PIMUR, Fruit and Vegetable Study, 1969.

Assemblers contact producers in the assembly centers where they negotiate sale of the product a day or so before it is to be picked up. The producer cuts the green *plátano* stalks (*racimos*); it will ripen during a period of 5 to 6 days. The assembler sends a truck to the farm to pick up the *plátano* for shipment to Cali. Producers usually sell to a small number of assemblers (one to three) whom they supply on a regular basis.

Seventy-eight percent of the assemblers in the Quindio area negotiate the sale of the product before making shipment. The transaction negotiation with Cali wholesalers is done by telephone, usually 3 to 4 days in advance of delivery. The assemblers usually arrange and pay for transport of the product. Since the product is shipped in truckload lots the sale may be negotiated with more than one wholesaler. Most assemblers sell for cash to wholesalers; only 12% sell on credit of 8 to 15 days.

At the time of the PIMUR study, the farm price in the Quindio area was $5.10 per *racimo*, while the retail price in Cali was about $15.10. The $10 margin was divided as follows: assembler 18%, wholesaler 54%, and retailer 28%.

The relatively low farm price for plantain can be explained in part by the complementary, by-product relationship of this product with coffee. The *plátano* is used to shade the coffee, and is harvested and sold as a secondary source of income. New coffee varieties and production systems will reduce the use of *plátano* as a protective shade for coffee, thus, future *plátano* production will probably shift toward more specialized, commercial operations.

There is relatively good coordination between Cali wholesalers and assemblers in Quindio. The assembly operation seems to be reasonably competitive with easy entry for new assemblers.

Wholesale margins seem relatively wide. This is due in part to product losses and relatively high physical handling costs. It seems likely that margins for the wholesale function can be reduced with improved facilities and less loading and unloading as the *plátano* moves through wholesale channels to satellite public markets and larger retail stores.

According to data from the Bank of the Republic, wholesale prices for plantain in Cali are seasonally high in May and December and low in January and August. Prices fluctuate within a range of 10% above and below the annual average. This is a relatively narrow range of price variation as compared to other fruits and vegetables.

Potatoes - Cali's main source of potatoes is Pasto in the state of Nariño, with smaller quantities coming from Manizales (Caldas), Tenerife (Valle), and Silvia (Cauca). (Figure 3.9.) Potato assemblers in urban centers and country buyers are the most important market outlets for producers. Potato assemblers are less specialized than plantain assemblers. Potatoes represent only about 60% of their sales; the rest coming from other vegetables and grains. There are an estimated 36 potato assemblers in the Pasto area whose average monthly volume is 260 tons; however, 8% of these assemblers handle 32% of the total volume.

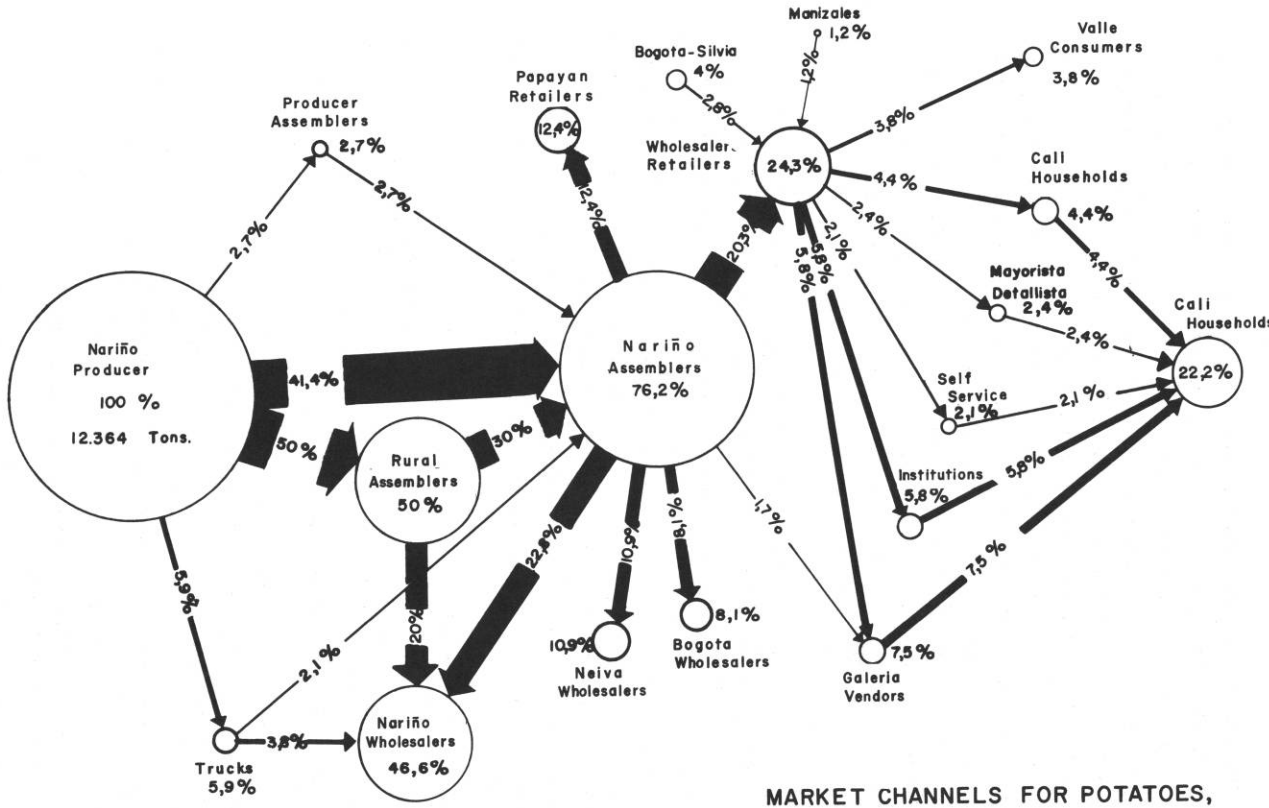
TABLE 3.32 NUMBER AND SIZE OF POTATO ASSEMBLERS IN NARINO, FEBRUARY, 1969

Tons/Month	Number of Assemblers	Percent of Assemblers	Total Volume Handled (tons)	Percent of Total Volume
Less than 150	15	42	1772	19
151 - 250	12	33	2316	24
251 - 600	6	17	2325	25
> 600	3	8	2964	32
TOTAL	36	100	9377	100

SOURCE: PIMUR, Fruit and Vegetable Study, 1969.

Most producers (75%) do some sorting and 92% sack the potatoes on the farm for sale to assemblers. Forty-two percent of the assemblers buy potatoes on the farm and pay transport to the assembly center; however, 25% of the assemblers buy from producers in the assembly centers and the producer pays the transport costs.

Assemblers negotiate the sale of potatoes with Cali wholesalers by telephone



MARKET CHANNELS FOR POTATOES, CALI, 1968

Fig. Nº 3.9

or by telegraph in which they reach agreement on prices, volumes and delivery dates. Assemblers usually pay transport to the wholesalers warehouse. Each Cali wholesaler generally has three to four assemblers in Nariño who supply him on a regular basis. Seventy-six percent of the wholesalers buy on credit, with an average of 9.6 days delay in final payment.

The price spread between producer and consumer is fairly large for potatoes. At the time of the PIMUR study the consumer price for a common variety like *Tocana* averaged $1160 a ton in Cali while the Nariño farm price averaged $686 per ton for a total price spread of $474 per ton. Of this total price spread 53% goes to the retailer, 25% to the wholesaler and 22% to the assembler. The price spread must also be wide enough to cover spoilage which can be high in a perishable crop like potatoes. Most of the spoilage loss is realized by the retailer who buys bags of potatoes that have been unopened since leaving the farm.

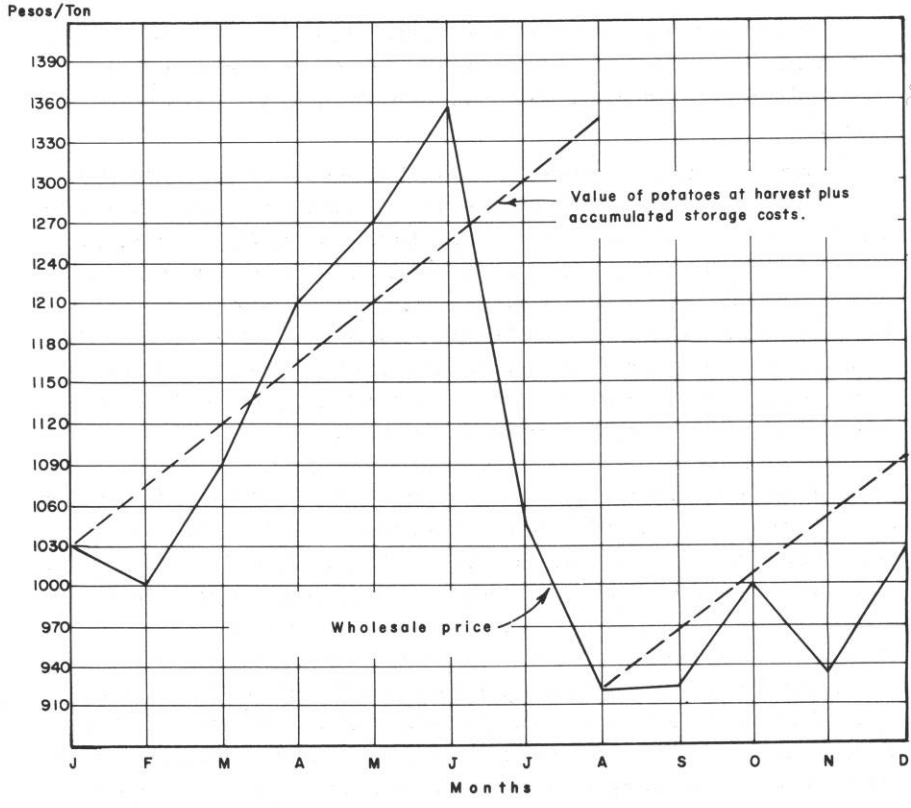
Figure 3.10 shows the wide seasonal fluctuations in wholesale prices of potatoes in Cali, based upon data for 1963 through 1968. Nariño producers harvest two crops each year, the largest in August and September and a second much smaller crop in January and February.

The cost of storing potatoes in Nariño has been estimated to be about $40 per month per ton (Table 3.33). Based upon these costs and the 1963-68 average wholesale price movement in Cali it would not have been profitable to store potatoes during the August to December period. However, it would have been profitable to store from the January - February period into April - June period. See Figure 3.10.

TABLE 3.33 ESTIMATED MONTHLY STORAGE COSTS PER TON OF POTATOES IN PASTO, NARIÑO, 1969

Item	Monthly Cost Per Ton
Depreciation on warehouse estimated to cost $32,200 at 10% annually	2.50
Guarding, upkeep and care of warehouse	1.50
Interest charges on building at 14% annually	3.87
Handling, sorting and application of fungicides on potatoes	10.50
Value of potatoes rejected in sorting, estimated at 31 kilos per ton	2.45
Potato loss due to shrinkage and damage at 1% monthly	7.90
Interest cost of holding one ton of potatoes at $790 per ton at 1.5% monthly	11.85
TOTAL	$40.57

SOURCE: Basis for these data estimates is drawn from study by Daniel Díaz Delgado, *Almacenamiento de Papa en Silos Semi-Subterráneos* (Instituto de Investigaciones Tecnológicas, Bogotá, D. E., Colombia, 1963), pp. 48 and 70.



Source: Banco de la Republica, Economic Studies Sections, 1969

MONTHLY AVERAGE WHOLESALE PRICES FOR TUQUERRERREÑA POTATOES, CALI, 1963-68

Fig. Nº 3.10

Further study should investigate the possibilities of lower cost storage facilities. Also, there should be efforts to reduce the seasonality of production through new varieties, changes in cultural practices, and credit policy.[15]

Tomatoes - Tomato production for the Cali market is located in the flat area of the Cauca Valley. The marketing channels for tomatoes are divided into processing tomatoes (25% of production) and fresh tomatoes (75% of production). (Figure 3.11.) Processed tomatoes are purchased in about equal proportions directly from producers or from producer cooperatives. Assemblers are the most important buyers of fresh tomatoes with a smaller volume moving directly to wholesalers. Producers usually do not sell tomatoes directly to retailers as they do some fruit and vegetable crops. The public markets handle about two-thirds of the fresh tomatoes purchased by Cali consumers.

The market for processing tomatoes is organized by the processors who contract production directly with producers and through COAGROVALLE (Cooperativa de Agricultores del Norte del Valle). The contract with COAGROVALLE specifies prices, quantities (plus or minus 10%) and the time at which the seeding should be done. COAGROVALLE delivers the product to the processing plant. Production is concentrated during certain periods of the year, but prices are stable. Production is also concentrated geographically in the Roldanillo area of Valle.

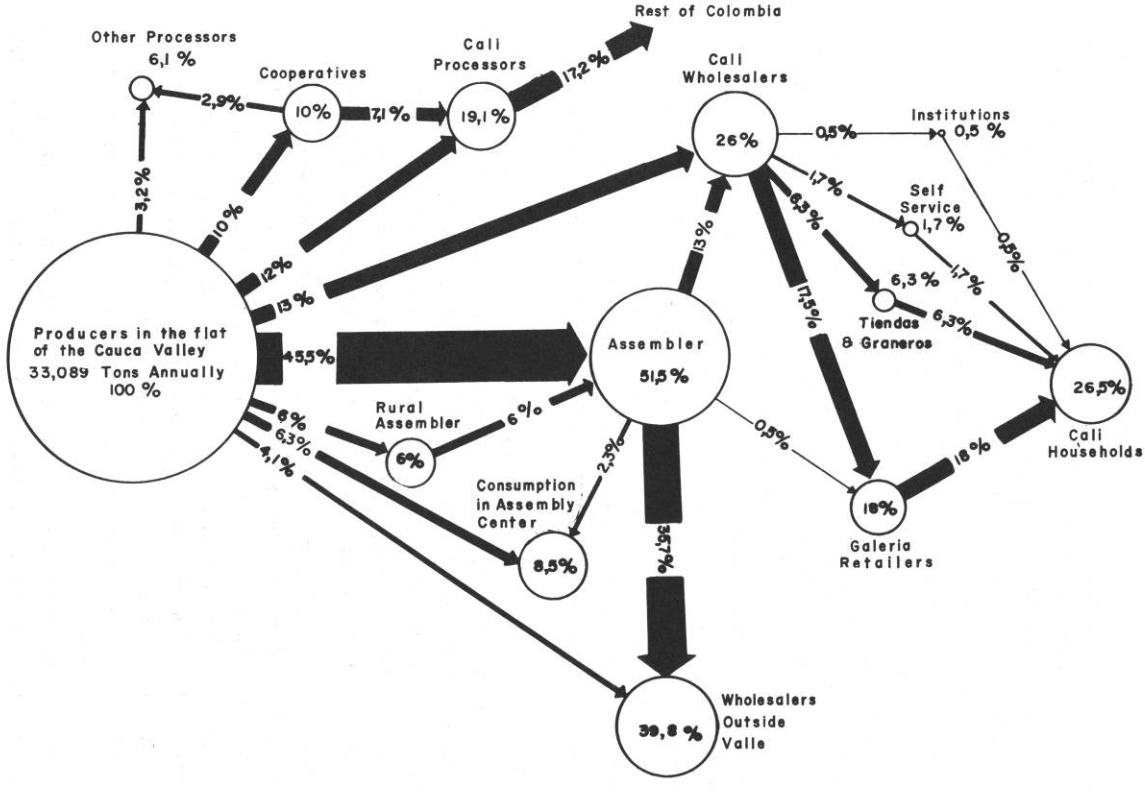
Tomatoes grown for fresh consumption are of different varieties and are produced and marketed through a separate system from that of processing tomatoes. There are many assemblers and producers who are geographically dispersed throughout the Cauca Valley making effective coordination difficult. There were an estimated 33 tomato assemblers in Valle at the time of this study. They have been in business an average of nearly 8 years, with tomatoes accounting for 90% of their sales. The average volume of tomatoes per assembler was about 43 tons monthly in 1968. However, 15% of the assemblers handle 61% of the total volume. (Table 3.34.)

TABLE 3.34 NUMBER AND SIZE OF TOMATO ASSEMBLERS IN THE CAUCA VALLEY, FEBRUARY, 1969

Type of Assembler	Number of Assemblers	Percent of Assemblers	Total Volume Handled Tons Monthly	Percent of Total Volume
Large	5	15	864	61
Small	28	85	556	39
TOTAL	33	100	1420	100

SOURCE: PIMUR, Fruit and Vegetable Study, 1969.

[15]Chris Andrew, *Improving Performance in the Potato Production Distribution System in Colombia*, unpublished Ph.D. thesis, Michigan State University, 1969.



MARKET CHANNELS FOR TOMATOES,
CALI, 1968

Fig. Nº 3.11

Nearly all (96%) tomato producers do their own harvesting, classifying and packaging. Forty-four percent of producers pay transport costs to the assembly centers, while 56% of assemblers pay this cost. All tomato assemblers operate from some type of warehouse in the assembly centers. Ninety-four percent rent the warehouses, while 6% own their facilities. The warehouses average 58 square meters per assembler. The main assembly centers for tomatoes are Palmira and Tuluá, with Monday, Wednesday and Friday as the busiest days of the week. Seventy-eight percent of the assemblers sell tomatoes to wholesalers for cash in the assembly centers such as Palmira and Tuluá.

Price and production instability seem to be major problems affecting the tomato production-distribution system. Wholesale prices in 1967 for Manalucio tomatoes in Cali varied from a low of $1.21 per kilo in April to a high of $3.31 per kilo in March.[16] Prices are generally low in January, February and May, and high in March, October and November. The price movements are related to the seasonal variations in production, which could probably be stabilized, because tomatoes can be grown all year long in the Cauca Valley. It is, however, more difficult to plant in the dry season because irrigation is essential and disease and pest control is more difficult.

There are sometimes sharp weekly and daily fluctuations in tomato prices because of extreme perishability and the lack of good market information to coordinate shipments.

The consumer-producer price spread for fresh market tomatoes was quite wide. At the time of the study consumer prices were estimated at $3,000 per ton of Manalucio tomatoes and the farm price at $1,520 per ton for a total price spread of $1,480 per ton. This margin was divided as follows: retail 54%; wholesale 26%; and assembler 20%. Losses due to spoilage were estimated to be 16 to 21% of the total volume passing through wholesale-retail channels.

Oranges - The main supply area for oranges is the geographic area of the Cauca Valley and the mountainous areas near Pereira and Armenia during certain seasons of the year. The marketing of oranges is divided into two separate distribution channels (Figure 3.12). The most direct link between producers and consumers has been organized by two producer groups (Inverpool and Citricos del Valle). They buy from their members and sell directly to retailers and consumers. All other producers sell either to assemblers or rural buyers who in turn sell to assemblers.

Ninety-six percent of the orange production is on many small, widely scattered farms throughout the Cauca Valley area. Large numbers of small-scale

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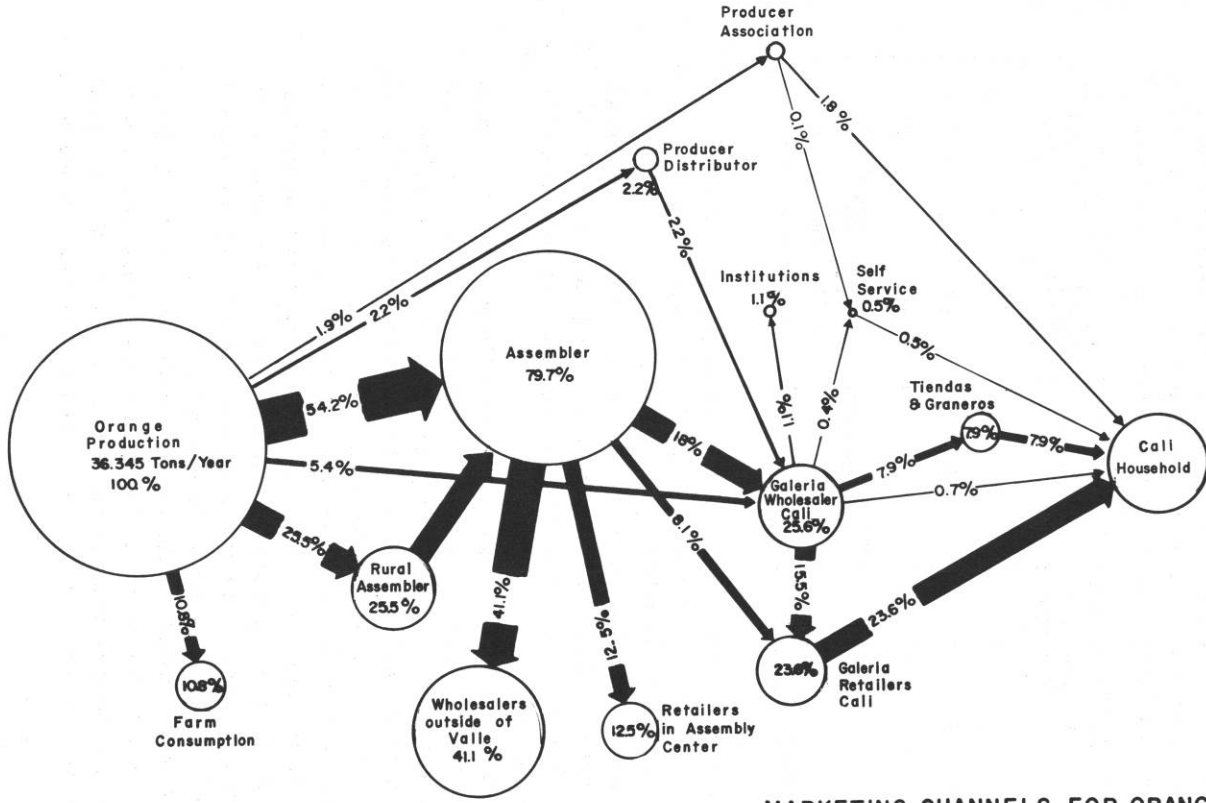
[16] Banco de la República, Departamento de Investigaciones Económicas, (Cali, 1969).



MARKETING CHANNELS FOR ORANGES, CALI, 1968

Fig. Nº 3.12

assemblers go from farm to farm assembling the product. They also assemble other products on a seasonal basis. These assemblers have been in business an average of 9 years and handled an average of 33.8 tons of oranges monthly in 1968. Over half the total volume (56%) is handled by 14% of the assemblers.

TABLE 3.35 NUMBER AND SIZE OF ORANGE ASSEMBLERS IN THE CAUCA VALLEY, 1969

Tons/Month	Number of Assemblers	Percent of Assemblers	Total Volume Handled Tons/Month	Percent of Total Volume
Less than 40	12	16	24	1
40 - 200	31	40	292	11
201 - 600	23	30	830	32
> 600	11	14	1458	56
TOTAL	77	100	2604	100

SOURCE: PIMUR, Fruit and Vegetable Study, 1969.

Seventy-one percent of the assemblers buy the product on the farm. In addition, 76% bring sacks for packaging and 88% also provide personnel for harvesting, packaging and classifying the production. Nearly all (97%) also pay cash for the product. Most assemblers (82%) pay transport from the farm to assembly centers, and 65% pay transport to the consumption center. Truck transport is used by 41% of assemblers. Pickups and buses are also used by the small assemblers.

The consumer price for common oranges was estimated at $1030 per ton and the farm price at $310 for a total price spread of $720 per ton. This margin was divided as follows: assembler 26%; wholesaler 19%; and retailer 55%.

The prices of common oranges, like most of the fruit and vegetable crops studied, fluctuate considerably during the year. The Cali wholesale prices for oranges averaged $60 per sack of 62.5 kilos in 1968 but varied from a low of $40 in January to a high of $100 in March. They averaged about $50 from June through August and then began to increase again.[17] These price fluctuations seem to be primarily due to the production cycle for oranges caused by the variations in rainfall during the wet and dry seasons.

The present commercial production and distribution is handled by two companies (Inverpool and Citricos del Valle), both of which have large commercial producers as partners or owners of the organization. Inverpool buys oranges at a fixed price delivered to the packing station at Palmira. The oranges are

[17]Data are from Banco de la República, Seccional Cali, Division de Estadisticos Economicos.

washed, waxed, classified by size, and packed into paper cartons of 14 kilograms for delivery to consumers in high-income areas of Cali. Small oranges are sold to wholesalers in the *galeria* area. Citricos del Valle classifies and packs the oranges in wooden boxes for sale to retail and institutional outlets. The small oranges are sold in the *galerias*. A most important characteristic of this part of the marketing channel is the vertically integrated nature of the operations which has linked together large-scale commercial production with large-scale distribution.

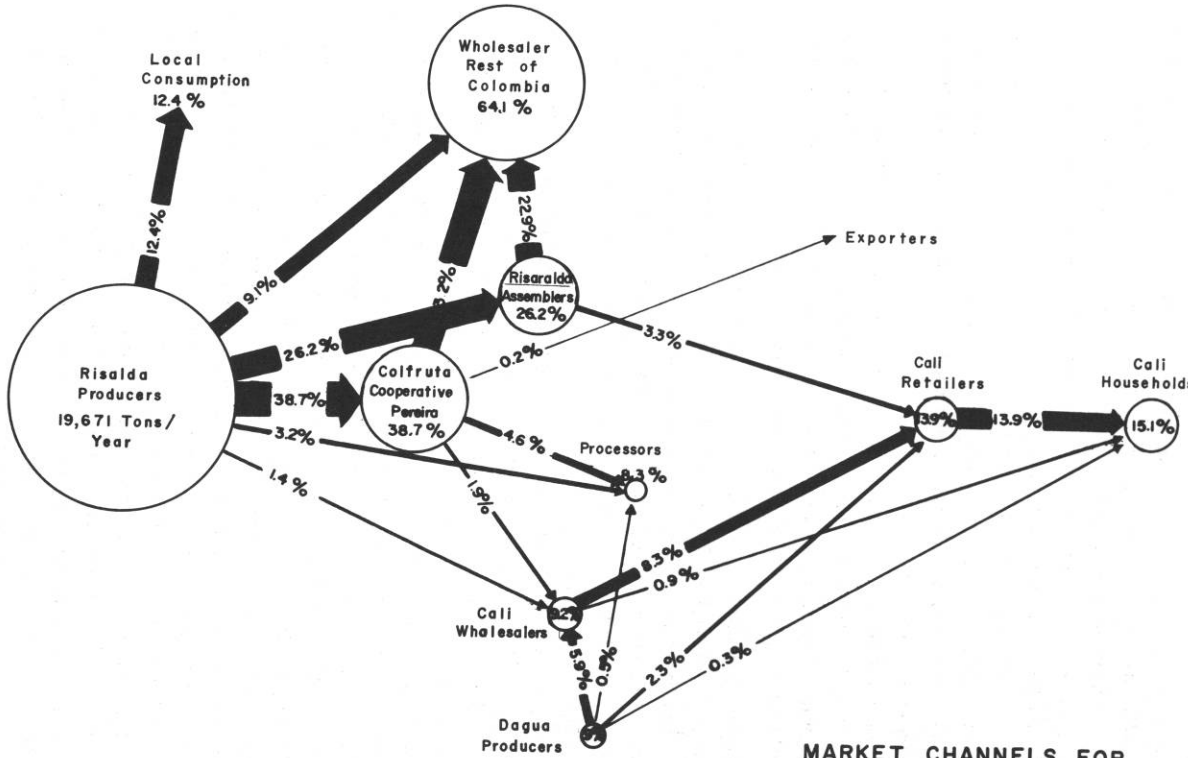
Quality control among the commercial firms seems to be much better than for the traditional firms. The commercial firms, using improved varieties on irrigated farms, have oranges with a much higher juice content than the common oranges grown on non-irrigated farms.

The commercial firms can also better coordinate their production with the demands of the market through varietal selection and irrigation. Neither production nor prices fluctuate as much seasonally as the traditional production which closely follows the rainfall patterns of the Valley.

Pineapple - Pineapple comes to Cali from two main areas -- Dagua (Valle), and Pereira (Risaralda), the latter providing about 90% of the volume. (Figure 3.13.) No assemblers were found in the Dagua area. Because of its proximity to Cali, the producers bring the product to Cali themselves and sell it to wholesalers or retailers. Most producers come by bus (*chiva*) but they also use small trucks or pickups.

The Risaralda area has only recently become an important pineapple producing region. Coffee is the principal crop in this area but more emphasis has now been given to pineapple and other crops as part of the diversification program for the entire coffee zone.

In Risaralda the most important pineapple assembler is COLFRUTAS (a pineapple growers' cooperative financed originally by Caja Agraria). Only 7 other pineapple assemblers were found in the area. Among the producers interviewed, 48% belong to the cooperative, and they sell over half their pineapple production to the cooperative. The producer delivers the pineapple to a COLFRUTAS warehouse and three days later receives payment. COLFRUTAS sorts the product by size and variety for later sale to consumption centers. COLFRUTAS contracts a part of the production to processing firms and wholesalers in other parts of Colombia. It has also exported some pineapple to the U.S. The main problem faced by COLFRUTAS is a lack of production, which it is trying to resolve with additional financing from the Caja Agraria. Since the existing production is not adequate for domestic markets, additional production can be fomented in order to first meet the domestic needs and then explore the potential for exporting pineapple on a continuing basis.



MARKET CHANNELS FOR PINEAPPLE, CALI, 1968

Fig. Nº · 3.13

Pineapple prices appeared to be slightly more stable seasonally than for some of the fruits and vegetables studied. Cali wholesalers reported an average sales price of $76 per sack of 62.5 kilos in 1968. The lowest price at which they reported selling was $57 per sack while the highest price at which they sold was $95 per sack.

The consumer-producer price spread for pineapple, like most of the fruits and vegetables, is quite wide. The consumer price averaged about $89.60 per sack at the time of the study and the producer price in Risaralda averaged $53.70 per sack. The price spread of $35.90 is divided as follows: assembler 26%; wholesaler 36%; and retailer 38%. Improving production and marketing of pineapple in the Dagua area seems necessary if this area is to compete successfully with the Risaralda area. Since Dagua is within the INCORA Project No. 1 it would be possible to organize a "Colfruta" type operation to modernize pineapple production and marketing in that area.

Conclusions and Recommendations

The fruit and vegetable crops analyzed in this report exhibit a greater diversity of problems than those revealed for any of the other commodity groups studied. The many different fruit and vegetable products consumed in Cali come from several different geographic areas. Each fruit and vegetable crop has its own unique characteristics which restrict the geographic area in which it can be grown. Some of the areas studied have flat, well drained, fertile land which can produce many different crops, while others have less fertile, mountainous land with limited production alternatives.

There are large numbers of small farmers with little education earning no more than a "subsistence" living in the production of fruit and vegetable crops. Because the farms are geographically scattered and produce small quantities, the costs of marketing are high. The utilization of technical farm inputs (*i.e.*, improved seeds, fertilizers, pesticides, etc.) varies widely between products and among farms for the same product. Only two of the commodities considered (oranges and pineapple) have a rapidly developing commercial segment at the present time. Even for these commodities, most of the production still comes from smaller, more traditional farms.

The assembly system relating to this production system has many of the same characteristics. There are large numbers of small firms owned and operated by individuals primarily dependent upon food marketing for their livelihood. The firms tend to be competitive even though a small percentage frequently handles most of the total volume of goods moving through the system.

For each of the products studied there exists a traditional marketing system which handles most of the volume moving to Cali. A modern marketing

channel handling smaller volumes with fewer but more highly coordinated firms is emerging for some products such as oranges, pineapple and tomatoes.

The marketing channels, especially the traditional channels, are not well coordinated at the present time. Fairly wide price fluctuations characterize all of the commodities studied with the exception of tomato processing. Price variations combined with variations in production due to environmental and technical factors increase the production and marketing risks confronting producers.

The capital investment required in fruit and vegetable marketing is low in the traditional marketing channels. The facilities used in assembly centers are very inexpensive but adequate for existing needs. Because of small-scale production and distribution, widely scattered production, the large number of assemblers involved, and the rudimentary handling methods, it is doubtful that assembly centers utilizing improved machinery and equipment are immediately practical for most of the fruits and vegetables.

Quality control and lack of incentive to improve quality are major problems in the fruit and vegetable sector. The differences in the quality of oranges is a case in point. The commercial orange producers are using improved varieties grown on irrigated farms. The traditional orange producers use native varieties without irrigation and leave the oranges on the tree until the assembler comes along to harvest them. In the former case, the oranges are sorted and packaged and have a high juice content. The oranges from traditional sources are largely ungraded and highly variable in quantity and quality of juice. Thus, poor handling and management practices in both production and marketing has resulted in variable but generally poor quality product.

The earlier analysis has already indicated that fairly wide price spreads from producer to consumer were found for all the fruit and vegetable crops studied. The price spreads shown in Table 3.36 tend to bear this out. These price spreads tend to be higher at all levels in the marketing channel than those observed for any of the other products studied. Using a main channel for fruits and vegetables such as the assembler, wholesaler, plaza market flow as an example in order to determine a total price spread , it becomes evident that the marketing system absorbs half or more of the consumer's cost for most of these commodities. Several factors contribute to the large price spreads. The commodities are generally very perishable, so price mark-ups must be wide enough to cover both the physical product loss due to spoilage and handling as well as the value loss due to quality deterioration. (Some losses for the fruits and vegetables studied are shown in Table 4.23 of the Packaging section of Chapter 4). The small-scale, widely scattered production units combined with a small-scale distribution system increases the cost of marketing, especially handling and transport costs for these products.

TABLE 3.36 PRICE SPREADS FOR SELECTED FRESH FRUITS AND VEGETABLES IN CALI DURING FEBRUARY, 1969

Product	Assembler	Wholesaler	Plaza Markets	Self-Service	*Ambulantes*	Neighborhood
Plátano	26%	17%	22%	19%	44%	23%
Potatoes	13%	10%	22%	20%	21%	24%
Fresh Tomatoes	15%	18%	21%	25%	28%	20%
Oranges	37%	19%	35%	30%	43%	31%
Pineapple	15%	9%[a]	13%	20%	19%	-

[a]Contains only five observations.
SOURCE: PIMUR, Retail, Wholesale and Fruit and Vegetable Studies, 1969.

Future demand for fruit and vegetable crops will likely be strong as population and income grow. Demand for some products like oranges and fresh tomatoes will likely grow rapidly because of their fairly high income elasticities of demand.

If this demand is to be satisfied, a more highly organized production and marketing system is needed to assure stable supplies of a high quality product at the lowest possible price. Furthermore, it is probable that an improved production-distribution system will foment additional increases in demand beyond that projected from population and income growth. Failure to improve the system will mean higher cost, lower quality products and an eventual loss of consumer markets to other products where production and distribution become more efficient.

1. *It is recommended that government policy for the fruit and vegetable sub-sector be revised, keeping in mind three criteria: 1) improving farm productivity; 2) lowering assembly and distribution costs; and 3) stabilizing seasonal price and production patterns.*

An integrated program using credit policy as well as research and extension programs appears necessary to deal adequately with the complex set of problems affecting the fruit and vegetable industry. The cooperation of several different Colombian institutions such as ICA, Caja Agraria and INCORA is needed to deal with the interrelated aspects of research extension and government policy if solutions to the problems presented above are to be found.

a) *It is recommended that production credit be oriented toward the creation of production zones.*

The creation of production zones for fruits and vegetables should be

advantageous in several ways. If production can be concentrated in areas which have the greatest comparative advantage, production costs can be reduced. By concentrating production in certain zones, marketing costs, especially transport and handling, can also be reduced. More commercial firms handling larger volumes at a lower per unit cost should also develop in the longer run. The export potential from these zones is considerably improved by increasing the availability of large commercial supplies within a relatively small area.

Naturally these production zones should be created only after studies of the economic and ecological conditions in each area. An interdisciplinary research team consisting of professionals from ICA and/or Caja Agraria should evaluate the agricultural potential of each area. A tentative list of where production zones could be established for selected crops is shown in Table 3.37. These should not be considered as definitive but rather as areas in which a detailed study could be made. Once the study indicates the production to be fomented in each area, the Caja Agraria can orient its credit policy to create production zones. A supervised credit program might be adopted in each area, including an agronomist or agronomists specialized in fruit and vegetable production who would advise all producers in the zone on improved methods of production and marketing.

TABLE 3.37 SUGGESTED PRODUCTION ZONES WITHIN THE SUPPLY AREA OF CALI, 1969

Product	Zones Which Credit Should Be Increased
Tomatoes	Roldanillo and central part of Valle including Guacari, Palmira, Yotoco, Vijes and Yumbo
Platano	State of Quindio, northern part of Valle (Cordillera Central)
Pineapple	Dagua and Risaralda

SOURCE: PIMUR, Fruit and Vegetable Study, 1969.

Either the Caja Agraria or INCORA could work to establish production and marketing cooperatives or other forms of organization to facilitate both the marketing or agricultural products and the sale of farm inputs. Some of these have already been established, such as the marketing cooperative (COAGROVALLE) located in Roldanillo. Where these cooperatives exist production credit should be channeled through the cooperative to facilitate input sales and marketing of the producer members' crops.

In the longer run, assembly centers may be feasible in cities like Palmira for fruits and vegetables. The assembly centers should be built only after the wholesale supply center for Cali has become operational. The wholesale center may create additional demands for marketing services upon assembly areas, making the construction of assembly centers feasible at that time.

The cooperatives and/or assembly centers should strive to improve their linkages with large wholesalers in the major urban centers like Cali, Bogotá and Medellin. Improving information flows may be one way of strengthening these ties. Contracting with urban wholesalers may be a desirable way of guaranteeing produce markets from the area. Other means, requiring more resources, would be whole or jointly owned wholesale facilities in the urban markets. Contracting directly with retail store chains having their own wholesale facilities may be another way of assuring stable markets for the production in each zone.

b) *It is recommended that careful analysis and consideration be given to the creation of a line of credit for fruit and vegetable production similar in nature to the Fondo Financiero Agrario.*

This plan, similar to that already being used by commercial grain producers in Valle, appears necessary to encourage the development of commercial production based upon greater use of modern inputs. All borrowers under such a plan would be permitted to hire an agronomist of their choice to advise them on technical problems of production and marketing. He could advise on which improved crop variety best suited for a farm, selection and application of fertilizers, pesticides and insecticides, as well as on harvesting and marketing the product. Other factors to be considered in this line of credit are the minimum size of planting to be financed and the terms of the loan.

A suggested minimum size to be financed, for selected crops, is shown in Table 3.38. Some crops, like tomatoes, are very labor-intensive in nature, so the minimum size may be quite small. On the other hand, certain crops like plantain are interplanted with coffee, so the minimum size should be much larger. The minimum sizes suggested here will still permit small producers to grow 2 to 3 different fruit and vegetable crops during the year, since the production cycle for most of these crops is quite short.

The financing must also be adapted to production cycles which vary considerably among the fruit and vegetable crops. The length of the loan can be quite short, as in the case of tomatoes, or it may have to be quite long, as in the case of oranges. Long-term financing is necessary to promote the development of commercial orange groves because new plantings require five years before beginning production.

2. *It is recommended that an extension agent specialized in fruit and vegetable production and marketing be included in the ICA regional office for Cali.*

This specialist would work closely with producers and assemblers of fruits and vegetables, giving special emphasis to the improvement of handling methods in marketing and to variety and cultural practices to improve quality. New

TABLE 3.38 SUGGESTED TERMS AND REQUIREMENTS ON WHICH FRUIT AND VEGETABLE CREDIT SHOULD BE MADE AVAILABLE

Product	Minimum Size of Production Unit (Plaza Harvested Annually[a])	Required Length of the Loan in Months
Processing tomatoes	2	6
Fresh tomatoes	2	8
Cabbage	2	6
Potatoes	5	7
Onions	2	6
For new plantings of:		
Plátano in Quindio	70[b]	48
Oranges	10	96
Pineapple	3	30

[a]The suggested minimum size to be financed for these crops is closely related to the average found on surveyed farms. In some cases the minimum size is less than the average found on surveyed farms. (See Table 3.30.)

[b]The minimum size for *plátano* recognizes the fact that it is interplanted with coffee. The minimum financeable size can be reduced significantly if *plátano* is not inter-planted with coffee.

SOURCE: PIMUR, Fruit and Vegetable Study, 1969.

handling and packaging methods could both reduce the physical losses incurred in marketing, as well as improve the handling efficiency of those employed in the distribution system. The use of improved varieties and better cultural practices can improve and reduce variability in product quality.

Increased use of packaging can contribute to an improvement in the food distribution system. The primary need is for inexpensive farm-to-consumer containers for fruits and vegetables, protecting them from deterioration as they pass through the distribution system. Firms in the packaging industries do have the technical capacity to design and produce the needed packages. It is recommended that an extension worker be assigned to work with the packaging firms, producers, wholesalers, and retailers to help facilitate the adoption of economically viable packages. The agent would be responsible for showing producers and distributors the advantages in adopting a protective package. He would have to help buyers at each stage of the channel to evaluate the benefits and convince them to pay for it in order to provide the necessary incentives. Working with groups he could insure a sufficient volume for giving an adequate demonstration on package feasibility.

Whenever possible the ICA specialist might work with the agronomists in each production area to organize local marketing associations or cooperatives. This specialist should work with INCORA and/or Caja Agraria cooperatives in the production zones to improve their methods of operation.

3. *It is recommended that IDEMA intensify efforts to develop useful classification and grading guides for selected fruits and vegetables.*

Top priority should be given to developing a classification system for tomatoes and potatoes. A basic reason for this priority is that both commodities are included in the price information program which necessitates a rudimentary classification system. Another reason is that both these products already have an informal grading system accepted by the trade. Thus, development of grades acceptable to the trade and satisfactory for a price information program are feasible for these two products. The use of a grading system facilitates the exchange of goods by providing a standardized terminology for all trading in a particular commodity. Transaction costs can be reduced since physical inspection prior to purchase is no longer necessary. Tomato wholesalers, for example, personally inspect tomatoes in the assembly centers before making a purchase. A grading system would permit order buying from Cali by telephone, thereby reducing time and transport costs of tomato wholesalers.

4. *It is recommended that the current IDEMA market information system be strengthened to include some fruits and vegetables, beginning initially in the Cauca Valley.* (For a detailed discussion of this recommendation, see the Communication section of Chapter 6.)

The costs of implementing the above recommendations for both the public and private sector would be small especially if existing agencies shifted program priorities. The major changes suggested concern credit policy and require little or no additional funds. The largest expenditure would be for financing the agro-economic studies in each production zone. The technical assistance can be financed by charging a slightly higher interest rate on loans to producers. The cost of placing a fruit and vegetable extension specialist in Cali is small since ICA already has a regional office in Cali.

The major benefits to be expected from the implementation of the above recommendations will be lower consumer prices for fruits and vegetables, more stable prices and supply, and better quality products. Price reductions for these crops can be achieved in at least three different ways. First, production concentration in areas with the greatest comparative advantage will make possible lower production costs. Second, the concentration of production in certain areas will reduce the costs of assembly and distribution, making a reduction in marketing margins possible. Third, farm productivity can be increased through more widespread use of modern technical farm inputs.

To the extent that producers can be encouraged to plant fruit and vegetable crops during the entire year, more stable prices and production will benefit both producers and consumers. Greater stability in prices and production will increase the availability and consumption of these products.

Improved production and marketing practices will make higher quality products available to consumers. A better quality product will be produced on the farms and improved handling methods in the marketing system will maintain

that quality until it reaches the consumer. Consumption could therefore expand rapidly not only as a result of population and per capita income growth but also due to improvements within the production-distribution system for fruits and vegetables.

Grains*

Introduction

The Cauca Valley is a major surplus grain producing area exporting corn, beans, soybeans and sorghum to other regions in Colombia. Rice is also produced in the Valley, but additional supplies are imported from other areas to satisfy local demand. The other major cultivated crops competing with grains for the land use in the Valley are sugar cane and cotton.

The PIMUR grains study was focused upon the commercial production and marketing system in the flat part of the Cauca Valley in Valle. Two grain subsystems were delineated, one focusing on rice and the other on corn, beans, soybeans and sorghum. Detailed interviews were conducted with 31 rice farmers and 263 farmers producing the other grain crops. Information was also gathered from rice mills, grain assemblers, processors and storage agencies.

Consumption

Cali consumers spent 13.5% of their total food budget for grains. As a product group, grains rank behind meat, processed foods and fruits and vegetables in terms of consumption. (See Chapter 2.) Among the grains, rice consumption is four times as important as corn in grain form. This does not include processed corn products (Table 3.39).

TABLE 3.39 PER CAPITA MONTHLY CONSUMPTION OF SELECTED GRAINS BY PER CAPITA MONTHLY INCOME, CALI, FEBRUARY, 1969

Per Capita Monthly Income	Per Capita Monthly Consumption (Kilos)			Income expenditure elasticity of demand		
	Rice	Corn	Beans	Rice	Corn	Beans
1 - 125	2.00	0.69	0.43			
				0.48	0.08	0.23
126 - 240	2.73	0.73	0.50			
				0.24	0.13	0.18
241 - 500	3.24	0.79	0.56			
				0.04	-0.28	0.19
501 or more	3.39	0.59	0.68			
AVERAGE	2.80	0.70	0.53			

SOURCE: PIMUR, Consumer Study, 1969

*Based upon PIMUR Technical Report No. 11, *Grain Production and Marketing in the Cauca Valley*, 1969.

Rice consumption increases with levels of family income, whereas corn consumption increases very little and actually declines at the upper income levels (Table 3.39). Bean consumption increases moderately as incomes rise. These relationships indicate that, as the income level of the community rises, corn (as grain) consumption per capita remains stable or declines, while rice and bean consumption continues to rise.

A substantial proportion of Valle corn, soybeans and sorghum goes into processed products or feed concentrates for livestock. Hence, the above consumption data underestimate the overall importance of these crops in the total food system. Also, the higher income elasticities of demand for livestock products and cooking oils point toward increasing per capita demand for products derived from grains. (See Table 2.5, Chapter 2.)

Production

Over the past decade, the cultivated area in the flat part of the Cauca Valley has increased as pastures have been converted to crop land. Most of the increase has been in sugar cane, corn and soybeans, although cotton took over a large area during the 1959-64 period and then declined sharply. (Table 3.40.) Sorghum entered as a new crop in 1963. Rice acreage has trended irregularly downward.

Most of the grain (corn, soybeans, beans, sorghum) is produced on farms cultivating more than 50 hectares. Forty-five percent of the 263 grain farms surveyed used 50 hectares or more for cultivated crops (Table 3.41). (The survey sampling procedure eliminated all farms using less than 3 hectares in at least one of the grain crops.)

TABLE 3.40 TRENDS IN AREA SEEDED TO SELECTED CROPS IN THE FLAT PART OF THE CAUCA VALLEY, 1958-68

Year	HECTARES PLANTED[a]						
	Sugar Cane	Corn	Soybeans	Sorghum	Cotton	Beans	Rice
1958	78,240	7,820	6,210	-	4,370	15,360	14,000
1959	79,200	19,200	7,700	-	21,310	8,960	24,960
1960	86,800	34,560	10,370	-	20,530	8,320	13,200
1961	80,000	49,760	13,000	-	21,095	8,100	15,370
1962	80,089	47,040	16,320	-	35,200	7,500	13,480
1963	79,836	46,400	19,500	-	30,860	3,900	10,300
1964	84,400	72,320	20,280	11,712	14,244	5,670	11,370
1965	93,900	61,120	23,400	13,342	7,306	9,280	14,800
1966	104,900	62,400	35,800	12,032	8,070	2,740	14,375
1967	103,100	70,880	45,750	17,575	6,400	8,080	13,900
1968	103,200	70,000	37,590	16,630	14,707	12,435	11,100

[a]Data for sugar cane refer to total area in cane during the year rather than area planted because it is a perennial crop. The data for all other crops are based upon two crop cycles annually with the exception of cotton. Cotton by law can only be grown in the first half of each year.

SOURCE: Asocaña: National Association of Sugar Cane Growers
Banco de la República, Cali Section - Biennial Economic Report.

TABLE 3.41 A FREQUENCY DISTRIBUTION OF SURVEYED GRAIN FARMS BY SIZE AND LAND TENURE, 1968

Land Tenure	Number of Farms by:				
	Hectares in Cultivated Crops			Total	Percent of Total Farms
	3-50	51-100	101 or more		
Owner	88	34	20	142	54
Renter	42	26	14	82	31
Owner & Renter	14	15	10	39	15
TOTAL	144	75	44	263	100%

SOURCE: PIMUR, Grain Farmer Survey, 1969.

Forty-six percent of the grain farmers rented or part-rented the cultivated land. Renting was more common among larger farmers who find renting a more feasible way to increase their operations than buying land.

Eighty-two percent of the surveyed farmers consider agriculture their principal occupation. Most of the larger operators reside in urban centers. Grain producers are relatively well educated, with an average of 8.8 years of schooling; 19% have attended a university. Ninety-five percent of the farms are easily accessible by roads that will accommodate large trucks.

Grain farmers tend to grow more than one crop, often rotating corn and soybeans with cotton, in a two-semester cropping program. A regulation limits cotton planting to one semester a year as an insect and disease control measure. Beans and sorghum are sometimes included in the cropping plan.

Grain yields on Cauca Valley farms are substantially greater than national averages (Table 3.42). However, actual farm yields are still far below the potential indicated by experiment station research, even allowing for reasonable differences in management practices between experimental plots and commercial farm operations.[18]

TABLE 3.42 REPORTED GRAIN YIELD IN COLOMBIA AND ON SURVEYED FARMS IN THE FLAT PART OF THE CAUCA VALLEY

Crops Grown	Yields in Kilos/Hectare		
	Colombia	Valle	
	1967[a] First Semester	1967[b] Second Semester	1968[b] First Semester
Rice	1896	3537	3786
Red Beans	326	1736	1420
Corn	930	2995	3044
Sorghum	1797	2538	2800
Soybeans		1941	2005

[a]DANE, Muestra Agropecuaria Nacional, 1967.

[b]SOURCE: PIMUR, Grain Study, 1969.

[18]Jay Atkinson, *Changes in Agricultural Production and Technology in Colombia*, Foreign Agricultural Economic Report No. 52, U.S. Department of Agriculture, Ministry of Agriculture and Central Planning Agency of Colombia, June, 1969, p. 19.

Over the past decade (1958-68), grain yields have trended upward in Valle, but not as rapidly as might have been expected given the wide availability of improved seeds, fertilizers, and other technical farm inputs (Figure 3.14). Credit has been generally available to use these modern inputs. At the time of the PIMUR survey, 76 percent of the producers were utilizing production credit. Hence, it appears that the lack of progress in increasing yields may be due to the management of these new technical inputs resulting in improper application rates or poor timing.[19] (This problem is further considered in Chapter 4 of this report.)

Marketing

Based upon interviews with farmers, assemblers, and processors, detailed market channel diagrams were derived for each of the grains studied. For corn, beans and rice, additional market channel data were obtained from the PIMUR urban studies.

Grain farmers typically sell their entire production in one or two large transactions at or shortly after harvest. Very little grain is held on the farm for periods longer than one month. Early sales are made to finance the next semester's crops and to avoid storage problems. Assemblers and processors are the principal buyers. Among the larger farms, size of transaction was over 100 tons for corn, sorghum and soybeans. Farmers usually bag the grain, but do little cleaning or sorting before it is sold. Assemblers frequently supply bags to the farmer and buy grain on the farms, paying transport costs to assembly points. Processors, on the other hand, usually buy grain at the plant and do not supply bags.

There are three large soybean processors in Valle -- Grasas, S.A.; Lloreda, and Mancini, who buy most of the soybean output. Processors in Bogotá and Medellin also buy a large share of Valle soybean production. Seven processors are the principal purchasers of corn and sorghum -- Quaker; Maizena, S.A.; Forrayo, Ucarvajal, Purina, Finca and Solla. Some of these firms operate plants outside Valle.

Some processors are contracting with farmers to buy their entire production of particular grains. The contracts, both verbal and written, are made prior to planting time and guarantee a base price, which frequently is the IDEMA support price. The final transaction price is adjusted upward if market prices are above the base price at harvest time. Some contracts provide for price discounts on grain arriving at the processing plant with high moisture content and excessive foreign materials. Payment to farmers are usually delayed for a few days after delivery.

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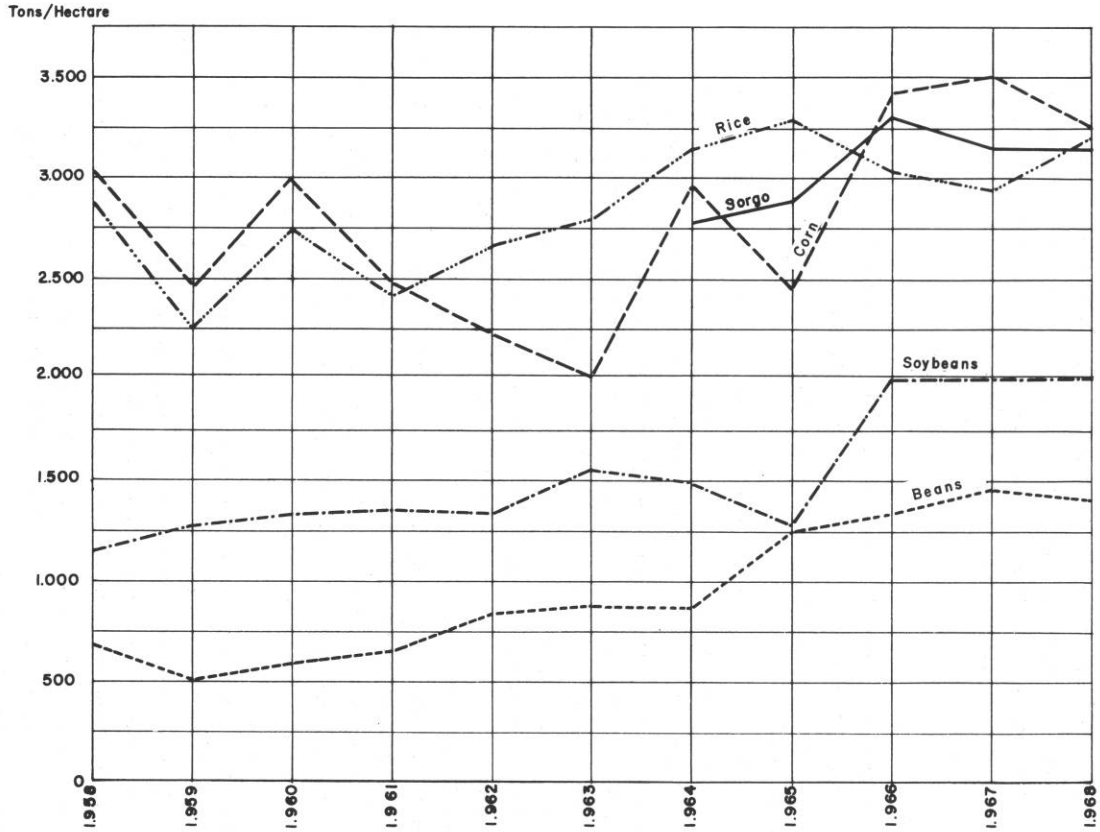
[19] Douglas D. Hedley, *An Economic Analysis of Corn Production in the Cauca Valley, Colombia*, Unpublished Ph.D. Thesis, Michigan State University, 1969.



Source: Banco de la Republica – Cali
Semestral Economic Reports,
1968

YIELDS FOR VARIOUS CROPS IN THE FLAT PART OF THE CAUCA VALLEY, 1958-68

Fig. Nº 3.14

Processors sometimes prefer to contract with assemblers rather than producers. The assembler agrees to supply a certain volume to the processor subject to a fine for failure to fulfill the contract. This system is advantageous to the processor, because it allows him to buy larger volumes than he normally could from producers. The assembler is also more receptive to the quality standards required by the processor, and there is greater assurance that the assembler will provide the volume and quality of grain agreed upon in the contract.

The 16 grain assemblers surveyed were located in the assembly centers of Palmira, Buga, Tuluá and Cartago. The relative importance of each assembly center is shown in Table 3.43. The largest total volume of grains moves through Cartage assemblers with corn representing most of that volume. Palmira is second in total volume but largest in soybeans.

TABLE 3.43 ESTIMATED ANNUAL VOLUME HANDLED BY SURVEYED GRAIN ASSEMBLERS IN THE CAUCA VALLEY BY CITIES IN 1968[a] (METRIC TONS)

Product	City				Total
	Palmira	Buga	Tuluá	Cartago	
Corn	25,392	2,500	21,176	71,976	121,044
Beans	5,000	215	--	8,237	13,452
Soybeans	18,571	10,000	8,889	2,905	40,365
Sorghum	6,830	6,250	12,000	2,870	27,950
TOTAL	55,793	18,965	42,065	85,988	202,811

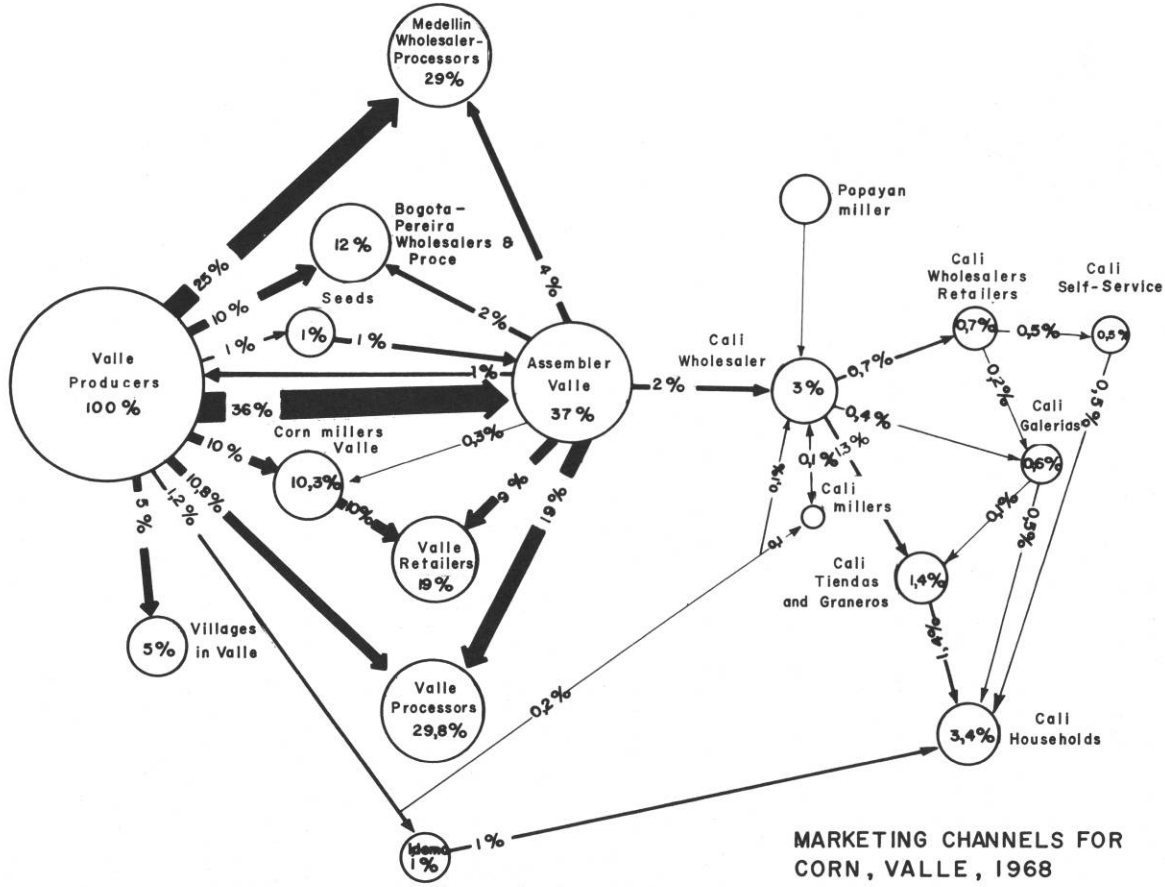
[a]The volumes shown in this table are gross volumes that include the trading which occurs between assemblers.

SOURCE: PIMUR, Grain Study, 1969.

The 16 grain assemblers located in these assembly centers buy 37% of the corn and 55% of the beans produced in the Valley. The importance of these assemblers, as well as processors, in the marketing system for each of the grains studied can be seen in Figures 3.15 to 3.19. The information contained in these channel maps is based upon information collected during interviews with assemblers, processors and producers. Secondary data were also used in some instances to complement that collected in personal interviews.

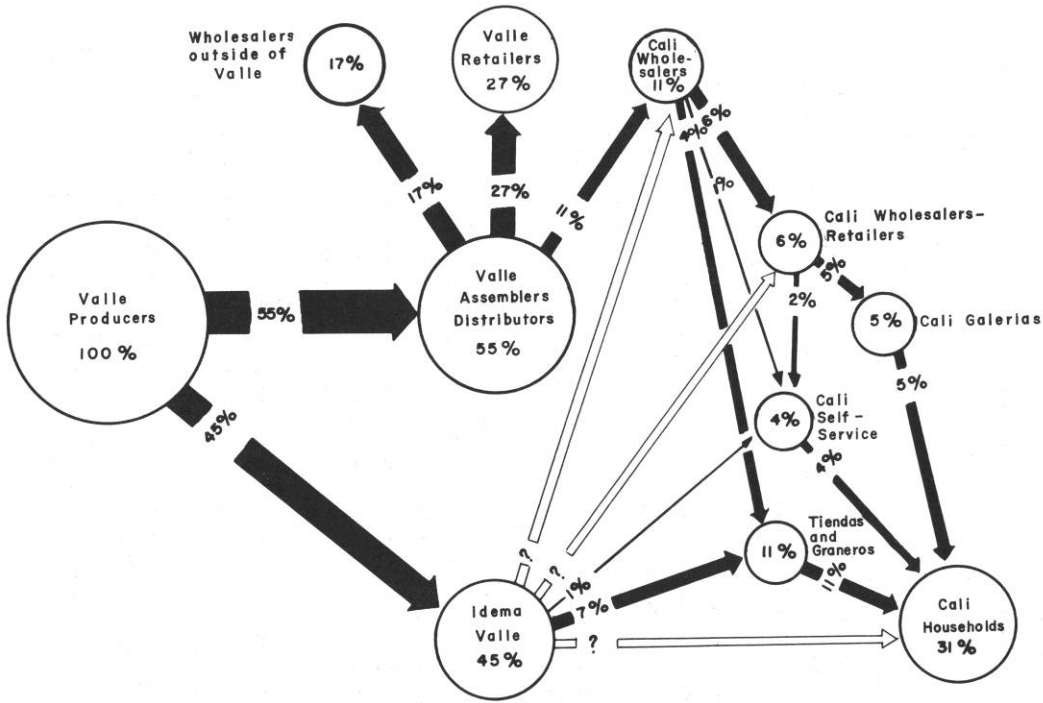
Assemblers and processors are the most important corn buyers in the Cauca Valley. (Figure 3.15.) Cauca Valley processors utilize about 30% of the corn production, most of which (19%) they buy from assemblers. Wholesalers and processors from other cities outside Valle buy 41% of Valle corn production.

Assemblers and IDEMA were the principal bean buyers in 1968. Forty-four percent of Valle beans, however, go to wholesalers in cities outside Valle. (Figure 3.16.) IDEMA purchased a large share of the bean production (4,390 tons) in the Cauca Valley during 1968. IDEMA did not purchase beans in 1967



MARKETING CHANNELS FOR CORN, VALLE, 1968

Fig. Nº 3.15



MARKET CHANNELS FOR CALIMA BEANS, VALLE, 1968

Fig. Nº 3.16

and purchased only 427 tons in 1966. The 1968 purchases seem to have been abnormally large because of the need to protect farm prices as a result of a large increase in production.

The distribution channels for soybeans and sorghum are less complicated than for the other grains studied. Once again the processors and assemblers are the most important buyers of these grains. (Figures 3.17 and 3.18.) Processors buy most of their grain directly from producers, although they also buy large volumes from assemblers.

As can be seen in Figure 3.19, Valle is an importer of rice, mainly from Huila and Tolima. Most rice moves from producer to the mills and then to Cali wholesalers who in turn sell primarily to Cali *graneros*.

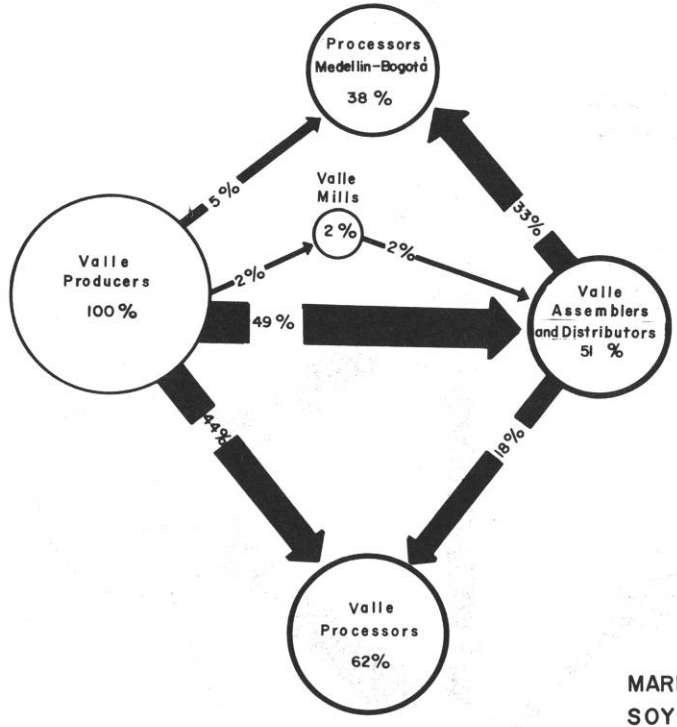
The number and size of grain assemblers is shown in Table 3.44. The total volume of business handled by these assemblers amounted to $26.4 million monthly. The 16 firms studied, which sold an average of $1.95 million monthly, typically handle large volumes of grain at relatively low cost per unit handled. Since they have been in business for an average of 11 years, the number of firms appears to have remained stable through time. These assemblers normally conduct their business operations from warehouse telephones.

Even though half of the assemblers handle 88% of total sales, they have relatively little monopoly power. The assemblers compete with each other and the processors through the services they provide. Most assemblers visit the production areas before harvest time in order to make agreements on purchases. Twenty-one percent of the assemblers provide seed to the producer, as well as the packaging materials for harvest. Assemblers also advance money to the producers during the growing season, and buy the goods on the farm absorbing the transport costs. Many producers prefer to sell to assemblers because they make payment immediately and do little or no grading and price discounting. Assemblers seem most interested in a rapid turnover. Rather than store commodities for a better price and margin, they prefer to sell quickly in order

TABLE 3.44 NUMBERS AND SIZE OF GRAIN ASSEMBLERS IN THE CAUCA VALLEY BY MONTHLY SALES, 1968

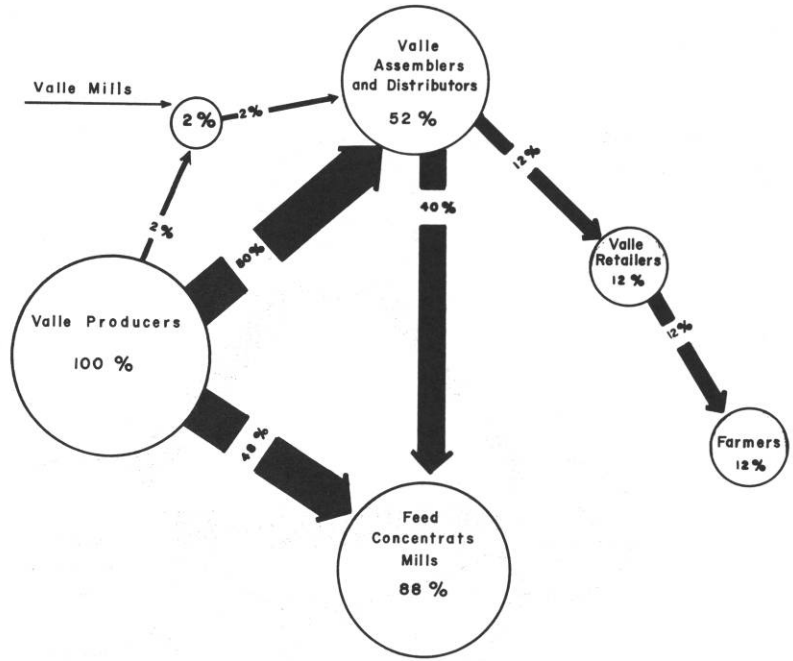
Monthly Sales in Thousands of Pesos	Number of Assemblers	Percent of All Assemblers	Total Monthly Volume	Percent of Total Volume
More than 3,000	3	19	13,333	51
1,501 - 3,000	5	31	9,833	37
500 - 1,500	4	25	2,400	9
Less than 500	4	25	834	3
TOTAL	16	100	26,400	100

SOURCE: PIMUR, Grain Study, 1969.



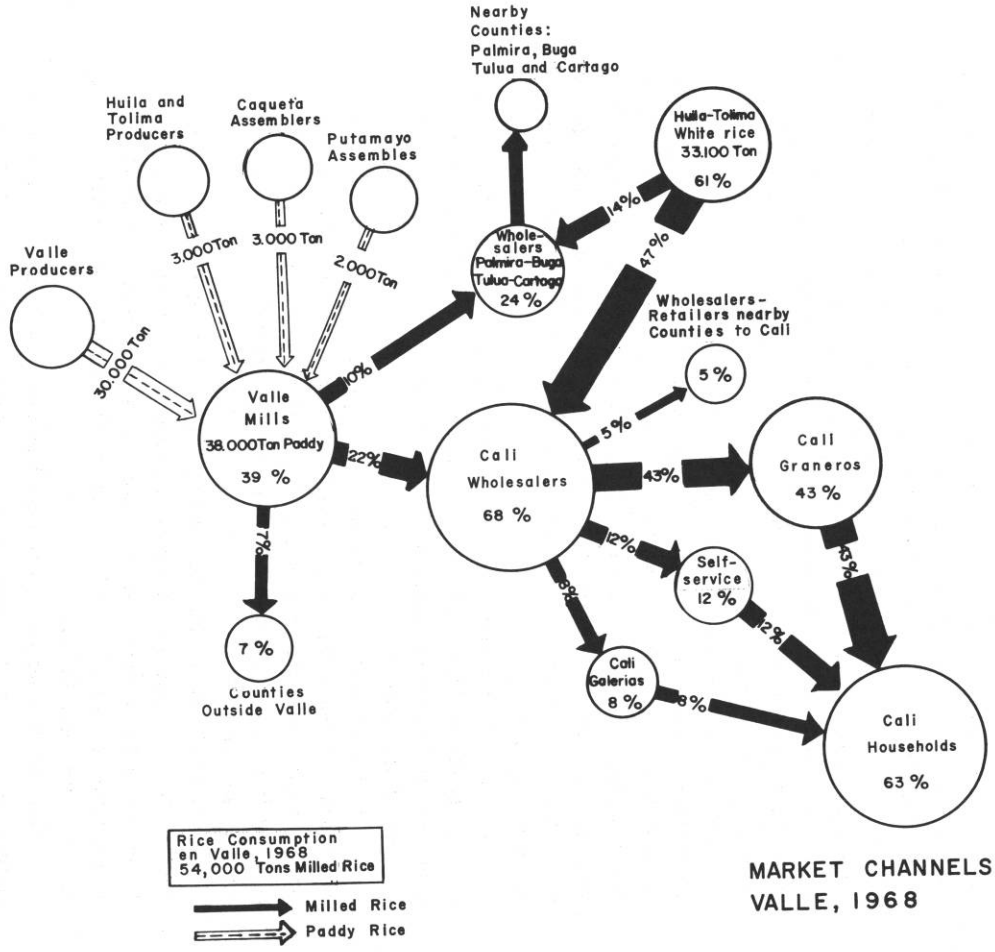
MARKETING CHANNELS FOR SOYBEANS, VALLE, 1968

Fig. Nº 3.17



MARKETING CHANNELS FOR SORGO, VALLE, 1968

Fig. Nº 3.18



MARKET CHANNELS FOR RICE, VALLE, 1968

Fig. Nº 3.19

to handle larger volumes at lower unit margins. Additionally, assemblers are prohibited from obtaining loans on stored grain (*pignoración*), making it difficult for them to finance large stocks. (See Chapter 6, Laws and Regulations.)

Some barriers to entry exist but entry is by no means blocked. Capital may be a barrier since these assemblers need large amounts of money to finance their purchases. A lack of knowledge of the grain business as well as contacts with suppliers make it difficult for newcomers to compete.

Other forms of competition further reduce the assemblers' market power. Processing firms and wholesalers from major urban markets can shift among their suppliers at any time thereby reducing their dependence upon assemblers. Furthermore, IDEMA provides farmers with a guaranteed minimum price in the event assemblers try to lower their purchase price.

There are several advantages to the assemblers' large size. The large scale permits lower unit costs of handling and transport, and transaction time per unit sold is reduced since buyers can acquire the desired volume of goods from a smaller number of suppliers. There is also a greater opportunity for implementing changes in the system, such as classifying grains, since agencies can work with a small number of individuals and still have a large impact on the entire system.

Valle has 15 rice mills, most of them near Cali, which operated at 38% of capacity during 1968. Palmira is the major rice milling center, handling about 75% of the rice purchased in Valle. One large mill in Palmira accounts for most of that volume.

Millers buy the rice from producers at harvest time based upon samples which farmers bring to the mill. They furnish sacks for the rice and pay transport costs from the farm to the mill. Discounts are then made to pay back any loans the farmer may have received from the miller in the form of inputs, seeds or cash.

Millers sell the hulled rice to urban wholesalers with about 15 days credit. The wholesalers normally pay transport costs to their warehouses. Millers are able to store paddy rice and obtain a warehouse receipt which can be discounted at the bank. Milled rice is not stored because it will not keep for more than about 20 days.

Thus, rice millers perform several important functions in the marketing system. The main problem seems to be excess milling capacity in Valle due mainly to the gradual decrease in rice acreage during the last 10 years. The Valle rice mills process locally produced rice, although a part of their supply is shipped in from other departments, Figure 3.19. A large proportion of the rice consumed in Cali is shipped directly to Cali wholesalers from Tolima and Huila.

Performance

Grain marketing margins were generally lower than those for any other product included in this study. Assembler margins seem low in relation to services offered, which often include farm to market transport, sacks for grain, and warehouse operations. (Table 3.45.) The rice margin of 17.4% for assembly and milling also includes storage costs. Wholesaler margins are low, but services rendered are few including transport from supply areas to Cali and the warehousing operations, but relatively few services to retail buyers. Retailing margins make up a large proportion of total marketing costs, especially on corn and beans. Highest margins were in large self-service stores more able to buy at lower prices than small stores. But they sell prepackaged grains at about the same or lower retail prices as their competitors. Retail margins for rice are much lower than for corn and beans, reflecting a more competitive pricing structure on this relatively more important staple food item.

TABLE 3.45 GROSS MARKETING MARGINS[a] FOR CALI RETAILERS, WHOLESALERS AND ASSEMBLERS OF GRAINS IN THE CAUCA VALLEY IN FEBRUARY, 1969

Product	Assembler or Miller	Wholesale/ Retail	Self-Service	Wholesale	*Graneros*	*Tiendas*	Galerias
White corn	3.4%	9.2%	15.5%	4.1%	11.8%	10.8%	10.3%
Yellow corn	3.4	11.4	18.6	4.7	11.4	11.9	12.6
Red beans	1.7	7.4	16.4	5.2	11.4	12.0	13.5
Top quality rice	17.4[b]	6.9	7.5	3.8	8.4	7.5	8.0
Soybeans	1.7	-	-	-	-	-	-
Sorghum	3.3	-	-	-	-	-	-

[a]All Margins are reported as a percentage of the sales price.

[b]Includes costs and losses due to milling.

SOURCE: PIMUR, Retail, Wholesale, Assembler Surveys, 1969.

Although marketing margins do not appear excessive, there are opportunities for further reduction in costs, especially at the wholesale and retail levels. The gross margin on white corn, for example, which moves from assembler to wholesaler to self-service retailers, equals 23.0% while the gross margin on the same corn which goes from assembler to wholesaler to wholesale/retail to *granero* equals 29.5%. Thus, margins can be reduced if retailers can buy on a volume basis directly from wholesalers or assemblers. (A further discussion of this potential is found in Chapter 2.)

Although the grain assembly is concentrated among relatively few firms, there appears to be effective competition and reasonable charges for these services. Nevertheless, some further improvements in grain handling could be effected. Bulk handling of soybeans and sorghum could reduce costs on direct movements from farm to processor. Storage capacity was generally adequate,

except in the Cartago area where some additional storage capacity may be needed. Also, improved sorting and classifying should be encouraged at the assembler level. This could be stimulated by a more uniform set of grain grading standards and a related market information service.

Grain price fluctuations are usually not excessive in terms of seasonal price movements as related to storage costs. Based upon data from the Bank of the Republic, wholesale prices for yellow corn in Cali fluctuated from a low of $1.30 in February of 1968 to $1.61 in December of 1968. Prices of the other grains (soybeans, etc.) tend to be fairly stable during the year. Their seasonal movements were more similar to corn than to beans in 1968. IDEMA's policy of price supports and forward contracting by processors lends stability to the system. The effectiveness of these institutions in stabilizing grain markets could be markedly improved with more adequate and timely statistical information on crop prospects, volumes harvested and storage stocks.

Conclusions and Recommendations

A major problem of the commercial grain production sector seems to be generally low yields for the grains studied, especially corn. Even though new production technologies have been developed and rapidly adopted, much remains to be done to fully achieve the potentially higher yields and lower costs benefiting both consumers and farmers. (See Chapter 4, Technical Agricultural Inputs.)

Economic performance of the production-distribution sector for grains is reasonably good in many other ways. Gross marketing margins were not high at the assembler and wholesaler levels. Only at retail were margins on grains somewhat high, compared to possibilities through alternative marketing organizations. Prices of the major grains, with the exception of beans, were found to be quite stable during 1968. Although the number of grain buyers in Valle is small, the competition among the three main groups, -- Valle assemblers, Valle processors, and buyers from other regions outside of Valle -- seems to be strong. The scale of assembly firms was relatively large, enabling them to charge low margins per unit handled. Both producers and processors have adopted many new practices and will probably continue to do so, given the appropriate incentives. The greatest potential gains seem to be in improved production efficiency and improved vertical coordination in the wholesale-retail system. The gains in assembly and storage do not appear potentially large.

Storage facilities for grain were generally found to be adequate in all parts of Valle except Cartago. Cartago has developed into an important grain assembly center but has limited storage facilities. Other problems of less

importance involve the lack of a standardized system for grading and classifying grains. It was found that IDEMA, INAGRARIO, and the processors as well as assemblers are all using somewhat different methods for determing grain value. Another problem is the lack of current production and marketing information at all levels in the system. The present price information program is inadequate because the information reaches too few users too late to be of significant decision-making value.

1. *It is recommended that ICA intensify efforts to produce more accurate guidelines on the most profitable levels of use for major technical farm inputs, through applied research and rapid dissemination via extension programs.* (For detail see Chapter 4, Technical Farm Inputs.)

2. *It is recommended that an improved market information system be initiated on a pilot project basis linking assembly points in the Cauca Valley with major consumption centers.* (For a detailed discussion of this recommendation, see Chapter 6.)

3. *The existing grain classification and grading standards should be carefully revised by IDEMA in consultation with grain wholesalers and processors and the new grades should be promoted by offering grading services in major assembly centers.*

The grain study has indicated differences between IDEMA's existing grades and standards and the grading systems being used by grain processors. Similar criteria are used but there are differences in specifying the limits of acceptability. For example, the processors have no stated maximum for humidity, but IDEMA does have a maximum beyond which grain will not be accepted. IDEMA has specified limits for broken and damaged kernels, but the processors have no stated limits. The discounting procedure for determining price once the product has been graded for humidity, impurity, and broken and damaged kernels also varies among firms. Some pay a premium for grains better than the minimum standards, while others do not. A basic need for all grain buyers in the public as well as the private sector is better equipment to more accurately measure the humidity, etc. Much of the present equipment cannot accurately and consistently measure humidity as changes in climatic conditions affect the accuracy in measuring grain humidity. The same grain graded on two different days may, therefore, be classified differently depending upon climatic conditions. Better equipment is needed.

Wholesalers and assemblers do not use these grades nor grading equipment when buying grain; rather, they rely more upon experience, grain appearance and feel. The price they pay reflects quality differences, but subjective, unscientific grading cannot accurately nor consistently determine quality. Consequently, accuracy and measurement consistency are even greater problems among wholesalers and assemblers than in the public sector. The reason wholesalers

and assemblers don't use grades are not entirely clear; however, the lack of grading equipment and farmer resistance may be important reasons.

A revision and standardization of these grades in consultation with grain wholesalers and processors is needed to improve their applicability and use. Such a revision will also be needed as part of the effort to develop current market information in Valle. The revision must determine how much of the grain traded at the present time actually meets the minimum standards. Effort should be made to develop a more uniform means of grading, so that everyone in the industry would be using the same procedure.

Greater use of grades should then be promoted in the industry by meeting with the appropriate groups to explain grading procedures and importance. Tying these grades to the price information system will also help promotion. IDEMA and/or INAGRARIO could provide a grain grading service in assembly centers such as Cartago and Palmira for interested producers or wholesalers.

4. *We recommend an expansion of grain storage facilities in the northern part of Valle.* For purposes of this study, the northern part of Valle includes the *municipios* of Andalucia, Ansermanuevo, Bugalagrande, Bolivar, Cartago, La Unión, La Victoria, Obando, Roldanillo, Toro and Zarzal. Cartago serves as the main assembly center for grains produced in this area. Grain production (corn, soybeans, sorghum, and beans) in this area was estimated at 50,454 tons in the first semester of 1967 by the Cotton Development Institute (IFA).[20] Corn and soybean production amounted to 57% and 28% respectively of the total. Sorghum and bean production were only 13% and 2% respectively. Grain production for the second semester was not estimated, but it normally runs higher than the first because the cotton acreage(14,000 hectares), which can only be planted in the first semester, is planted to grains in the second.

PIMUR estimates indicate that the assemblers in Cartago handle about 43,000 tons each semester, which makes Cartago the most important assembly center for the northern part of the Cauca Valley. Storage capacity in the area is limited in both quantity and quality. The assemblers themselves have an estimated storage capacity of 6,750 tons and about 43% of farmers reported some type of farm storage, but the quality of these facilities is low. Farm storage facilities are generally part of the house or another building which have no special adaptation for storage. They also lack the drying or fumigating equipment needed to properly treat grains. Commercial storage capacity amounts to 2,200 tons which belongs to ALMADELCO. IDEMA has capacity to store 4,576 tons, most of which is used only by IDEMA. Some of this capacity is, however, used by INAGRARIO for commercial storage. Thus, present storage facilities do not seem

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[20] Rubén Sepulveda, *Desarrollo Agricola del Valle*, Instituto de Fomento Algodonero, Bogotá, Colombia, 1967.

adequate to handle the volume of goods arriving on the market in a relatively short period of time.

For these reasons, a warehouse for bag storage of grains is recommended in the *municipio* of Cartago. The recommended warehouse should provide 6,500 square meters of space, sufficient capacity for an estimated 30% of the present grain production in this area.

It is recommended that INAGRARIO, which currently has plans to build a warehouse in Roldanillo-La Unión-Toro (RUT), build the warehouse in Cartago rather than RUT. Cartago seems to be a more appropriate location because of its importance as an assembly center for the northern part of Valle. The cost and returns for such a warehouse can be seen in Table 3.46. According to the estimates, the warehouse would be profitable only if it could be filled to capacity for an estimated three months in each semester.

Potential users of this facility are processors in Medellin, Bogotá, and Cali, who could buy their grain at the warehouse. Some large producers are also interested in using the storage facility. Assemblers could use the warehouse as an assembly center for grain being resold to processors.

The main benefits of the added storage space would be to reduce the losses and added expense associated with storing in widely scattered, poor quality farm and assembler facilities. It would also relieve part of the transport shortage which typically develops at harvest time, causing rates to increase $10.00 to $20.00 per ton for hauls between Cartago-Cali or Cartago-Medellin. The demand for storage space in the area can be expected to increase significantly as grain acreage and productivity go up in the next few years. The INCORA irrigation district will likely contribute strongly to this production increase.

5. *The bulk handling of soybeans, sorghum and corn moving directly to processors should be strongly encouraged.*

Bulk handling is not yet a common practice in the Cauca Valley. However, one of the major grain warehouses in Cali is now equipped to receive bulk grain. In addition, several of the processing firms in Valle plan to install bulk handling facilities in their plants during the coming year, some as early as January and February of 1970. Thus, it appears that bulk handling of grains moving to processing firms is feasible within the next year.

The main costs associated with making such a change-over are in adaptation of handling equipment at the farm level, the distribution level, and at the processing plants. Since most processors are now in various stages of making the change-over, the additional expense at this level will be small. Changes in harvesting equipment are necessary at the farm level and were estimated

TABLE 3.46 ESTIMATED COSTS AND RETURNS FOR CONSTRUCTION OF A WAREHOUSE IN CARTAGO, 1969

Tons Stored	Price Per Ton	Storage Cost Per Ton, Month	Months Stored	Income Generated
13,000	$1,300	$7.00	3	$273,000
2,000	2,000	$7.00	3	84,000
Fumigation of corn 13,000 tons at $8.00 per ton[a]				104,000
Grain drying 5,000 tons at $50.00 per ton[b]				250,000
Total income per semester				711,000
Total annual income				$1,422,000
Expenses:				
Depreciation				
Building - 5% annually				130,000
Dryer and scale - 10% annually				100,000
Office equipment - 10% annually				8,000
Jeep - 20% annually				20,000
Taxes and Maintenance				100,000
Consumables				103,900
Wages and social security				376,740
Total Annual expenses				838,640
Net Profit annually				583,360
Net returns on investment				13%

Investment needs:

Item	Per Unit Cost	Size	Total Cost
Land	$ 76 M2[c]	6500 M2	$ 500,000
Warehouse	400 M2[d]	6500 M2	2,600,000
Roads and scale	--	30 Ton	500,000
Dryer	500,000[e]	150 tons daily	500,000
Office equipment[f]			80,000
4 typewriters			
4 adding machines			
4 desks and chairs			
4 tables			
Waiting room			
Files, etc.			
Jeep or pickup			100,000
Others, and unforseen expenses			220,000
			$4,500,000

Personal Needs[g]	Number	Monthly Salary	Annual Salary
Administrator	1	5500	66,000
Secretary	2	5500	66,000
Accountant	1	2500	30,000
Assistant	1	1500	18,000
Messenger Boy	1	750	9,000
Warehouseman	1	2000	24,000
Watchman	3	2700	32,400
Janitors	3	1800	21,600
Drivers	1	900	10,800
Scalemaster	1	1000	12,000
Sub-total		24,150	289,800
Prestaciones 30%			86,940
TOTAL			$376,740

[a] Price from Aloccidente
[b] Price from IDEMA and INAGRARIO
[c] Cost in Cargago
[d] IDEMA
[e] IDEMA
[f] INAGRARIO
[g] INAGRARIO

SOURCE: PIMUR, Grain Study, 1969.

by Agricolas Salazar at $4000 per machine.[21] Existing trucks can be adapted easily by placing a lining of plastic or other material in the truck box.

Lower costs and greater speed in handling grain are the major benefits to be derived from changing over to bulk handling. Estimated savings of about $90-100 per ton of grains are shown in Table 3.47, most of which are in packaging, but to a lesser degree in labor costs.

TABLE 3.47 ESTIMATED SAVINGS FROM USING A SYSTEM OF BULK HANDLING FOR SELECTED GRAINS

Item	Cost Per Ton[a]		
	Sorghum	Soybeans	Corn
Bags @ $4 each	$ 60	$ 60	$ 60
Bag sewers, 3 @ $25 per day	3	3	3
Bag handlers @ $0.60 per bag	9	9	9
Tractor @ $60 per hour	17	23	19
Loading and unloading trucks	5	5	5
	$ 94	$100	$ 96

[a]The calculations are based on the assumptions that 28 tons of sorghum, 21 tons of soybeans and 25 tons of corn can be harvested daily under "normal" conditions.

SOURCE: PIMUR, Grain Study, 1969.

6. *We recommend that the regulation applying to grain storage be broadened to permit assemblers and wholesalers to use warehouse receipts as collateral for loans (pignoración).* The present grain storage regulation allows producers and processors who store grains in approved warehouses to use the warehouse receipts as collateral for loans. Grain assemblers and wholesalers are not eligible for such loans, and as a result are handicapped in their effort to store grains in order to meet the seasonal demands. The negative effects of this situation seem to be most serious in corn and bean marketing, since rice, soybeans, and sorghum can be and are stored by processing firms. Beans do not go to processors, leaving the entire storage function to the commercial and governmental sectors. Serious price fluctuations during the year and between years indicate that the storage function has not been performed well in the past. Providing the commercial sector with an incentive to store grains, especially beans, would contribute to greater price stability by properly rationing production throughout the entire consumption period.

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[21]Personal interview with Agricolas Salazar, Palmira, September, 1969.

Conclusions

The aggregate demand for food in the Cali area is increasing about 4 to 5% per year due to population growth and rising incomes. The PIMUR consumer study indicates that as incomes continue to rise the demand for poultry, eggs, milk, meat and most fruits and vegetables will increase more rapidly than the demand for grains. Also, if production and distribution costs can be reduced there would be additional increases in per capita consumption of food, especially for highly desired items such as poultry, eggs, milk and meat, as prices decline relative to other consumer goods.

The demand for marketing services in the Cali area has been increasing more rapidly than the demand for basic food commodities at the farm level. By 1969, 70% of Valle residents were located in urban centers and if past trends continue, it is expected that by 1984, 89% will be living in urban areas. Thus, the logistical services of assembling, transporting, storing and distributing food are becoming a larger part of the value of final products delivered to the consumer. But, as consumers' incomes continue to rise they will also demand more processed and packaged foods; higher quality, more carefully handled perishable foods; and reasonable protection against contamination, adulteration and deceptive selling practices. Therefore, over the next several years the cost of food marketing services will become an increasing percentage of the consumer food outlay and the farmers' relative contribution to the final product will decline. These patterns of change are consistent with the more general patterns of economic development described in Chapters 1 and 7 of this report.

In Chapter 3 we have presented a summary description of the organizational structure of the production-distribution systems for five commodity groups. The conduct of intermediaries has been described and performance has been examined as a basis for diagnosing opportunities for improving market coordination. Specific recommendations were formulated to reduce marketing costs and/or improve marketing services.

The production-distribution systems for grains, poultry and eggs were found to be technologically more advanced than similar systems for the other commodities studied. Still, the available evidence indicates that efficiencies can be achieved in farm production which would significantly reduce costs of poultry, eggs and some of the grains, especially corn. (See the Technical Farm Inputs section of Chapter 4.) The grain assembly system is performing relatively well. Large assemblers are competing with each other and with large processors for grains produced on large commercial farms. However, performance in the grain distribution system can be further improved by better market information, grades and standards, increased storage facilities in Northern

Valle, and a shift toward bulk handling. Possibilities for reducing wholesaling and retailing costs were specified earlier in Chapter 2.

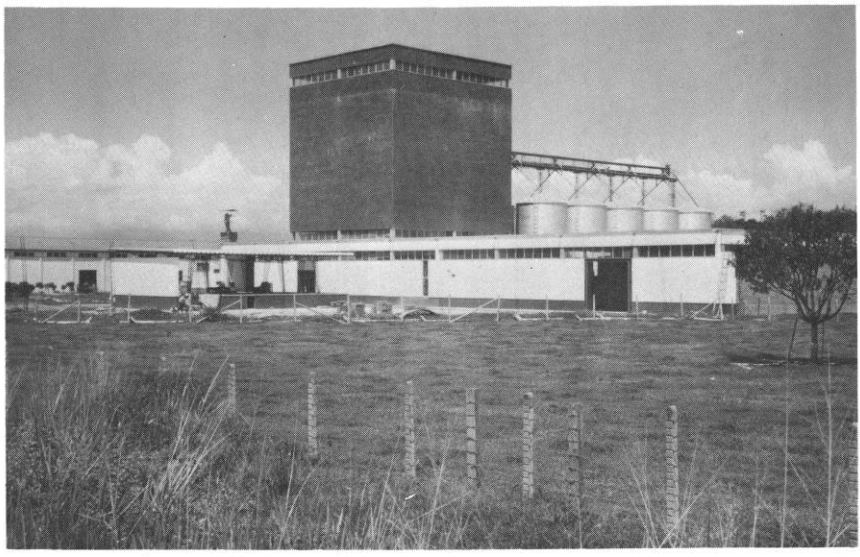
A substantial portion of the poultry and egg distribution systems are vertically integrated from farm production through the wholesaling function, and to some extent through retailing. Relatively large firms produce and distribute an increasing percentage of total output. The quality of broiler meat could be improved, and short-term supply fluctuations reduced through the construction of a centralized poultry slaughter and wholesale distribution facility in Cali. As the total output of broilers increases, processing and distribution costs should decline below present levels. Egg distribution and selling practices by two large producer associations could be improved through the use of grades, packaging and related pricing and distribution practices. The stability of output and prices in the poultry and egg sub-system could probably be increased through the actions of a national poultry commission.

The existing system of slaughtering and distributing meat in Cali provides a minimum of consumer services and the wholesale-retail margins appear unnecessarily wide. Inadequate sanitation in livestock slaughtering and meat handling endangers health and reduces the product's eating qualities. Retail price controls and a poorly organized wholesaling system inhibit the transmission of consumer preferences back through the system to livestock producers. We have recommended modernization of the meat system. It does appear possible to improve product acceptability at the same or lower costs as compared to the existing system.

The diagnostic study of the fluid milk production-distribution system serving the city of Cali identified several major problems. First, unsanitary handling methods and adulteration, especially among raw milk dealers and producers are endangering consumer health and limiting the potential milk market. Secondly, milk supplies fluctuate by 20 to 30% between the wet and dry seasons while consumer demand follows an opposite seasonal pattern. Yet milk price controls do not permit price variations as a regulator of consumption or as a stimulant to producers to expand output during the dry season. Thirdly, the costs of the existing milk assembly and distribution system are high due to the large amount of cross-hauling and the small scale of the raw milk operations. Finally, milk production per cow remains very low because of the extensive nature of farm production. A comprehensive milk reform program has been recommended dealing with these problems. It appears possible to greatly improve the quality and safety of fluid milk without increasing consumer prices.

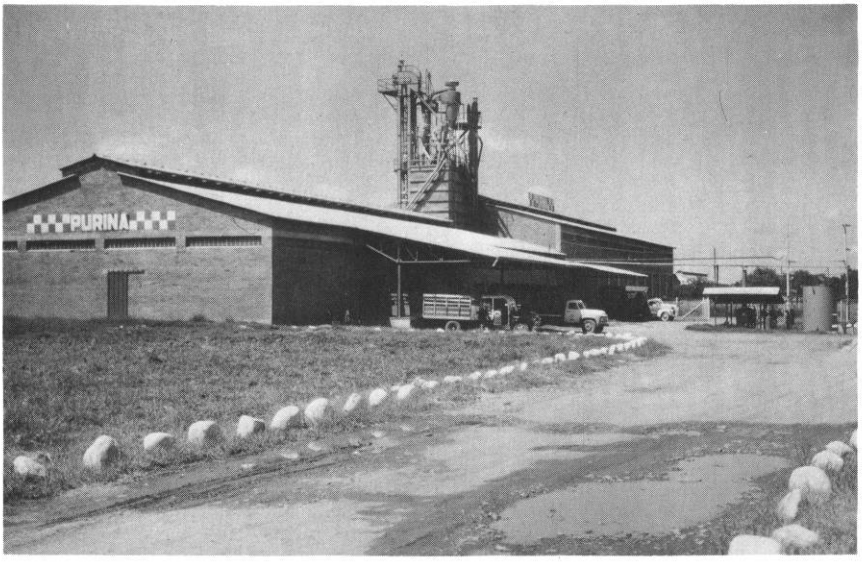
Fruit and vegetables offer the most difficult market coordination problems in the food system. Most fruits and vegetables are produced by small farmers so geographically scattered that assembly costs are frequently high. Because of uncertain markets, lack of resources and information, these small farmers

have been slow in adopting practices to increase their output or improve product quality. The assembly and wholesaling system is composed of many small firms earning low returns but with high margins for their services. The high margins result, in part, from the small lots handled and losses of these relatively perishable products. Product quality, volume of production and prices vary widely over time due to climatic variation and the poor information system connecting the various stages in the production-distribution system. Much can be done to improve performance in the fruit and vegetable sub-system but progress is likely to be especially slow for this food group.



A *cresemillas* plant for processing and storing improved seeds. This is a public entity associated with the Caja Agraria, a government agency that provides agricultural credit and distributes agricultural supplies. The above plant is located in Palmira.

A particularly well-stocked farm supply store located in Palmira. This store operates as part of the Caja Agraria agricultural input distribution system.



A feed concentrate processing plant located in Buga. Corn, milo and oilseed meals produced in Valle are processed and mixed with other ingredients to formulate feeds for poultry, hogs and dairy cattle.

A *chiva* gathering a load in a rural community. The *chiva* system provides regularly scheduled services to rural trading centers and to the larger cities.

A wide assortment of transportation equipment serving wholesalers and retailers in the Galeria Central area.

Moving grain by hand cart from the Galeria Central area to retail outlets.

A retailer rides with the motorcart operator he has engaged to transport his purchases from the Galeria Central area to his retail store located in one of the *barrios*.

Many consumers travel to and from the public markets by bus.

CHAPTER 4

SPECIAL INDUSTRIES IN THE FOOD SYSTEM

Introduction

An industrialized food system is characterized by specialized functions performed off the farm. As the system becomes more productive through specialization and introduction of new technology, the share of the food peso (or of the value added) attributable to these special industries increases. For example, production specialization in specific geographic areas increases the need for transportation services. At the same time, improvements in the performance of the transportation industry permits more efficient specialization in farming.

The special industries of the food system examined in this chapter are those producing technical farm inputs, including: farm chemicals, improved seeds, machinery, and feed concentrate; food processing; packaging and transportation. The performance of the total food system is greatly affected by the coordination of these specialized industries. The objective of these studies was to identify opportunities for improving resource use in the selected industries; to identify problems in the coordination of these industries with other phases of the food production-distribution system; and to determine the capacity of these industries to positively respond to the greater demands stimulated by external or internal economic changes. Limited resources prevented the preparation of detailed and definitive studies in all aspects of the special industries considered.

Secondary data and previous research studies were an important source of information. Depth interviews were also conducted by project technicians using purposive sampling techniques. This sampling method was used because of the wide variation in characteristics encountered among firms in the populations. In some cases, key firms refused to supply requested data making a more complete description and analysis impossible.

Technical Farm Inputs*

Technical farm inputs are defined as factors used in farm production which are produced or modified off the farm and are the result of scientific and technical achievement. In this study the distribution and purchase of the following technical farm inputs was examined: improved seeds, fertilizers, pesticides, farm machinery and feed concentrates.

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*Based upon PIMUR Technical Report No. 3, *The Distribution and Use of Agricultural Inputs in the Cali Area*, 1969.

The development and use of technical farm inputs is a central element in the overall economic development process. New agricultural technologies make it possible to expand food and fiber production to meet rising demands, while at the same time releasing labor from agriculture to engage in other productive activities. Industrialization and the desired increases in levels of living are not likely to occur in the absence of rapid technological change in agriculture.

Past experience indicates there is a high degree of complementarity in the use of technical farm inputs. For example, the application of fertilizer to traditional crop varieties may produce only modest yield increases. But the application of fertilizer to newly-adapted crop varieties may produce large yield increases when appropriate management practices are also applied.

The adoption of new technical farm farm inputs is closely related to the profitability of the new versus the old methods of farming. However, to decide on the most profitable rate of application of technical farm inputs, the farmer must consider the expected physical output response to different applications of the new technical inputs, the cost of the inputs, and the expected prices of the product to be produced. The adoption of new technical inputs also depends upon the farmer's awareness of the new technology and the availability of the inputs in local trading centers.

In Colombia, the major responsibility for agricultural research and related extension programs is centered in ICA (Instituto Colombiano Agropecuaria), although producer associations and private industry are also substantially involved. This is an important area of development activity, since the modernization of agriculture requires a well-organized research program to determine the most economical use of technical farm inputs and then to extend this knowledge rapidly through educational programs.

Improved Seeds

Production - At the present time there are nine Colombian firms producing improved seeds. They are: Caja Agraria (CRESEMILLAS), Proacol, Agrosoya, Fedearroz, Procebada, Caribe, Empresa Agricola de Occidente, Semicol and ICA-IDEMA. The oldest and largest is the Caja Agraria, Department of Seeds which began operations in 1952. The other large producer is Proacol which began reproducing and distributing improved seeds in 1961. Cresemillas, Proacol, Agrosoya and Fedearroz all have seed processing plants in the Cauca Valley.

Because Cresemillas, Proacol, Agrosoya and Fedearroz produce and distribute the vast majority of improved seeds used in the Cauca Valley region, the analysis here will focus on these firms and their distribution channels. The distribution system for improved rice seed is not analyzed because of the simplicity of the market channel from the rice producers' association to its members.

"Improved" seeds are defined as those improved varieties or hybrids which are selected and multiplied by using certain quality standards in order to guarantee plant characteristics superior to common native varieties. Almost all improved varieties or hybrids in Colombia have been selected and produced by the Instituto Colombiano Agropecuario (ICA). Those seeds reproduced from "improved basic stock" under requirements established by the Ministry of Agriculture are identified as "certified seeds", by a special tag showing the specific characteristics of the seeds .

In addition to the improved or certified seed, which is considered a technical farm input in this study, "treated" seeds are in many cases selected and sold to farmers as a purchased input. But since such seeds embody no specialized technical knowledge or production process, being selected for cleanliness, size and appearance only, they seem to offer the farmer much less opportunity for productivity gains and are not included in the present study.

Table 4.1 shows the installed capacity along with the total volume of seed actually processed in 1968 in the entire country and in the Cauca Valley by the four major seed firms. The installed capacity figures are estimates provided by each firm assuming ideal reproduction, storage, plant operation and demand conditions.

TABLE 4.1 EXISTING PLANT CAPACITY FOR PROCESSING AND HANDLING IMPROVED SEEDS AND LEVEL OF UTILIZATION IN COLOMBIA AND IN THE CAUCA VALLEY, 1968

	Caja Agraria		Proacol	Fedearroz		Procebada Agrosoya		Total	
	Colom.[a]	Valle[b]	Valle[c]	Colom.	Valle[c]	Colom.[a]	Valle[c]	Colom.	Valle
Installed Plant Capacity (tons)	32,000	2,500	2,700	46,000	9,000	7,200	3,000	90,000	17,200
Production (tons)	8,566	2,138	1,817	9,016	153	2,102	831	22,332	4,939
Plant Utilization %	26.8	85.5	67.3	19.6	1.7	29.2	27.7	24.6	28.7
Grain Production (tons)									
Corn	3,058	1,270	767					3,825	2,037
Soybeans	214	214	792				831	1,837	1,837
Beans	654	654	58					712	712
Sorghum	20	-	200					220	200
Rice	-	-	-	9,016	153			9,016	153
Wheat	4,620	-	-					4,620	-
Barley	-	-	-			2,102		2,102	-
TOTAL	8,566	2,138	1,817	9,016	153	2,102	831	22,332	4,939

[a]SOURCE: National Planning Department - corrected for 1968 with data collected in PIMUR's interviews.

[b]1968 capacity. This capacity was increased in 1969.

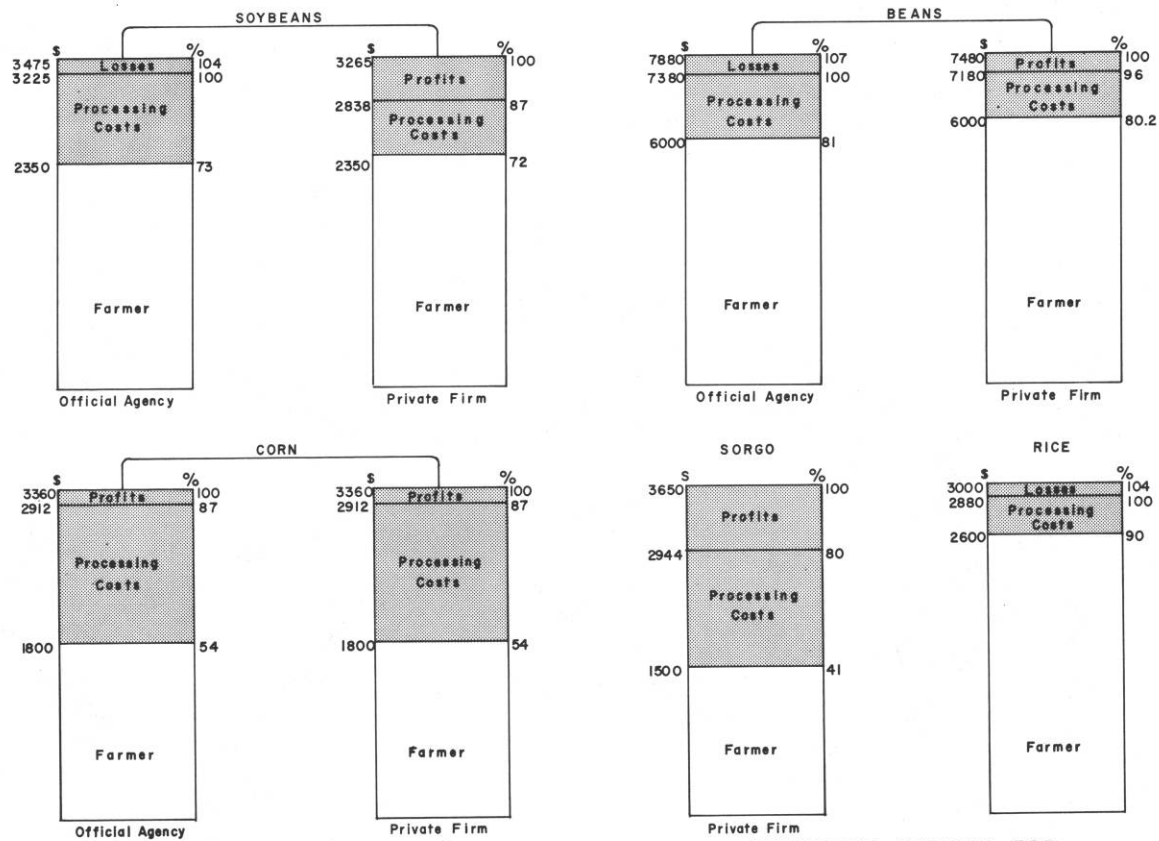
[c]SOURCE: PIMUR's interviews, 1969.

All of the seeds produced by Proacol and Agrosoya are sold in the Cauca Valley region. Of the four major producers, Proacol achieved the highest rate of plant utilization with an average of 63%. But at the regional level, Cresemillas achieved a plant utilization of 84%. It should be noted that Cresemillas has just completed expansion of its facilities in Valle to an estimated capacity of 6,200 tons. This more than doubles their plant capacity and significantly increases the production capacity in Valle and in Colombia. They also began processing improved sorghum seeds (200 tons) for the first time in 1969.

Figure 4.1 illustrates comparative costs and returns for the two major seed producers in the Cauca Valley. This analysis was prepared using cost estimates supplied by the two firms. Seed purchase prices are identical and final sales prices are practically the same. But, due to lower processing costs, Proacol shows a substantial profit for all seeds, while Cresemillas shows a net loss in its sales of three of the four improved seeds considered. It must be recognized that since basically the same equipment and facilities are used in the production of several different final products, the imputation of costs may vary significantly. Cresemillas has reported their costs in such a way as to indicate losses on bean and soybean production. But those losses are recuperated in the profits shown for corn which is a much larger volume item. On the other hand, the private firm has imputed its costs in such a way as to show the same profit on corn as Cresemillas, and at the same time, show a significant profit on the other seed products. Recognizing the data limitations, it appears that the private firm is able to compete effectively with the public seed producing agency.

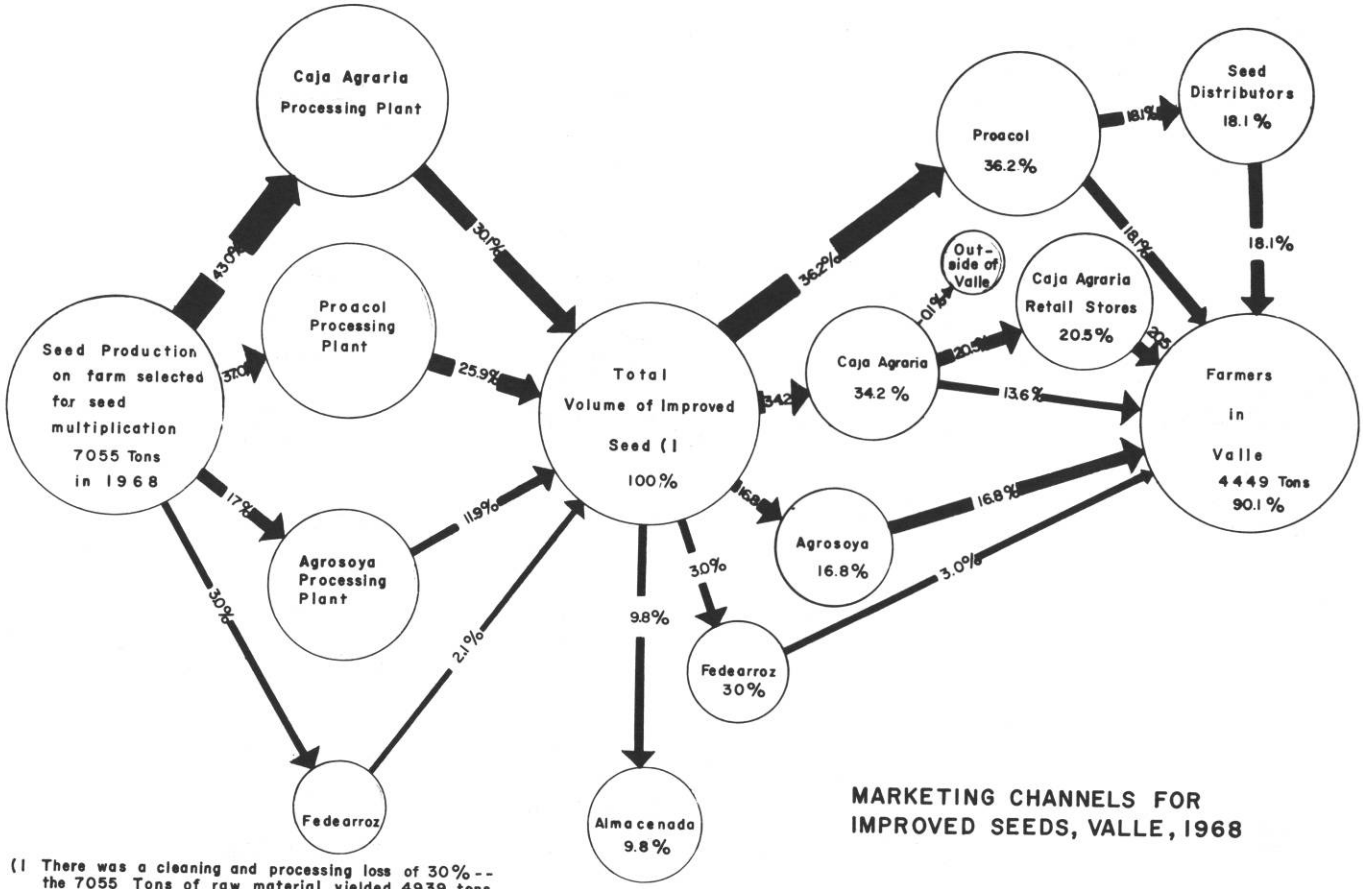
Distribution Channels - Distribution channels for improved seeds in the Cauca Valley are quite simple, with almost 50% being sold directly to farmers at the processing plant. (Figure 4.2.) The Proacol distributors are located in the major cities of the Valley such as Tuluá, Cartago and Zarzal and are most frequently grain wholesalers. Farmers, if they wish, can trade a portion of their products at harvest time for improved seeds for the following semester. The 25 Caja Agraria-owned retail outlets and nine affiliates serve as distributors for Cresemillas in the Cauca Valley. In general, Proacol concentrates its seeds sales among large-scale commercial producers, while Cresemillas supplies all types of farmers. Due to its more complete network of distributors, including many small towns, Cresemillas is the major supplier for small farmers using improved seeds.

Proacol places its seeds on consignment with distributors who receive a 2.5% commission on all sales. The distributors may take up to 30 days to pay for merchandise sold. If they wish to extend credit of more than 30 days to



MARKETING MARGINS FOR IMPROVED SEEDS, 1969

Fig Nº 4.1



MARKETING CHANNELS FOR IMPROVED SEEDS, VALLE, 1968

(1 There was a cleaning and processing loss of 30% -- the 7055 Tons of raw material yielded 4939 tons of clean selected seeds.

Fig Nº 4.2

farmers, they must accept the risk and cost themselves. Some of these distributors levy interest charges to the farmers for accounts extending beyond 30 days. Those who are also grain wholesalers sometimes supply their customers with seed under an agreement whereby the farmer is required to sell his products to the wholesaler in order to liquidate the loan. The Caja Agraria seed processing department sells seeds through its farm supply stores, granting a distribution margin of 5%. Producer cooperatives are also able to purchase direct from the Cresemillas plant at a 10% discount on the retail price in Caja Agraria stores.

Farmer Use - The percentage of commercial farmers in PIMUR surveys using improved seeds and technical assistance is relatively high. (Table 4.2.) It should be noted that one of the methods of defining the commercial grain farmer population was through lists of farmers who purchased improved seeds. Thus, one would expect the percentages of grain farmers using improved seeds to be high. Still, the high percentage of use for both seed and technical assistance illustrates the complementarity of the two, and at the same time, no doubt reflects the effectiveness of the Fondo Financiero Agrario credit requirement for technical assistance.

Table 4.3 shows that commercial grain farmers in the PIMUR survey tended to use slightly higher than recommended seeding rates. This is probably due to seed losses from planting equipment and may be due to the farmer's desire to add a margin of safety as a hedge against poor germination or insect damage.

TABLE 4.2 PERCENTAGE OF COMMERCIAL FARMERS USING IMPROVED SEED AND TECHNICAL ASSISTANCE IN THE CAUCA VALLEY, PIMUR SURVEYS, 1969

Crop	Percentage of Farmers Who Used	
	Improved Seeds	Technical Assistance
Corn	90.6	72.5
Soybeans	79.5	83.3
Sorghum	83.7	86.3
Beans	84.5	86.9
Rice	27.6	93.6
Tomato	95.0	N.A.

SOURCE: PIMUR, Farmer Surveys, 1969.

TABLE 4.3 RECOMMENDED AND ACTUAL SEEDING RATES FOR MAJOR GRAIN CROPS, CAUCA VALLEY, COLOMBIA, 1969

Product	Recommended Seeding Rate Kg./Hect.[a]	Seeding Rates Actually Used (Weighted) Average[b]	Mode[b]
Corn	17	23.2	22
Soybeans	75	76.5	78
Sorghum	15	25.9	12
Beans	65	52.6	50
Rice	150	14.5[c]	160

[a] Report of the commission appointed by the Ministry of Agriculture to study improved seeds.
[b] PIMUR, Grain Farmer Survey, 1969.
[c] This figure differs from that in PIMUR's study on grains (PIMUR Technical Report No. 1) because only improved seed is considered here.

Applying the average seeding rates of commercial grain farmers from Table 4.3 to the total sales of improved seeds in the Cauca Valley, it is possible to estimate the number of hectares which could have been seeded with improved seeds in 1968. The amount of improved corn and bean seeds appears to have been sufficient to seed all the acreage planted to those crops in the Cauca Valley. Since only 91% of the commercial corn and 85% of the commercial bean producers interviewed by PIMUR reported using improved seeds, it appears that overseeding, replanting, seed losses and possibly net sales to other regions of the country account for the discrepancy.

On the other hand, a similar calculation indicates that production of improved soybean and sorghum seeds in the Cauca Valley was sufficient to seed (at recommended rates) only about 50% of the acreage planted in the region in 1968. Yet 80% and 84%, respectively, of the commercial soybean and sorghum producers in the PIMUR survey reported using improved seeds. The explanation is probably that the region is a net importer of these seeds from other regions and that many farmers produce their own improved soybean and sorghum seeds. Nevertheless, in recognition of the potential market, Cresemillas has begun reproducing sorghum seed, and Proacol is placing added emphasis on both soybeans and sorghum.

Conclusions - There is a well-developed, reasonably efficient production-distribution system for improved seeds with sufficient capacity in Valle to more than meet the improved seed needs of the region, given that a high percentage of the corn, bean, and rice acreage is already being seeded with improved varieties or hybrids. The seed producing firms do relatively little plant breeding work. They are dependent on ICA for new seed stocks. The development and distribution of new seeds will continue to be one of the most significant contributions to agricultural development in the region. But it also appears that potential productivity gains at the farm production level can be achieved by taking greater advantage of the complementary relationship between improved seeds and other technical inputs.

The structure of the improved seed production-distribution system in Colombia is oligopolistic, with two firms dominating -- one privately owned and the other a public concern. The public firm exercises price leadership, indicating strong quality and service competition. Given the nature of the industry -- with significant scale advantages and the necessity for progressive behavior --neither monopoly or atomistic competition could be expected to provide comparable economic performance.

Fertilizers[1]

Manufacturing and Mixing - The fertilizer industry in Colombia has shown rapid development in the past few years, in fact little, if any, mixed fertilizers are now imported. Most nitrogen fertilizers are domestically produced, however, because of insufficient developed sources of rock phosphate and potash, most raw materials or intermediate potassium and phosphorous products are imported.

The primary source of nitrogen for fertilizer production in Colombia is the Amocar plant. In 1968, this plant produced about 85,000[2] tons of anhydrous ammonia with a nitrogen content of 69,900 tons. The only other plant in Colombia which has the capacity to produce basic nitrogen material is Ferticol. These two plants are currently supplying most of the nitrogen needs of the fertilizer manufacturers and mixers listed in Table 4.4. Manufacturers are defined as those firms which purchase raw materials (*e.g.*, anhydrous ammonia, rock phosphate, phosphoric acid, and potassium chlorate) and use them to produce mixed and/or simple fertilizers. "*Mixers*" are defined as those firms purchasing prepared fertilizers (*e.g.*, urea, triple sugar-phosphate, etc.) and mixing them either chemically or mechanically in order to produce a special formula for distribution.

ABOCOL is the largest manufacturer of both mixed fertilizers (104,400 tons in 1968) and urea (47,700 tons), and the Caja Agraria is the largest mixer (66,600 tons in 1968). The last column in Table 4.4 shows that all firms except ABOCOL were operating at less than 50% of capacity in 1968. In spite of the low rate of utilization, new capacity is still being constructed. A new plant is now under construction on the Atlantic Coast (Monomerous) which will begin production in 1970 with an immediate capacity of 18,000 tons of mixed fertilizers. ABOCOL completed expansion of its urea-producing capacities in June, 1969. FERTICOL is just coming into production with an expected capacity of about 30 tons in 1969.

Thus, if fertilizer consumption continues to grow at a rate of 9% per year[3], both present and planned nitrogen production and general mixing capacities would be sufficient to meet Colombia's needs for the next ten years.

It was noted earlier that most of the nitrogen needs in Colombia for 1968 were produced domestically. Only 6,400 tons of nitrogen were imported last

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[1] Some of the data in this portion of the report were generously supplied by the Planning Department of the Ministry of Agriculture which is currently conducting a comprehensive national study of fertilizer production, distribution and consumption. The reader is referred to that upcoming publication for further detailed analysis.

[2] Portions of this anhydrous ammonia were imported.

[3] National Planning Department, *Report on the Production and Use of Fertilizers in Colombia.*

TABLE 4.4 FERTILIZER PRODUCTION IN COLOMBIA, 1968
(THOUSANDS OF TONS)

Manufacturers and Mixers	Total Installed Plant Capacity	Compound Fertilizer	Nitrogeneous Fertilizer	Phosphoric Fertilizer	Total Production	Plant Utilization %
Manufacturers						
ABOCOL	200	104.4	49.7[b]		154.1	77.1
Quin S.A.	25	7.7		4.7	12.4	49.6
Ferticol	55					
Acerias Paz del Rio	a		2.4[c]	39.8[d]	42.2	a
Mixers						
Caja Agraria[e]	300	66.6			66.6	22.2
Sulfacidos[f]	100	33.1		.5	33.6	33.6
Others[e]	60	32.0			32.0	a
Totals		243.8	52.1	45.0	340.9[g]	

[a]Data not available

[b]46% Urea

[c]21% ammonium sulphate

[d]Escorias Thomas - 19.9% P_2O_5

[e]Mechanical mixing

[f]Chemical mixing

[g]This total production figure is probably over estimated because of double counting. This arises because several firms purchase domestically produced mixed fertilizers for re-formulation in their own plants. The forthcoming Ministry of Agriculture fertilizer study estimates total fertilizer production for 1968 to be 295.6 tons after eliminating double counting.

SOURCE: ICA, PIMUR Interviews with individual firms.

TABLE 4.5 DOMESTIC PRODUCTION AND IMPORTATION OF NITROGEN, PHOSPHOROUS, AND POTASSIUM FERTILIZER MATERIALS, 1968

	N	P_2O_5	K_2O
		in 1,000 tons	
Imports	6.4	39.0	26.4
Domestic	74.0	5.5	0
Total	80.4	44.5	26.4
% of Total Imported	8	87	100

SOURCE: ICA, PIMUR Interviews

year as compared to a total utilization of 80,400. (Table 4.5.) On the other hand, 39,000 tons of P_2O_5 were imported, which represented about 87% of the total consumption of that element. All of the potassium used was imported. Since 1966, imports have accounted for about the same percentage of total phosphorous and potassium needs each year as in 1968. But during that same time period, nitrogen imports have dropped from about 37% to 8% of the total requirement.

While actual production costs are difficult to obtain and quite variable from one product to another, it is estimated that raw materials represent about 60-70% of total production costs with labor representing about 10%.

Since labor costs are a relatively small portion of production costs and given that firms are operating well below full physical plant capacity levels, it appears that total output could be expanded quite easily without employing large amounts of additional labor. However, there could be a large employment effect in the distribution and transport of expanded fertilizer output, since these are much more labor-intensive activities.

In order to cope with production programming problems, most manufacturers require a minimum order. Such orders are received from large distributors, commission agents, or brokers, and some large farmers order directly from the producer. The terms of sale to large distributors are most frequently 60% cash with 40% financed for 180 days, at an interest rate of 1.45% per month. Credit conditions on direct farmer sales are somewhat more favorable, ranging from no down payment with 90 days credit at 1.5% per month, to 50% cash with 180 days at 1.5% per month.

Prices - Fertilizer price indices (using deflated prices) for 1958 to 1967 are reported in the first column of Table 4.6 . Real fertilizer prices declined from 1958 through 1961; increased slightly in 1962; jumped drastically in 1963 when the ABOCOL plant came into production amid strong efforts to protect the domestic fertilizer industry; then declined slightly through 1966 before rising again in 1967. The ratio of farm product prices to fertilizer prices is by and large inversely related to fertilizer prices, *i.e.*, when fertilizer prices were going up, the ratio of farm product prices to fertilizer prices was going down, and vice versa. Thus, when the fertilizer price index went from 99.4 in 1962 to 131.3 in 1963, the ratio of farm product prices to fertilizer prices fell from 101 to 83.

TABLE 4.6 INCREASES IN REAL PRICES OF FERTILIZERS AND AGRICULTURAL PRODUCTS, 1958 = 100

Year	Fertilizer Price Index	Agricultural Products Price Index	Ratio of Agricultural Products Prices to Fertilizer Prices
1958	100.0	100.0	100.0
1959	100.0	96.7	96.7
1960	95.8	93.6	97.6
1961	90.6	103.5	115.0
1962	99.4	99.8	101.0
1963	131.3	109.5	83.0
1964	130.0	126.2	97.0
1965	123.3	111.6	90.0
1966	120.0	108.2	90.0

SOURCE: Report of National Planning Department to the Ministry of Agriculture and the Bank of the Republic.

Current fertilizer prices in Colombia are somewhat higher than U.S. prices (using the Caja Agraria prices as a measuring stick) as shown in Table 4.7. But it must be recognized that the U.S. fertilizer industry has expanded its capacity rapidly in recent years, producing highly competitive practices and lower prices, (leaving many firms operating at a loss). Colombian fertilizer prices compare much more favorably with April 1967 and 1957-59 average U.S. prices. Given Colombia's scarcity of foreign exchange, it would seem wise to continue to foster and protect domestic fertilizer production. As the relatively new Colombian plants begin to increase their rate of capacity utilization, it should be possible to effect some lowering of real fertilizer prices. On the other hand, if market concentration forces the Colombian government to seek ways of holding prices below monopoly levels, it might be best to consider permitting imports rather than establishing price controls.

TABLE 4.7 COMPARISON OF CAJA AGRARIA FERTILIZER PRICES IN JUNE 1969 WITH U.S. FERTILIZER PRICES IN APRIL 1967 AND 1969[a]

	Urea	15-15-15	5-20-12	10-20-20
Caja Agraria Average Price[b]	$2042	$1749	$1574	$1762
U.S. Average Price April, 1969	1587	1516[d]	1120	1764[f]
U.S. Average Price April, 1967	1879	1670[d]	1277[e]	1819[f]
U.S. 1957-59 Average	2125[c]	1682[d]	1327[e]	1778[f]

[a]All U.S. prices were converted to Colombian pesos at a rate of 17.2 per dollar.

[b]This average price was based on the Caja Agraria price at 12 major locations in Colombia.

[c]No U.S. price available for Urea for 1957-59 average: This figure is computed using Nitrogen equivalent in Ammonium Nitrate.

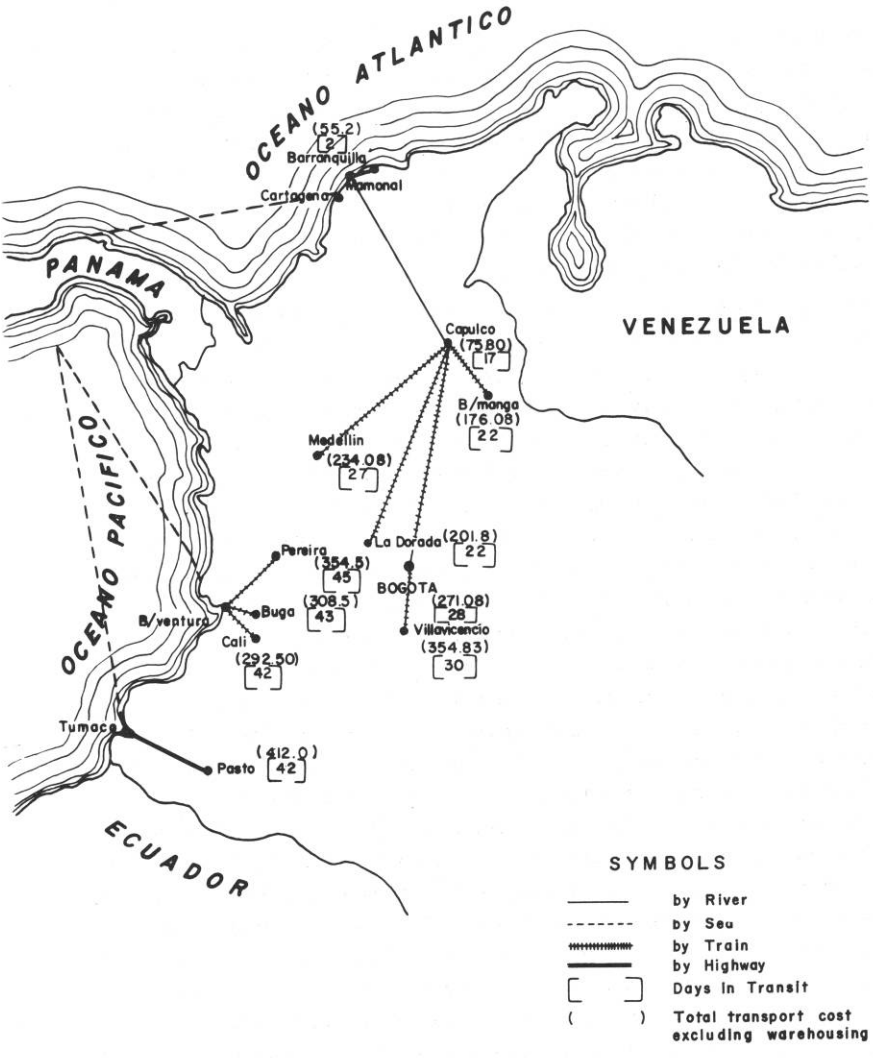
[d]Based upon a 12-12-12 equivalent of 15-15-15.

[e]Based upon a 6-24-12 equivalent to 5-20-12.

[f]Based upon a 8-16-16 equivalent of 10-20-20.

SOURCE: Caja Agraria and *Agricultural Prices*, U.S.D.A., Washington, D.C.

Transportation - The efficient transferral of fertilizer from the production points, concentrated mostly on the northern coast, to agricultural areas where it is used remains a significant problem. The critical factors affecting transportation arrangements are: a country divided by three mountain ranges, a highly independent and relatively unorganized trucking system, a nationalized railroad system which just recently has shown signs of becoming a dependable and viable transportation alternative, and a limited merchant fleet. Transportation methods for fertilizers from the north coast to some major consuming points are illustrated in Figure 4.3 along with average cost estimates and delivery times required.



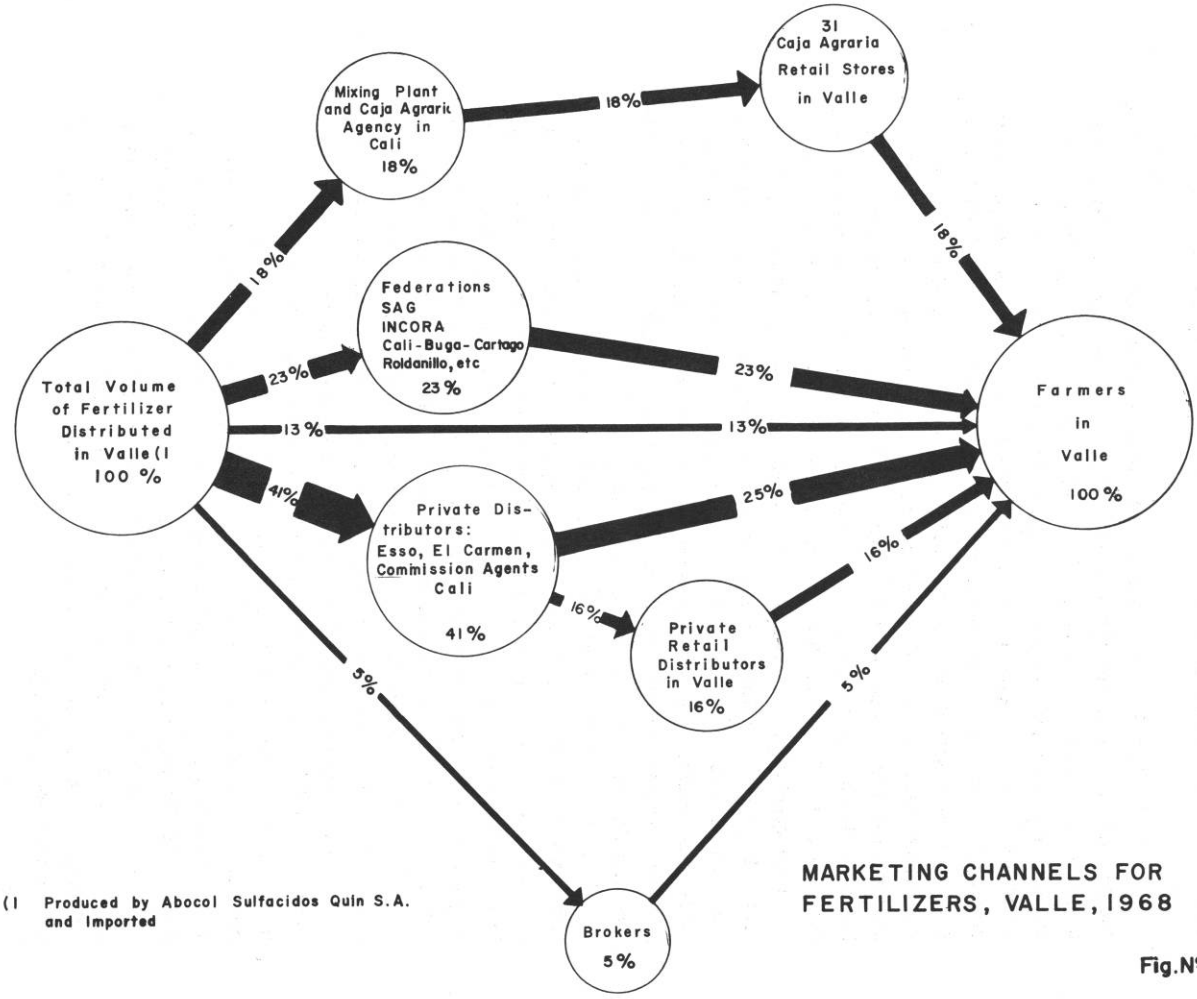
AVERAGE COSTS FOR TRANSPORTING FERTILIZERS FROM NORTH COAST FACTORIES TO INTERIOR DESTINATIONS IN COLOMBIA, 1969

Fig. Nº 4.3

On the average, transportation costs represent about 14% of the price of urea in Cali. But the cost of transport services is probably not as important as availability and scheduling of delivery at the proper time. Shipments to the interior encounter difficulties of coordinating rail shipments with river barge movements. Ocean shipments to Buenaventura and Tumaco are troubled by the difficulties of obtaining a freighter, meeting the minimum load requirements, and finding a backhaul for the freighter in order to avoid higher rates produced by the ship returning empty.

Distribution Channels - One of the most difficult problems facing Colombian fertilizer manufacturers, mixers, and distributors is in production and distribution scheduling. This problem is caused by several factors. Many areas of Colombia produce two yearly crops, and the planting periods for the same crop may vary significantly from one region to another. Fertilizer production and distribution scheduling is further complicated because of the lack of dependable and timely information on crop cycles, acreage planted estimates, fertilizer response, etc. Finally, the lack of special inventory control and traffic management skills, coupled with the transportation uncertainty, hampers effective distribution planning. The resulting market coordination problem produces difficulty for all channel participants. The fertilizer manufacturer or mixer is unable to plan efficient production runs because of demand timing uncertainties. The distributor finds himself frequently in costly out-of-stock situations or occasionally with equally costly large inventories. The farmer (and eventually the consumer) suffers from higher than necessary fertilizer prices and frequent unavailability of critical non-substitutable inputs.

The marketing channel for fertilizers in the Cauca Valley region is presented in Figure 4.4. The distribution system is relatively simple, with no more than two intermediaries between fertilizer producers and farmers. The two larger private distributors (Petroquimica Esso and El Carmen), along with special commission agents, distribute about 41% of the total fertilizer in the region, primarily through their exclusive agent retailers, but in some cases direct to the farmer. Of the two private firms, Petroquimica Esso is the larger, handling about twice as much volume as El Carmen. Producer federations and associations buy and distribute directly to their farmer members and customers. They handle approximately 23% of the total fertilizer used in the region. The other major distributor is the Caja Agraria. The Caja organization is the second largest *single* distributor in the region, Petroquimica Esso being the largest. At its mixing plant and warehouse in Cali, the Caja Agraria purchases simple fertilizers and mixes them to formula specifications. The Caja's 25 farm supply stores and nine private affiliates serve as the major point of sales to farmers. About 13% of the total fertilizer needs in the



(1 Produced by Abocol Sulfacidos Quin S.A. and Imported

MARKETING CHANNELS FOR FERTILIZERS, VALLE, 1968

Fig.Nº 4.4

Cauca Valley are sold directly from producers to sugar plantations and large farmers, and 6% is sold through special brokers who do nothing more than accept orders and pass them along to fertilizer producers for direct shipment to the buyer.

Since the Caja Agraria is the largest national distributor of farm inputs and because it is a non-profit organization, it is generally regarded as the price leader. In fact, the price level set in semi-annual negotiations between the Caja and its suppliers usually becomes the wholesale price for other distributors. The Caja makes its purchases only twice a year, because as a government agency, it is required to buy through competitive bidding. From five to six months lead time on orders is required because of the public bidding, evaluation, decision and delivery process. The same process for imported products requires as much as 7 to 9 months. The producer federations are not bound by bidding requirements, so their orders are made more frequently. In the case of the Federación Nacional de Arroceros, a yearly contract states that a minimum quantity of fertilizer be purchased from the individual supplier during the year. But the contract does not stipulate delivery dates, which are subject to federation needs during the year and availability of required products when ordered. For both the Caja Agraria and farmer associations, all purchases are made through the national headquarters. Similarly, transportation arrangements are handled by the central office.

As a result of the above practices, serious inventory control problems frequently arise, especially for the Caja Agraria. Poor communications with regional warehouses and retail outlets, coupled with cumbersome inventory control procedures and a degree of uncertainty in obtaining timely and economical transportation, combine to produce frequent out-of-stock problems at the retail level, while annual interest charges on inventory run as high as 7% of sales. While it is true that the Caja Agraria must incur significant inventory maintenance costs under the present semi-annual order system, their personnel agree that tighter inventory controls and delivery scheduling could reduce that expense significantly.[4] The Caja Agraria and farmer associations operate on a marketing margin ranging from 10 to 14% of the product's cost at the point of final sale. For the Caja Agraria, a typical margin of 12% covers inventory interest charges of about 7% and warehouse costs of about 3%, with the balance going to administration and office overhead expenses. These margins do not appear high, but they might be reduced somewhat and, perhaps more importantly, services could be improved and costly out-of-stock problems could be eliminated with better inventory control and more effective coordination in the purchase and distribution processes.

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[4]PIMUR personal interviews with Caja Agraria personnel, July 28, 1969.

The purchase procedures of the private distributors differ from the Caja in that inventory control is decentralized; *i.e.*, the regional representative makes direct orders and attempts to maintain adequate supplies to meet the needs of retailers and farmers in his zone. Orders are made as necessary, and the regional distributor arranges for transportation. While such a coordination mechanism is more flexible than that of the Caja Agraria, frequent farmer complaints about the lack of timely availability of fertilizers suggest that improvements could be made in inventory control and coordination between retailers, regional distributors, and fertilizer manufacturers.

The retail stores affiliated with private distributors frequently complain that their position as exclusive distributor in a given area is undercut by direct sales to farmers by the regional distributor. This may aggravate the inventory control and cost problems of both the regional and local distributors. On the other hand, the regional distributors argue that their local agents are too often poorly organized, poorly managed and thus sales are not what they should be.

The cooperative study by PIMUR and Jan Flora in all county seats of Valle (excluding Cali and Buenaventura) and in the 5 northern *municipios* of Cauca indicated that fertilizers were available in 68% of those cities. The unavailability in one-third of the *municipios* most likely represents a significant barrier to effective fertilizer use by small farmers, but not for the larger commercial farmers who have adequate transportation to commercial centers where the product can be purchased.

On the other hand, the lack of availability of technical assistance to farmers regarding proper use of fertilizers and the lack of availability of the most appropriate formulas for a given crop at a given time remains an important barrier to efficient fertilizer application.

Margin information for private distributors and their retail representatives is not available. But since their prices (as shown in Table 4.8) are only slightly above Caja and Federation prices, and wholesale prices are presumably the same, their gross margins can be only slightly higher. Since they must make some profit to stay in business over the long run, it appears that by maintaining tighter administrative control and holding costs to a minimum, such firms are able to make a profitable place for themselves in the market, often by serving larger-scale farmers. However, unless more viable relationships can evolve with more aggressive and efficient local distributors, the trend toward more direct farm sales by private regional distributors and fertilizer manufacturers may accelerate. This would be to the disadvantage of smaller farmers who cannot be economically served by direct sales and therefore are dependent upon efficient local distribution systems.

TABLE 4.8 PRICES OF FERTILIZERS AT DIFFERENT LEVELS IN THE DISTRIBUTION CHANNELS, PIMUR, 1969

Distributor	Urea ($/ton)	Triple 14 ($/ton)
Esso	2109	1875
Industrias Carmen	2090	1860
Federations	2020	1805
Sulfacidos	2100	1816
Caja Agraria	2030	Not sold
Medium-sized distributor	2200	1980

The fertilizer brokers perform a liaison function between farmers and fertilizer manufacturers and distributors. For this service, manufacturers or mixers usually pay a commission of 2.5%. Delivery timing and transportation is arranged by the seller. While this margin seems a bit high in comparison to distributor margins, it is apparently profitable for the manufacturer because he is able to sell directly from factory to farmer with a margin of only 2.5% plus minor transaction and administrative costs. Without this kind of direct sale arrangement, some of the small fertilizer manufacturers and mixers would have a difficult time competing with the Caja Agraria and other large manufacturer-distributor systems.

Credit policies vary among the different distributors. The Caja retail store does not ordinarily provide credit on fertilizer sales, but farmers are able to obtain farm loans from the Caja's branch bank to purchase fertilizers and other inputs. The federations provide financing for 60% of the value of the purchase at 1.5% per month for up to 150 days. In most cases the federation purchases the farmer's product and is therefore willing to deduct the value of his loan from product payments. The credit plan most frequently offered by private distributors carries an interest charge of 2% per month for as long as 180 days. The higher interest rate on loans may be one way in which private distributors boost total returns in order to remain competitive on fertilizer prices.

Farmer Use - A search of the existing literature on fertilizer use reveals little useful economic analysis based on agronomic response data for different soil and climatic conditions in the region. ICA has prepared a set of general recommendations on fertilizer usage in the region by crop. However, it is not clear what procedures and data were used in preparing those recommendations. One study by ICA technicians produced yield responses to different fertilizer applications on corn, which when valued at current support prices were not

sufficient to pay for the cost of the fertilizer.[5] Hedley[6], in his economic study of corn production in the Cauca Valley, concluded that there is no consistent response of corn yields to phosphorous and potassium applications. He also concluded that optimum nitrogen applications would range from 60-100 kilograms per hectare, but that moisture availability and timing as well as plant density variation may change optimum levels significantly. It appears that too little agro-economic research is available to formulate meaningful fertilizer application recommendations.

Still, as indicated in Table 4.9, a fairly high percentage of commercial farmers in the Cauca Valley region are using fertilizers. Since more larger grain farmers use fertilizer, an even higher percentage of the acreage is fertilized. (Table 4.10.) This may be partially due to the fact that farmers with Fondo Financiero Agrario credit are required to hire and accept the technical input prescriptions of *agronomos* who, in the absence of research, must make assumptions about profitable use of fertilizer. Generalizing from response data from other areas of the world with different environmental conditions and seeds more adapted to fertilizer response may result in considerable over-estimation of the value of fertilizer in particular situations.

TABLE 4.9 FERTILIZER USE IN THE VAUCA VALLEY, BY CROP, PIMUR, 1968

Crop	Percent of Farmer Using			Total
	Single-element Fertilizers only	Compound Fertilizers only	Both	
Corn	28.0	11.0	16.0	55.0
Soybeans	5.0	10.0	5.0	20.0
Sorghum	27.0	6.0	8.0	41.0
Beans	15.0	21.0	2.0	38.0
Rice	21.0	3.0	66.0	90.0
Tomatoes	5.4	10.8	72.9	89.1

SOURCE: PIMUR, Grain Farmer Survey, 1969.

TABLE 4.10 PERCENTAGE OF ACREAGE FERTILIZED BY SIZE OF GRAIN FARM UNITS, CAUCA VALLEY, 1968

Product	% of Acreage Fertilized		
	Farms with less than 50 hectares	Farms with more than 50 hectares	Total
Corn	60	80	75
Soybeans	23	37	34
Sorghum	35	54	48
Beans	33	44	37
Rice	81	89	88

SOURCE: PIMUR, Grain Farmer Survey, 1969.

[5] Jim Spain, and Marin Gilardo, *Necesidad de Fertilizantes Fosfalos y Nitrogenados en los Suelos Colombianos*, ICA, Unpublished Manuscript.

[6] Douglas D. Hedley, *An Economic Analysis of Corn Production in the Cauca Valley, Colombia* , Unpublished Ph.D. dissertation, Michigan State University, East Lansing, Michigan, 1969.

The recommended application rates are shown in Table 4.11 for each of the grain crops along with the average application rates of farmers in the PIMUR Grain Survey who said they used fertilizers in the second semester of 1968.

TABLE 4.11 RECOMMENDED AND CURRENT AVERAGE FERTILIZER APPLICATION RATES FOR MAJOR GRAIN CROPS IN THE CAUCA VALLEY, 1968

Crop	ICA Minimum Recommended Application Rates[a] (Kg. per Hectare)			Actual Average Application Rates by Commercial Farmers Who Used Fertilizers, 2nd Semester 1968[b] (Kg. per Hectare)		
	N	P_2O_5	K_2O_5	N	P_2O_5	K_2O_5
Corn						
Southern Valle	90	60	30	c	c	c
Rest of Valle	75	15	15	54	40	25
Soybeans	10	30	10	44	38	25
Sorghum	60	15	15	35	41	23
Beans	10	30	10	30	47	26
Rice						
Southern Valle	90	30	30	64	53	26
Rest of Valle	100	100	50	78	60	30

[a]ICA Department of Soils

[b]PIMUR, Grain Farmer Survey, 1969

[c]No interviews were conducted with corn producers in Southern Valle.

In general, the non-leguminous crops show an under-application of nitrogen, while the actual application rates for legumes significantly exceed the recommended rates. On the other hand, except for corn and rice in the southern part of the Valley, all other grain farmers are significantly exceeding the recommended application rates for phosphorous and potassium. This situation is probably brought on by less than precise application of mixed fertilizers. For example, the farmer may decide to apply 15-15-15 on his corn, either because the other formulas are not readily available or because he simply does not know better, but in order to apply the recommended nitrogen dosage of 75 kilos per hectare, he ends up applying equal amounts of phosphorous and potassium. The result is an uneconomical application of the last two nutrients, and the extra cost may significantly reduce the profitability of fertilizer use. He might even have made more profit without applying the fertilizer. At the aggregate level, this situation produces an unnecessary waste of scarce resources and aggravates the problem of limited foreign exchange, since many fertilizer raw materials are imported. Another explanation for the high average use of phosphorous is the fact that many farmers apply *escorias* Thomas (slag from steel mills) partly as a soil corrective in order to raise the ph level and partly to supply phosphorous (7-9% P_2O_5 available immediately, 7-9% residual) to the soil. The dosage needed to raise the ph sufficiently may

include more phosphorous than the recommended application rate for that nutrient. The economic effect of such a condition is, of course, the same as described on the preceding page.

The type of crop produced on the land in the previous semester is an important factor to consider when evaluating fertilizer usage. Since grain farmers in Valle can produce corn, sorghum, soybeans, or beans, depending on price conditions, it would be quite possible to plan a crop rotation system using legumes and non-legumes in order to reduce nitrogen fertilizer needs. The data from commercial grain farmers in the PIMUR survey suggest that this is not a common practice. Of the 45% of farmers who produced corn in the second semester of 1968 without fertilizer, 32% had produced a non-leguminous crop in the previous semester. Similarly, of the 62% of sorghum producers not fertilizing in the second semester, 1968, 46% had produced non-legumes in the previous semester.

The possibility that grain farmers in Valle are currently under-utilizing nitrogen for non-legumes, over-utilizing phosphorous and potassium for most crops, and not practicing rational crop rotation is difficult to reconcile with the fact that from 73% to 94% of those same farmers were receiving technical assistance during the same period. The explanation is probably a combination of the following: 1) the technical assistance is never actually received; 2) the assistance is erroneous because too little usable research is available to guide the *agronomo* and farmer in determining the most profitable use of fertilizer; 3) the farmer has difficulty in purchasing the desired fertilizer formula.

Conclusions - If fertilizer consumption continues to grow at the rate of 9% per year, Colombia appears to have sufficient nitrogen manufacturing and mixing capacity to meet demands for the next decade. Nitrogen needs are being supplied by domestic production, but most phosphate and potash will continue to be imported. Production costs may be lowered somewhat as existing capacity is more intensively utilized.

Fertilizer pricing appears to be effectively competitive, with the Caja Agraria acting as a price leader. Fertilizer distribution costs are not excessive given the difficulty of coordinating transport from the north coast to interior locations. Still, more effective inventory control and distribution scheduling could lower marketing costs and, more importantly, improve the availability of proper fertilizer formulas at the time and place required by farmers. While fertilizer is used by the majority of commercial grain farmers in the Cauca Valley, there is a definite lack of reliable information on profitable rates of fertilizer application. Evidence suggests that Cauca Valley grain farmers may currently be making uneconomical applications of fertilizers.

Pesticides[7]

Product Formulation - "It is estimated that the losses from insects and diseases are on the order of 15% to 20% of gross agricultural products"[8] in Colombia. It is virtually impossible to produce some crops in Colombia without fungicides and insecticides.

Colombia imports pesticides both in final product form and as raw material. For the pesticides made in Colombia, most raw materials are imported, though about 50% of solvents and emulsions are now domestically produced. Most of the major firms are subsidiaries of German (Bayer, Hoechst, Cela, Shering), U.S. (Hercules, Union Carbide, Dow Cyanamid, Eli Lilly), English (Shell), Dutch (Proficol) or Swiss (CIBA, SANDOZ) corporations. In most cases, these firms carry a range of pesticides in addition to other chemical-based products, such as drugs, veterinary supplies, etc. Most of these firms import only intermediate products which are mixed with solvents or emulsions and packaged for distribution. Because of the number and diversity of producing firms, and due to the fact that the same equipment can be versatile enough to produce a wide range of products, it is difficult to determine the current production capacity for pesticides in Colombia. It is estimated, however, that in 1968, the industry operated at 40-50% of capacity.[9]

PIMUR interviews indicated that the factors which contribute most to this low utilization of plant capacity are the low demand for pesticides, the difficulty of obtaining import permits for raw materials, and related to that, the poor and inconsistent quality of domestically produced solvents and emulsions. Recently, demand for pesticides has been stimulated by the requirement that farmers accept technical assistance in order to obtain credit from INCORA or the Fondo Financiero Agrario. The problem of obtaining import licenses can only be solved by changes in government procedures for granting import permits. Product quality control could be improved if ICA, which is responsible for establishing quality standards for agricultural inputs, can establish workable standards which coincide realistically with industry capacity to conform and then can administer them vigorously.

Raw materials account for a high percentage of pesticide formulation costs. Raw material represents about 60-70% of total costs, with labor and selling costs absorbing about 10% each, and plant depreciation, administration, maintenance, etc. contributing the balance. It therefore seems that an increase

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[7]Pesticides are defined here to include those chemical-based products for controlling insects (insecticides), weeds (herbicides) and fungi (fungicides).

[8]*Informe sobre Producción y Consumo de Pesticidas en Colombia*, Planeación Nacional.

[9]PIMUR Interviews with formulating firms.

in demand that might permit more intensive plant utilization would neither lower pesticide formulation costs nor expand labor needs significantly.

Distribution Channels - Pesticide producers distribute through the Caja Agraria, the farmer federations and associations, private distributors, and direct to farmers. The producing firms prefer to distribute through the Caja and farmer federations because of their size and timely repayment of credit concessions. This channel represents about 50% of all sales. On the other hand, pesticide formulators point out that private distributors are usually more aggressive product merchandisers than the Caja Agraria or producer federation stores.

Because pesticide prices have been frozen by the government since 1967, most formulators have adjusted credit policies to reduce the amount and terms of credit given to buyers. Farmer federations can still obtain credit for 90 to 120 days at an interest of 1.5% per month. Most private distributors are asked to pay within 30 days but in return they can obtain a 5% discount. If the private distributor does not pay within 30 days, he loses his discount and must begin paying 2% per month interest. In order to reduce their credit costs while stimulating sales, some pesticide formulating firms are helping to arrange Law 26 loans for the farmers who wish to buy their products. This is accomplished by pre-arranging a line of credit with a private bank, to be used and paid for by farmers.

Since the major distribution channels are virtually the same for pesticides and fertilizers, a channel map will not be repeated here. Differences between channels are that Petro-Quimica Esso and the Caja Agraria each distribute a smaller proportion of sales; farmer federations and small independent farm supply stores are more important; and there is no broker system for pesticides. On the other hand, most large formulators maintain a corps of *agronomo*-salesmen who make direct contacts with the larger farmers in their assigned zones in order to observe crop conditions and make recommendations for pesticide application. The *agronomo* then directs the farmer to the nearest distributor for his firm's products or for large orders helps him make direct purchases from the producer's warehouse. These *agronomo*-salesmen also make contact with privately and publicly employed *agronomists* in their zone in order to promote their firms' products and serve as a communicator of technical information regarding pesticides.

Pesticides are available in 80% of the *municipios* of Valle and northern Cauca according to a survey of those *municipios* by PIMUR and Jan Flora of Cornell University. As in the case of fertilizers, the unavailability in 1/5 of the *municipios* probably represents a significant barrier to effective pesticide use by small farmers though it does not present problems for large commercial farmers who have ready access to the larger trading centers in the region.

It appears that pesticide producers are more aggressive in their sales promotion activities than other farm input producers. A variety of advertising media are used, including newspaper (especially in weekly agricultural pages), radio (farm programs), signboards, pamphlets, and demonstration plots.

Prices and Margins - A comparison of retail prices (Table 4.12) indicates there is little variation among the major distributors. In some cases this is the result of frozen retail pesticide prices. For some products strong competition tends to equalize prices slightly below fixed price levels. As in the case of fertilizers, the purchase price of the Caja Agraria and producer federations sets the wholesale price level. Thus, most distributors pay the same prices for their pesticides. With retail prices fixed and formulation costs rising steadily due to inflation[10], the formulators must keep raising wholesale prices and thereby reducing the distributor's margin. Current wholesale prices leave an 8% margin for distributors who can get an additional 5% discount by paying in less than 30 days. However, if the buyer does not pay in less than 30 days, the discount is withdrawn, and he must begin paying interest charges of 2% per month on the unpaid balance. Thus, pesticide distribution margins are currently at or below the 12% level of the Caja Agraria. At the same time, non-price competition, such as extra services, farmer credit and delivery have been intensified in the distribution of some of the more profitable products, particularly between independent private and non-profit distributors.

TABLE 4.12 PRICES OF PESTICIDES AT DIFFERENT LEVELS IN THE DISTRIBUTION CHANNELS, PIMUR, 1969

Distributor	Insecticide	Herbicides		
	(Methyl Parathion) $/gallon	Gesaprim $/kilo	Treflan $/gallon	2-4-D Amine $/gallon
Federations	84.70	85.20	462	not sold
Caja Agraria	82.00	not sold	not sold	52.80
Esso	90.00	88.50	not sold	56.00
Industrias Carmen	90.00	88.50	480	not sold
Medium-sized distributors	95.00	90.00	510	not sold

SOURCE: PIMUR, Interviews with distributors.

Thus, pesticide formulators have met their rising costs by gradually increasing wholesale prices and thus reducing the distributors' margin since retail prices are frozen. It should be recognized however, that distribution margins cannot be squeezed much lower, since they are already as low as the non-profit margins of the Caja Agraria. If pesticide formulators cannot find ways of lowering production costs in order to keep wholesale prices down, they may find themselves faced with a situation in which distributors refuse to

[10] The consumer price index increased over 15% from May 1967 to May 1969. (Source: Banco de la República).

handle certain low-margin products. Some distributors are already starting to cut out some products.[11] There is some indication that formulating firms will either be forced to discontinue production of such products; to lower quality standards and costs; or to place more emphasis on direct farm, Caja Agraria and Federation sales channels. In any case, the farmer may find it more and more difficult to find the products he needs or he may get lower quality products.

Farmer Use - The lack of agronomic response and related economic analysis was discussed in reference to fertilizers. The same argument applies equally well to pesticides. However, the pesticide problem is a bit more complicated, since the application timing is considerably more critical than for fertilizers. Application errors of 4 to 5 days may render its use fruitless. Thus, in order to achieve efficient use of pesticides, the farmer must understand insect and disease life-cycles (at least at the practical level) or have access to technical assistance during the growing season to assist him in making pesticide application decisions. There is a real need for more practical agronomic research with economic evaluation of the profitability of different pesticide application rates. Such information should be channeled to both *agronomos* and farmers.

Insecticides are used by the majority of all commercial grain producers in Valle with the exception of sorghum. (Table 4.13.) Because a higher percentage of the larger farms use insecticides (except for beans), the percentage of total acreage treated is higher than the percentage of farmers using insecticides. Similarly, the majority of fruit and vegetable producers, except plantain and cabbage growers, reported using insecticides. No attempt was made to obtain application rates in the farmer surveys because of the degree of technical complexity involved in such data collection.

TABLE 4.13 USE OF INSECTICIDES RELATED TO FARM SIZE
CAUCA VALLEY, COLOMBIA, 1968

Crop	% of All Producers Using Insecticides	% of Acreage Treated with Insecticides	
		On Farms with Less Than 50 Hectares	On Farms with More Than 50 Hectares
Corn	75	65	88
Soybeans	62	60	73
Sorghum	41	37	62
Beans	67	67	65
Rice	97	95	100
Pineapple-Valle	38	-	-
Pineapple Risaralda	75	-	-
Plátano -Quindio	15	-	-
- Valley Cauca	6	-	-
Tomato	100	-	-
Potato-Nariño	100	-	-
Cabbage-Valle	35	-	-
Onion-Valle	100	-	-

SOURCE: PIMUR, Grain and Fruit and Vegetable Farmer Surveys, 1969.

[11] PIMUR Interviews with Pesticide Distributors.

While extensive use of different types of herbicides is a relatively new development in the U.S. and other developed countries, herbicide usage in Colombia is truly in the infant stage. A broad leaf weed killer (2-4-D) has been available for several years, but the safer pre-emergence herbicides have only been introduced within the last 3-5 years. Rice and cotton producers have been the first to widely adopt the new herbicides.

In general, Table 4.14 shows that for most crops, farmers have just begun to experiment with herbicides (except that 97% of the rice growers, 92% of Risaralda pineapple producers and 91% of onion farmers were using herbicides). Once again, as a result of this tendency, a higher percentage of the acreage planted was treated with herbicides. The major reasons for their low utilization appear to be: 1) lack of availability of research results indicating profitability; 2) the pre-emergents are disliked because once applied, the farmer cannot change cropping plans, and he may lose the investment if replanting is necessary due to lack of moisture; 3) a prolific source of very cheap labor is available at almost all times; 4) some of the herbicide sprays endanger neighboring crops (*i.e.*, a 2-4-D might be applied on one farmer's corn field and drift over onto a neighbor's cotton with resulting damage).

TABLE 4.14 USE OF HERBICIDES RELATED TO FARM SIZE
CAUCA VALLEY, COLOMBIA, 1968

Crop	% of All Producers Using Herbicides	% of Acreage Treated with Herbicides	
		On Farms with Less Than 50 Hectares	On Farms with More Than 50 Hectares
Corn	22	15	37
Soybeans	8	2	22
Sorghum	23	20	33
Beans	7	12	0
Rice	97	94	100
Pineapple-Valle	0	-	-
Pineapple Risaralda	92	-	-
Plátano -Quindio	18	-	-
-Valley Cauca	6	-	-
Tomato	9	-	-
Potato-Nariño	28	-	-
Cabbage	0	-	-
Onions	91	-	-

SOURCE: PIMUR, Grain and Fruit and Vegetable Farmer Survey, 1969.

Fungi are not a major problem for most crops grown in Valle. However, virtually all use fungicides[12], and 30% of bean producers in the grain survey said they use fungicides. The low percentage of fungicide use on beans is interesting given the common complaint that disease problems are brought on by fungi. It appears that in spite of the complaints, most farmers are not aware

[12]See PIMUR Technical Study No. 15, *Fruits and Vegetable Production and Distribution in the Cali Area*, as well as Chris Andrew's *Improving Performance in the Potato Production-Distribution System in Colombia*, unpublished Ph.D. dissertation, Michigan State University, East Lansing, Michigan, 1969.

of profitable methods of combatting such diseases.

Conclusions - Most pesticides in Colombia are produced by predominantly foreign-owned firms with imported raw materials. While solvents and emulsions are now produced in Colombia, there is a significant problem of low and variab quality. Distribution channels are fairly well developed, with farmer federations and the Caja Agraria acting as distribution and price leaders. Government price control has resulted in a squeeze on distribution margins for some products. Without elimination of price controls or at least upward adjustments, there will probably be some pressure on distributors and formulators to discontinue some products, to lower production costs by changing quality standards or to change distribution channels. *We therefore suggest that frozen pesticide prices be reviewed in order to determine, on a product-by-product basis, if the public interest would be better served by maintaining current prices, permitting prices to rise to a specified level, or eliminating price controls altogether.*

Insecticides are quite widely used by Cauca Valley grain farmers. Herbicides are little used except among rice growers, and fungicides are used only by bean, tomato and potato producers. Though no attempt was made to collect detailed data on application rates, available evidence suggests that a major problem is the lack of technical information indicating the most profitable conditions of use and rates of application for the various pesticides.

Farm Machinery

At the present time the Cauca Valley is probably the most highly mechanized agricultural zone in Colombia. It is estimated that well over 90% of the cultivated acreage in the flat part of the Valley is under tractor-powered cultivation. Most remaining cultivated acreage in the state of Valle, in Cauca, Quindio, Risaralda and other neighboring departments will be difficult to mechanize because of the mountainous terrain. The following section will, therefore, focus on problems of distribution, maintenance, and use of agricultural machinery in the region, rather than on problems of expanding utilization. Products considered in the study were tractors, combines, soil preparation equipment, machinery for the application of insecticides, fertilizers, etc. and machinery replacement parts.

Historically, the majority of these products have been imported. But, because of recent encouragement and credit from the Caja Agraria with protective tariffs, more and more farm implements and replacement parts are being produced in Colombia. The importers and distributors of large farm machinery in Colombia continue to import all tractors, combines, and parts for such equipment. When import restrictions and prices permit, they also import some farm implements, while serving as major distributors for Colombian-produced farm equipment. In

addition to a few large, well-organized farm implement and parts manufacturers, there are large numbers of small independent machine ships which produce both farm equipment and replacement parts largely on an individual order basis.

Imported Equipment - Importation and distribution of farm tractors and combines is handled under two different systems. In order to encourage the importation and use of tractors and combines, the Caja Agraria provides an import clearance and financing service to distributors. To participate in this program, the distributor must first qualify for participation by demonstrating his ability to provide an adequate level of parts and service, for a brand of machinery judged to be acceptable for use in Colombia by the Caja Agraria. If his firm qualifies, the distributor is granted a credit line equal to the value of his firm's fixed assets. The distributor then receives equipment orders from farmers and passes them along to the Caja Agraria which places the order with the appropriate foreign manufacturer, obtains import licenses, etc., and pays for the equipment. When the machinery arrives, the Caja Agraria notifies the distributor, who makes delivery to the farmer and supplies technical assistance and maintenance services. The Caja Agraria requires a 25% down payment on the equipment from the farmer at delivery. The remainder is financed by the Caja for 36 months at an interest rate of 12% per year discounted 6 months in advance.

The distributor may also choose to use his own capital or borrowed funds in order to import farm equipment directly. If so, he must order from manufacturers, obtain import clearance, accept the monetary exchange risks, and help arrange financing. The major sources of farmer credit under these circumstances are the Caja Agraria and the Instituto de Fomento Industrial (for U.S.-made farm equipment only). From 75 to 90% of the purchase cost may be financed for 2-3 years at interest rates ranging from 5 to 11% discounted 6 months in advance.

To cover import and distribution costs, a gross margin of 37% of the equipment purchase price is permitted by Colombian law under both systems described above. In either case, about 13% is required for tariffs, import clearance charges and administrative costs. An estimated twelve percent is needed for interest charges on capital used in the import process. The remaining 12% goes to the farm machinery distributor to cover his expenses and profit margin.

Both import systems are used by farm equipment importers under different circumstances. It seems that most distributors feel that importation is slower when handled by the Caja Agraria, but that their own risks are reduced considerably.[13]

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[13] PIMUR Interviews with farm machinery importers, 1969.

While the importation and distribution of farm tractors and combines appears to operate satisfactorily in the Cauca Valley region, evidence from both distributors and farmers suggests that because of the multiplicity of farm equipment makes and models[14] in Colombia, and due to difficulties in obtaining import licenses, the availability of spare parts is a critical problem. The government requires that all distributors import replacement parts equal to 18% of the value of imported equipment. But most distributors agree that in order to meet actual needs, they must exceed that percentage significantly.[15] Because of import delays, limited number of units of any one make and model and associated high inventory maintenance costs, distributors are unable to meet adequately the needs for replacement parts. The result is costly for equipment owners, since they must either leave the expensive machinery idle while waiting for the necessary parts or ask local machine shops to "copy" the needed item using makeshift equipment and materials.

Domestic Production - As a part of its policy to conserve foreign exchange and stimulate industrial development, the Colombian government in recent years has provided tariff protection as well as credit assistance for firms in the metal-working industry. As a result, more and more of the country's needs for farm implements and replacement parts are being produced in Colombia. The data in Table 4.15 (for Caja Agraria) indicate that domestic production has rapidly replaced imports for major farm implements.

TABLE 4.15 PURCHASES OF FARM IMPLEMENTS BY THE CAJA AGRARIA, 1960-67

Year	Plow		Cultivator		Harrow		Seeder	
	Imp.	Nat.	Imp.	Nat.	Imp.	Nat.	Imp.	Nat.
1960	669	-	665	-	292	-	232	-
1961	448	-	150	-	225	-	163	-
1962	245	-	63	-	224	-	147	-
1963	125	-	64	-	115	-	132	-
1964	45	8	-	30	-	11	-	112
1965	-	115	20	30	-	105	-	119
1966	10	346	34	114	11	263	22	78
1967	-	405	8	123	-	386	-	101

SOURCE: Caja Agraria

[14]According to the farm machinery distributors association, ADIMAGRO, there are 56 makes of tractors in operation. It is estimated that some of those have more than five different sizes. They also range up to 15 years old. With the history of frequent model changes and improvements, this expands the variety of parts required in stock for repair needs significantly.

[15]PIMUR Interviews with importers, 1969.

The firms in this industry can be divided into three major groups: 1) large firms producing farm implement or replacement parts with some degree of technical accuracy and acceptability; 2) smaller firms producing farm implements under direct contracts from the Caja Agraria or farmers, usually with raw material financing from the buyer and using questionable technical standards; and 3) small machine shops producing almost anything (*i.e.*, parts or implements) required by a potential customer on a custom basis.

The value of the fixed assets for firms in the first category range from $12 to 260 million.[16] For the most part, they are owned by Colombians and advanced production techniques are used. Plant utilization is low, ranging from 25% (for the largest firm) to 60% of capacity. Marketing channels are simple, with distribution handled direct to farmers, to the Caja Agraria, or to farm equipment distributors. Gross margins for the latter usually range from 20 to 25%. Data provided by the Caja Agraria indicate that the price of domestically produced farm implements ranges from 15 to 40% higher than imports. The same appears to be true for replacement parts.

The firms in the second and third categories are quite similar in their characteristics, except that the former produce implements primarily under contract to the Caja Agraria and farmers, while the latter produce custom-made replacement parts for farmers. The fixed assets of the firms in these two categories seldom exceeds 1 million pesos, and they are ordinarily individual proprietorships or family firms. In order to avoid labor union problems, these firms seldom employ more than 25 persons who frequently have very little specialized training. In general, management practices are poor, technical standards are low, equipment is old, and physical plants are under-utilized. Customers complain that product quality leaves much to be desired. This is not surprising given the organization, management, and technical skills used by these firms. Again, distribution channels are simple, with most sales being direct to the farmer or to the Caja Agraria.

Equipment Leasing Firms - There are two firms in the Cauca Valley which do custom land preparation, cultivation and harvesting. Both firms are primarily patronized by the sugar plantations and other large farmers who either do not have sufficient farm equipment to meet their needs or whose machinery is damaged. Most often the customers of these firms are owners of farms in excess of 100 *plazas*. However, one of the firms mentioned INCORA farmers as clients or potential clients. Nevertheless, it is clearly more profitable for these firms to serve larger farmers due to fewer scheduling problems, less "road time" for the machinery, and lower sales and collection costs.

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[16] PIMUR Interviews, 1969.

It is possible for such firms to achieve much higher utilization of farm equipment than the average farmer. Leasing firms estimate that each large (100 H.P.) tractor produces at least 1350 hours of farm work per year. In comparison, it is estimated that under optimum conditions a comparable tractor would be used no more than 675 hours per year by an individual farmer. If one assumes that, due to poor maintenance and handling, the farmer's tractor has a useful life equal to that of the rental firm's (10 years), and assuming equal initial purchase costs and opportunity costs for capital invested, the farmer's fixed cost ($76) per hour's work is twice as great as the rental firm's ($38).[17] By the time the farmer pays variable costs including administration, repairs, operator, fuel, oil, etc., his total cost of operation per hour is 145 pesos. The rental charge for the tractor and implements under consideration is about 120 pesos in the Cauca Valley. Thus, the farmer could save about 25 pesos per hour or 16,875 pesos per year, assuming he did 675 hours of farm machinery work. But other factors must be considered. The farmer must consider the possible cost of not having "timely" cultivation (*e.g.*, a few days delay in planting some crops may drastically reduce yields, or because of rain the farmer may miss a crop completely if planting is delayed). Also, the farmer may have many uses for a tractor (some incidental but important) not included in the services of the rental firm (*e.g.*, irrigation pumping and cartage). For these reasons, custom farm service firms are not likely to replace private tractor ownership for larger farms. On the other hand, farm equipment leasing firms may be able to increase efficiency of equipment utilization and reduce foreign exchange requirements for tractor imports, while supplying the farm machinery needs of medium and small-sized farmers. In addition, because of the high investment cost and non-versatility of harvesting equipment, custom harvesting offers significant potential savings.

Farm Ownership and Use - It was noted earlier that over 90% of the cultivated land in the flat part of the Cauca Valley is under machine cultivation. Virtually all land preparation for cane production is done by machine. The PIMUR Grain Farmer Survey showed that 97% of these commercial farmers interviewed owned or rented farm tractors. The rate of mechanization is undoubtedly much lower on smaller grain farms, not included in the PIMUR grain farmer sampling. The percentage of PIMUR interviewed fruit and vegetable farmers using tractors for cultivation was zero for onions and cabbage, 20% for plátano and pineapple, 41% for oranges, 92% for tomatoes and 31% for potatoes. The percentage of farms using farm machinery is low for some products, because mountainous land used in their production is not mechanizable with available

[17] These estimates also include the fixed costs of farm implements.

equipment. In general, PIMUR interviews indicate that farm mechanization is almost universal among large farmers on flat land.

Interviews with farm machinery distributors and direct farm observations indicate that careless operation practices by poorly trained drivers and inadequate maintenance practices significantly reduce the effective use of agricultural machinery in the Cauca Valley region. This produces higher than necessary repair costs, amplified by the frequent long periods of "downtime" due to non-availability of parts.

Conclusions - The Cauca Valley is already the most highly mechanized farming region in Colombia, with an estimated 90% or more of the cultivated acreage under mechanization. This level of mechanization has been accomplished largely with imported tractors, combines, and until recently, with much imported farm equipment. The import and distribution procedures do not appear to be a significant barrier to obtaining tractors or combines. However, there has been a proliferation of makes and models which has aggravated problems of parts supply. Recent government efforts to protect and stimulate the metal working industry have produced a proliferation of farm implements and replacement parts manufacturers. While a few of the larger of these appear to function with acceptable technical knowledge, equipment, and raw materials, most appear lacking in those critical areas and therefore turn out products of poor quality at high prices.

It is clear that economies of scale are important in the efficient design and production of farm implements and parts. The present size of Colombian firms in this industry, their limited technical know-how and practical experience, and the size of the total market explain the present high prices and low quality of domestically produced parts and implements. Since custom farm service firms are not likely to expand their influence (except in harvesting), it seems that medium and large-sized Cauca Valley farmers will continue to own and operate their own farm equipment. This suggests that improved operating and maintenance practices and greater availability of replacement parts are critical factors to be considered in efforts to improve the economic efficiency of farm machinery utilization.

However, cost comparisons suggest that smaller farmers may be able to save money by hiring machinery rental firms to handle land preparation, planting and cultivating. Larger farmers should also be able to reduce costs by renting equipment for heavy plowing and peak machinery requirements. All but the very largest Cauca Valley grain farmers must continue to hire harvesting done rather than invest in such expensive equipment.

Feed Concentrates

The following summary is based largely upon secondary data, information obtained from the Feed Concentrate Producers Association (ACOFAL), a limited number of personal interviews with concentrate processors, and the PIMUR surveys of poultry and egg producers. The lack of cooperation of several of the most important firms has seriously limited the description and analysis of the industry.

Industry Organization - The feed concentrate industry in Colombia is relatively new. According to information supplied by the Feed Concentrate Producers Association (ACOFAL), there were only 5 firms producing and importing animal feeds in Colombia in 1952. Prior to 1957 substantial quantities were imported. As shown in Table 4.16, domestic production has increased steadily since 1956, while imports have been virtually eliminated.

The current plant capacity in the feed concentrate industry is estimated at 430,000 tons, assuming plant operation at 8 hours a day for 6 days a week. The present percentage of this one-shift plant utilization is estimated at about 75%.[18] In some areas, such as Valle, one-shift plant utilization is near 100%. This plant capacity includes some 42 firms with 50 manufacturing plants. However, about 70% of the capacity belongs to the three largest firms (Finca, Purina and Solla).

TABLE 4.16 ANIMAL FEED CONCENTRATES: COLOMBIAN NATIONAL PRODUCTION AND IMPORTS (METRIC TONS)

Year	Imports[a]	National Production[b]
1956	6,319	66,438
1958	264	73,471
1960	-	125,275
1962	10	186,861
1964	12	229,221
1966	-	321,686
1968	-	320,000

[a]SOURCE: DANE

[b]SOURCE: ACOFAL

About 90% of raw material needs for the industry are domestically supplied. The remaining 10% which are imported are primarily fish and meat meals, vitamins, antibiotics and other minor ingredients. Recently, feed concentrate manufacturers have had some difficulty in obtaining sufficient supplies of soybean meal and sorghum. Soybean meal prices in Colombia have increased

[18]PIMUR Interviews with feed concentrate manufacturers.

rapidly in recent years in comparison to other feed ingredients. This is apparently related to rising world prices with which Colombia is competitive and to the fact that a 15% subsidy is paid on all exports by the Colombian government. At the urging of ACOFAL and with government support, the soybean oil producers have signed a contract agreeing to satisfy domestic demand before exporting soybean meal. The shortage of sorghum is apparently due to reduced production occasioned by the substitution of soybean plantings for sorghum by farmers in Valle and other major production centers. At current prices and with limited yield potentials of existing sorghum varieties, soybeans appear to be more profitable for the farmer. Sorghum has become an important feed concentrate ingredient constituting about 18% of the cost of a representative ration. It could be even more important if new higher yielding varieties could be developed. In the section of this report dealing with improved seeds, it was estimated that only about 50% of the sorghum acreage in the Cauca Valley was planted to improved seeds in 1968.

Distribution Channels - Figure 4.5 shows the three major distribution systems used. Due to the lack of data from large firms, it was not possible to prepare a consolidated diagram of market channels. While direct-to-farmer sales are important for most firms, the larger feed manufacturers as demonstrated in Channel Diagrams I and II depend heavily on independent distributors or exclusive agents. In most cases the small feed manufacturers (Channel Diagram III) supply the smaller poultry, egg, and milk producers who cannot be supplied efficiently by the manufacturer or his major distributors. The most important link in the channel is the independent distributor who is required by the manufacturer to supply technical assistance to farmers on all sales (direct deliveries to farmers or small retailers). Marketing costs usually amount to about 15% of the retail price.

Feed concentrates were found to be unavailable to farmers in 21% of the county seats surveyed in Valle and northern Cauca.[19] The small retail distributors mentioned above service the needs of farmers in the smaller communities, if they are served, while major independent distributors are located in the principal trading centers of the region.

Prices - Table 4.17 shows that feed concentrate prices have increased faster than the prices of milk and eggs. The ratio of milk and egg prices to feed concentrate prices has, therefore, been declining almost constantly since 1960. The demand for those food products and broilers has been expanding rapidly during that period as has the desired demand for feed concentrates.

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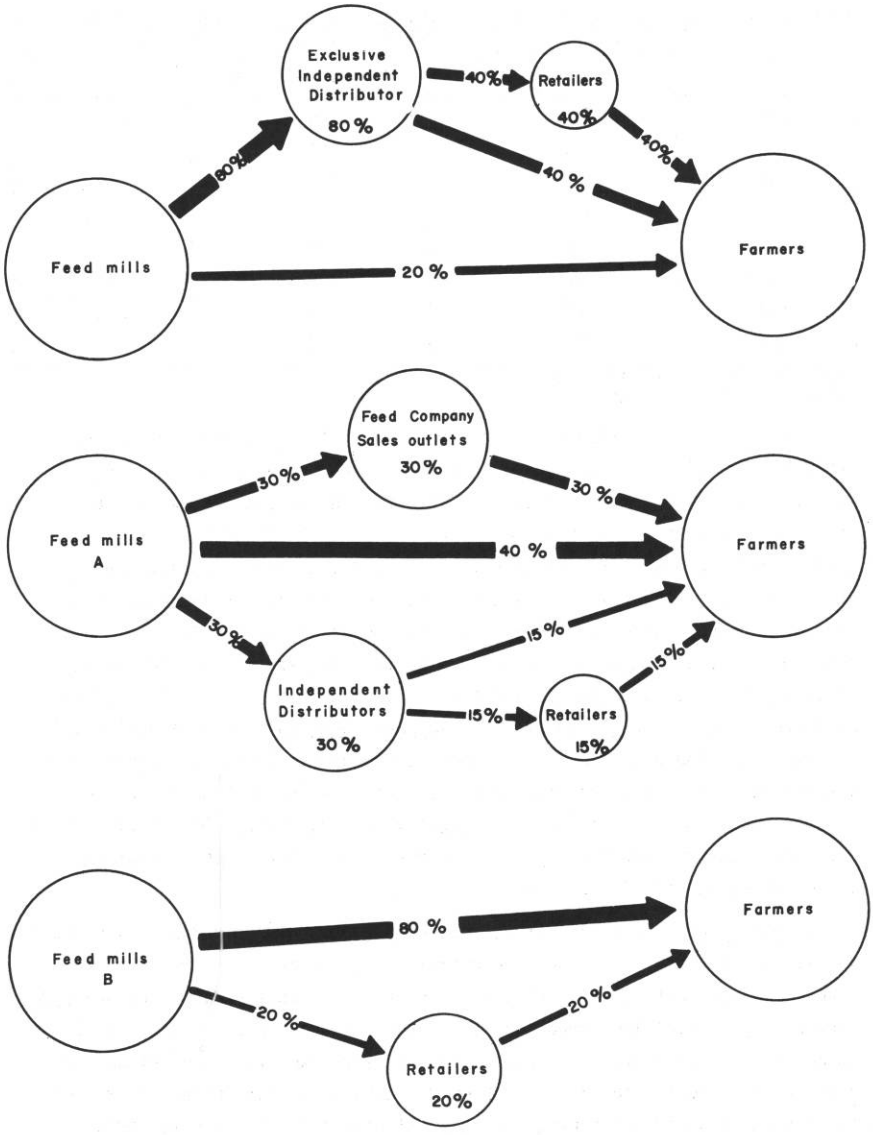
[19] Data from the joint study by PIMUR and Jan Flora, Ph.D. candidate from Cornell University, Technical Report No. 1, *Some Aspects of Market Integration of Rural Trading Centers in the Cauca Valley*.



DISTRIBUTION CHANNELS FOR FEED CONCENTRATES, COLOMBIA, 1969

Fig. Nº 4.5

TABLE 4.17 PRICE TRENDS OF FEED CONCENTRATES AND DAIRY PRODUCTS, PIMUR, 1969

Year	Price Index, Eggs and Dairy Products	Price Index, Feed Concentrates	Col. 2/Col. 3 %
1960	100	100	100
1961	106	107	99.06
1962	113	128	88.28
1963	138	165	83.63
1964	160	228	70.17
1965	178	208	83.58
1966	199	274	72.52
1967	218	292	74.65

Note: All prices related to 1960 = 100
SOURCE: Bank of the Republic

In order to cope with this situation, many of the larger egg and poultry producers in Valle have begun mixing their own concentrates with technical assistance, a vitamin-mineral pre-mix, and mixing equipment designed for and promoted by a veterinary suppliers manufacturer. The PIMUR surveys with poultry and egg producers indicate that those poultrymen producing their own feed obtain higher quality concentrates at lower prices. Production costs for farm produced concentrates were 200 to 300 pesos per ton (12-19%) less than the price of comparable products from feed manufacturers. Moreover, virtually all interviewees believe that conversion rates are better for farm-produced feeds. Over 100 poultry and egg producers in the Cauca Valley are now producing their own feed using these procedures. Since farm produced concentrates require large size operations, the mixing technology is an important factor stimulating large scale poultry and egg farms. On the other hand, more efficient distribution systems for pre-mixed concentrates would improve the competitive position of smaller farmers.

Conclusions - Feed concentrate production has increased rapidly in recent years, with over 70% of production capacity being controlled by the three largest firms. With current sorghum scarcities, it appears that the development of higher yielding, more profitable varieties, or hybrids could have an impact on feed concentrate prices. Commercially mixed feed concentrates are distributed directly to farmers, through independent distributors to farmers or through these same distributors to small retailers and then to farmers. Gross marketing margins of 15% do not appear to be excessive. The ratio of milk and egg prices to concentrate prices has declined in the face of rising demand for those farm products. The higher commercial feed concentrate prices in relation to farm product prices have led some larger poultrymen to begin producing their own feeds at what they consider a lower cost with better feed

conversion ratios. We were unable to evaluate fully the causes of the apparent structural changes in the feed and poultry industries due to the lack of relevant information. It might be hypothesized that manufacturer prices and profits are unnecessarily high. On the other hand, there may be other economic explanations for the lower production costs in small-scale vertically-integrated poultry feed mixing operations. In any case, the structural adjustments can be expected to continue and very possibly could lead to vertical integration by feed manufacturers into the poultry and egg production business.

Conclusions and Recommendations

More intensive use of technical agricultural inputs (as defined in this report) is a means of increasing agricultural productivity as a part of an overall economic development process. But it must be recognized that many technical farm inputs are most effective when used in specific proportions to other such inputs. There is a tremendous need for practical research on the profitability of different combinations of technical farm inputs for different farm enterprises. Because of widespread recognition of the importance of technical inputs in raising farm productivity, one finds farmers making extensive use of technical inputs without reliable advice on economic relationships. The result may well be a waste of valuable resources due to uneconomical applications. In spite of a rapid growth in sales of technical farm inputs in recent years, the rate of increase in output per hectare has been quite low in Colombia.[20] This may be partially due to the fact that new lands being brought into production are of poorer quality and require heavier doses of technical inputs in order to produce current yield levels. Another explanation may be that many of the technical inputs (*e.g.*, machinery and herbicides) are simply labor-saving and have little output-increasing effect. But a more important reason appears to be that technical farm inputs (especially fertilizer) are not being applied in optimal dosages or in appropriately complementary relationships with other inputs.

We therefore recommend that ICA expand its program of applied research on economically optimum uses and application rates for various combinations of complementary technical farm inputs and management practices using a task force approach.[21]

In order to coordinate research programs dealing with the important question of complementarity while considering the economic aspects of input use, it is suggested that research task forces be organized, including physical

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[20] Chris Andrews, *op. cit.*, and L. Jay Atkinson, *Changes in Agricultural Production and Technology in Colombia*, U. S. Department of Agriculture, Washington, D. C.

[21] Hedley, *op. cit.*, makes essentially the same recommendation based on his economic study of corn production in the Cauca Valley.

scientists (*e.g.*, soil scientists, plant breeders, agricultural engineers, etc.), economists and extension personnel. These teams would cooperate in planning, executing, and communicating research on the use of agricultural inputs. The Nebraska Mission personnel should be available to assist in organizing and working with these research teams. The recommended task force approach would help coordinate existing and on-going research programs in various ICA departments and would provide opportunities for planning new integrated research projects. The task force should be problem-oriented and the members of the team should remain within their disciplinary group, joining the task force only as long as necessary to deal with a particular problem. This team research would help avoid duplication of research efforts within ICA and would facilitate coordination with other researchers such as those at the new Centro Internacional de Agricultura Tropical (CIAT), and with researchers employed by farm input manufacturers and farmer associations.

In communicating the new research results to farmers, special emphasis should be placed on rapid preparation and dissemination of practical reports for use by independent *agronomos*, extension agents, agricultural input distributors and farmers. This means that effective two-way communications must be established between researchers, extension agents, agri-businessmen, and farmers through field days, newspapers, and special meetings.[22] Interviews with agricultural input producers and distributors suggest that they feel the need for this communication and are willing to participate and even to assist in organizing such programs.

Since the restructuring of the Ministry of Agriculture and other agricultural agencies in 1968, ICA has begun efforts to strengthen its work in agricultural economics and extension. The recommendations offered herein appear to be quite compatible with re-organizations which are already well under way in ICA. Thus, the added cost of implementation should be minimal, while the potential benefits in terms of greater agricultural productivity are large.[23]

While much progress has been made toward establishing effective distribution channels for technical farm inputs in the Cauca Valley, farmers still frequently encounter problems of convenient and timely availability of technical inputs. At the same time, input distributors often find themselves holding excessive inventories of individual products. Distributors are apparently unable to accurately predict seasonal demands, to establish effective inventory control and to efficiently program product orders and delivery. The results are slow turnover and high inventory maintenance costs and frequent

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[22]See PIMUR Technical Report No. 9 for a detailed discussion of this topic.

[23]L. Jay Atkinson, *op. cit.*

out-of-stock conditions for individual products. Farm input distributors, for the most part, do not understand and utilize the basic techniques of modern inventory control and traffic management.

It is suggested that SENA in cooperation with the University of Valle, ICA, and farm input manufacturers plan a special series of training courses to teach effective methods of inventory control, traffic management and order arrangements for technical farm inputs. SENA will probably require some technical assistance in planning the curriculum and training teachers. Curriculum planning should take into account present distribution practices and identify specific needs to be met. The courses should begin on a pilot basis with personnel from the Caja Agraria or a farmer federation. Based on that experience, the program should be adapted and offered to other interested groups and individuals. The courses might later be generalized to teach the principles of inventory control and traffic management to other types of distributors (*e.g.*, food retailers and wholesalers, consumer goods, industrial products, etc.).

The cost of the recommended training program is difficult to estimate, but outside of the cost of technical assistance, the added expense should be minimal. SENA already has resources allocated to this type of activity, but it lacks the trained personnel to plan and carry out effective training programs in this area. The major long-run benefits from the training program would be reflected in greater farm productivity as continuous supplies of the proper farm inputs are made available in rural areas at lower prices due to distributors' lower marketing costs. The latter, of course, assumes that competition will force input distributors to pass along part of the inventory and order cost savings to farmers. This assumption appears quite plausible, considering present structure and conduct in the industry.

As a way of improving coordination in the distribution of fertilizers, distributors should be encouraged to establish forward sales contracts with farmers. Model contracts should be prepared by ICA research and extension workers in collaboration with representatives of fertilizer manufacturers and distributors, and farm leaders. These contracts should be simple but complete. They would specify date and place of delivery, conditions of payment, type and volume of product, and should provide a basis for determing price (*e.g.*, the price might be specified in the contract, or it might be based on wholesale fertilizer prices at the time of delivery). ICA extension personnel should distribute and explain these model contracts to fertilizer manufacturers and distributors. They should also promote their use among larger farmers as a way of guaranteeing delivery of the proper fertilizer formula at the proper time.

Food Processing*

Food processing is an important economic activity in the Cauca Valley, representing 30% of the value added in all manufacturing in Valle, as shown in Table 4.18, and 44% of the value added in food processing in Colombia, as shown in Table 4.19.

TABLE 4.18 IMPORTANCE OF THE FOOD PROCESSING INDUSTRY RELATIVE TO TOTAL OF MANUFACTURING SECTOR IN THE CAUCA VALLEY

Gross Production	37%
Net Investment	25%
Added Value	30%
Personnel Employed	22%

SOURCE: DANE, 1966.

TABLE 4.19 PERCENT OF THE COLOMBIAN FOOD PROCESSING INDUSTRY REPRESENTED BY FOOD PROCESSING IN THE CAUCA VALLEY

Gross Production	32%
Net Investment	54%
Added Value	44%
Personnel Employed	30%

SOURCE: DANE, 1966.

The relative importance of the various commodity subsectors of the processing industry are shown in Table 4.20. These data indicate the great importance of sugar and coffee in the economy. However, this study of food processing did not include these major export commodities, concentrating rather upon those more directly related to the Cali food supplies. Those commodities discussed in Chapter 3 were emphasized and the study complemented the commodity subsector studies. It was intended to identify market channels and any special problems perceived by these food processors, especially as related to procurement and distribution.

TABLE 4.20 RELATIVE IMPORTANCE OF VARIOUS SUBSECTORS WITHIN THE FOOD PROCESSING INDUSTRY IN THE CAUCA VALLEY

Subsector	% of Total Value of Production
Sugar Milling	29.2%
Coffee Processing	27.2
Grain Processing	18.4
Fruits and Vegetable Processing	5.2
Milk Processing	5.2
Bread, Pastries and Pastas	4.6
Starches	1.8
Fish	0.9
Meat	0.5
Others	7.0

SOURCE: DANE, Manufacturing Firms, 1966, Valle tabulations.

*Based upon PIMUR Technical Report No. 5, *Food Processing and Distribution in the Cali Area.*

Structure

Table 4.21 shows the numbers and size distribution of the food processing firms of the commodity subsectors studied in the Valle del Cauca. A purposive sample of 54 of these firms was selected in order to provide information from firms of different size and characteristics. The sample was not statistically representative of the population, and the limited cooperation of some of the larger firms made it impossible to complete detailed market channel analyses.

TABLE 4.21 POPULATION OF CAUCA VALLEY PROCESSORS IN SUBSECTORS STUDIED BY SIZE OF FIRM

	Total	Large	Medium	Small[a]
Grains				
Rice, corn or flour mills	70	4	13	53
Vegetable oil extraction	3	3	-	-
Grain processors	2	2	-	-
Pasta manufacturers	8	1	2	5
Fruit and Vegetable				
Canners and processors	4	3	1	-
Candy and bocadillos	11	1	2	8
Milk				
Pasteurized, dehydrated or condensed	3	3	-	-
Cheese, butter or ice cream	13	-	3	10
Meat				
Canning and vacuum packing	2	-	2	-
Sausage and cold meats	8	-	2	6
TOTALS	124	17	25	82

[a]Large: Sales over $10,000,000 per anum
Medium: Sales between $1,000,000 and $10,000,000
Small: Sales under $1,000,000 per anum
SOURCE: PIMUR, Food Processing Study, 1969.

A considerable difference in the structure exists among the commodity subsectors, as is indicated by Table 4.21. Grain milling is characterized by a large number of small firms, of which specialized corn millers are by far the most numerous. There are no large specialized corn millers, whereas there are severál large wheat and rice mills. There are also two large multi-product grain processors, producing products ranging from corn oil to baby food. There are several large fruit and vegetable processors but no small ones. Cali has two milk pasteurizers, and the valley has one large milk dehydration and condensing firm. Cheese, butter and ice cream, by contrast, are produced by small-scale firms. There are no large firms in meat canning or processing.

The medium-sized firms, with annual sales between $1,000,000 and $10,000,000 and the small firms with sales under $1,000,000 are often very simple operations that require limited amounts of capital and technology to get started, but also have great difficulty in expanding into large-scale operations. On the other

hand, most of the large firms require more capital, and larger technical and managerial capacities, and are usually in more sophisticated processing operations. They enjoy national product distribution, while the small firms use Cali markets. In practically all areas of operations, the most significant differences in problems and characteristics are between the large and the small firms rather than between one sector of the industry and another.

Raw Material Purchasing

The large processors often buy directly from the producer or through rural assemblers. Some direct contracting with producers is done in the case of corn, soybeans, and some fruits and vegetables. In these areas, producers are supplied with seeds, technical assistance, and some financing. Milk processors usually have verbal contracts with dairymen. Flour mills are limited to wheat importation quotas set by IDEMA. Large grain wholesalers purchase most of their raw materials during the harvest season and store them in bonded warehouses where they can acquire bank-financing. Small processors buy from assemblers and wholesalers but usually in small quantities throughout the year, because of their lack of capital and inability to get outside financing. Some of these firms operate only during the harvest seasons when supplies are plentiful and inexpensive. Nevertheless, most processors complain of insufficient supplies of raw materials of the required quality, as well as the lack of accurate crop forecasting which would allow them to more adequately plan purchasing and production programs.

Utilization of Plant Capacity

Plant capacity utilization for some small specialty firms fluctuates between 100% on three shifts down to 0% during certain periods of the year, due to the seasonal nature of production of their agricultural raw materials. However, seasonal variation in supplies in the Cauca Valley area are much less than most in temperate climates due to the potential for multi-seasonal production. Large processors usually do not have drastic fluctuations. As was mentioned previously, the large grain processors are able to store grains and maintain efficient levels of operations. The large fruit and vegetable processors manufacture a wide line of foods and have been able to organize their production in consideration of the varying harvest seasons of their raw materials. As a result, overall plant utilization remains high. Milk processors also face fluctuations in milk production with plant capacity calculated to meet the peak periods.

In all these large firms, the numbers of workers employed vary only slightly throughout the year, while in small processors, seasonal fluctuations of employees is substantial.

Financing and Credit

In this area as in most others, there are real differences between large and small firms. In general, large firms are able to obtain outside financing and credit from various sources. Both raw materials and finished products are stored in bonded warehouses, either at the facilities owned and operated by the commercial banks or within their own silos and warehouses.

Small firms, on the other hand, are more limited and are obliged to work with supplier credit (short-term) or personal bank loans which are scarce and difficult to get.

Raw material purchases are usually for cash or eight days' credit. On the other hand, equipment suppliers usually give twelve to twenty-four months credit at 2% interest on the unpaid balance.

Sales and Distribution

Most large firms distributing their products nationally usually do so directly through their own sales agencies located in the principal market areas. These agencies sell directly to the large and medium volume retail outlets. They also sell to independent distributors or to a limited number of grains and staples wholesalers to reach the small retail outlets. In these cases, the wholesaler or distributor receives the full quantity discounts, and sometimes trade discounts. Credit given to intermediaries is usually for 30 days, but these usually pay with a further delay of 15 to 30 days. Some processors offer a discount (usually 5%) for payment in less than 15 days.

Where there is no processor agency, sales are usually made through a distributor who is given the exclusive distribution rights. Some processors have their own salesmen working in a distributor's area, and their sales are credited to the intermediary. In these cases, the distributor's main function is in credit management and storage.

Medium-sized firms use similar channels, selling directly in Cali, but using independent distributors, rather than agencies, in other parts of the country.

Small processors usually do not sell outside Cali, and distribute their own wares by selling directly to retailers and institutions. Many dairies and cold meat firms have their own retail outlets, and most of their sales are made directly to the consumer.

Price Control

The Colombian government has instituted price controls on a number of processed foods including rice, flour, vegetable oils and fats, oats, condensed and powdered milk, diatetic foods, and pastas. While these measures do not seem to be very effective in controlling retail prices, most large processors

attempt to abide by them. An important aspect of the commodities regulations is that the sales price is established nationally at the same level throughout the country. While no detailed study was made of the effect of these regulations on distributive practices, the regulation could be expected to greatly affect the pattern of distribution of processed foods. Given the high costs of transportation, it would be unprofitable for some firms to serve distant areas which otherwise might be profitable markets. The regional producer gains an added advantage, and some potential economies of scale may be lost. In the longer run, the regulation could affect location decisions.

Costs

Most processors were unable or unwilling to divulge specific costs of their various operations. Nevertheless, some information was provided for the three major cost categories in Table 4.22, and is reported as an indication of cost relationships processors believe to exist. The data presented is the proportion of the final base price which corresponds to each category. Base price is defined as the processor's listed F.O.B. factory price to its direct customers.

In the Table 4.22 data, the "residual" includes such costs as labor, production, administration, etc., as well as profits. It should be noticed that costs of sales and distribution are generally lower than might be expected, especially for those products with national distribution. However, distribution usually includes little promotion or service. The low costs reported may also be due, in part, to erroneous cost allocation.

TABLE 4.22 MAJOR COST CATEGORIES AS A PROPORTION OF BASE PRICE AS REPORTED BY PROCESSORS

	Raw Materials	Packaging Materials	Sales and Distribution	Residual
Grain Processors				
Corn milling	65%	9%	3%	23%
Rice milling	76	2	3	19
Wheat milling	78	3	1	18
Vegetable oil extraction	70	8	5	17
Other grain processing	63	25	6	6
Pasta manufacturing	50	15	12	23
Fruit and Vegetable Processors				
Canners and Processors	40-60	25-50	8	not est.
Candy manufacturers	54	27	8	11
Dairy Processors				
Milk processors	55	13	9	23
Dairy manufacturers	50-60	2-3	9-17	not est.
Meat Processors				
Canning and packing	55-60	10-17	5	not est.

SOURCE: PIMUR, Food Processing Study, 1969.

Conclusions

The food processing industry in the Cauca Valley is in a stage of steady growth, with overall sales increasing by 10% per annum. The large and medium size firms are increasing production steadily, while at the same time, the number of small firms is also increasing. This difference is of great importance, in that large processors are generally able to meet their requirements for additional financial resources, management and technical know-how, while the small processor stagnates because of the lack of these inputs.

The shortage of sufficient volumes of suitable raw materials is said to be the most important barrier to increased production in fruit and vegetable processing, dairy manufacturing and oil extraction. Nevertheless, there is still very little vertical integration between agricultural production and processing. Packaging costs for "instant foods" tend to reduce the market for these products because of their high price to consumers. This will be discussed in more detail in the next section of this report.

Meat processors and pasta manufacturers are realizing rapid growth rates with sales increasing between 20% and 50% during the last year. This increase is due to changes in consumer dietary patterns as well as improved production processes.

Medium and large size processors probably will be forced to change their distribution systems because of increasing costs. *There is interest on the part of some processors to help in the development of wholesalers and distributors with greater orientation towards sales and services. Technical assistance programs in this area are needed.* The benefit will be improved distribution at lower system-wide costs, especially due to savings in transportation costs.

Both medium and large size processors appear to be trying to increase automation and reduce their unskilled labor force. They believe they can achieve better quality and more production efficiencies through automation. A useful study would be to determine the extent to which the Labor Code and other institutional factors are stimulating the introduction of automated equipment in an economy of high unemployment.

Packaging*

Packaging plays an important role in a commercialized food production-distribution system. As a system becomes more industrialized and consumers achieve higher incomes, packaging becomes relatively more important. The performance of the packaging industry affects the costs and possibilities for

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*Based on PIMUR Technical Report No. 2, *Production, Distribution and Use of Packaging Materials for Agricultural Products in the Cali Area.*

many aspects of the food system, including the delivery of farm inputs, assembly of farm products, and food processing and retailing. The package can save both labor and product by reducing handling costs and losses in product quantity and quality. The purpose of this brief study of the packaging industry has been to identify barriers to improved performance of the packaging industry, including an evaluation of its capacity to respond to future demands; to identify existing barriers or failures to adopt economical uses of packaging in the food system, and to obtain some notion of the possible increased demand for labor which may be created in the packaging industry.

There are six industries engaged in the production-distribution of packages used by the food system: hemp, flexibles (cellophane and polyethylene), paper and cardboard, glass, metal and wood. Of these, the wooden box industry is the only one which is essentially artisan (*artesanal*). Some labor intensive craft production is involved in the fabrication of hemp bags and paper and cardboard packages. An increase in the demand for packages of these materials would increase employment. The plastics, metal and glass packaging industries are not labor intensive.

Wooden boxes, flexible packages and paper-cardboard packages are manufactured in Valle; packages of glass, metal and hemp (sisal) are produced in other areas of Colombia. Most raw materials for packages are produced in Colombia, but significant proportions of imported inputs are used. About 25% of the raw material for paper-cardboard packages is imported.

The Valle market represents between 18% and 35% of the national market for packages varying by type. The following are the estimated purchases in Valle in 1968 for the packaging of foods: 6.5 million new hemp bags, 18,000 metric tons of paper and its derivatives, 8 million glass containers, and 6 million metal containers.

As would be expected with industrialization, growth in the packaging industries has been significantly greater than the growth of population. In recent years the annual growth rate of the various packaging industries appears to have been about as follows: wooden boxes 15%, hemp 20%, plastics 15%, glass containers 10%, paper-cardboard packages 11%, metal containers 10%.

There appears to be substantial excess capacity in all the packaging industries except hemp, which was operating at about 97% of installed two-shift capacity at the time of the study. The remaining industries were estimated to be operating at from 33% to 78% of their rated installed capacity in one or two shifts. The firms with the lowest plant utilization are manufacturers of paper bags for grains, at 33% of installed capacity for one shift; and manufacturers of metal containers, at 46% of rated installed capacity for one shift. Thus, except for hemp bags, it would appear that capital for plants

and equipment in the packaging industry is no immediate barrier to expanding production.

Increased use of packaging in food distribution is limited by a number of economic relationships. The market for processed foods requiring glass or metal cans is very limited due to: 1) the small number of families with incomes sufficient to buy the more expensive products; 2) the general year-round availability of a great variety of foods; and 3) the very low cost of domestic servants who perform food processing at home. The cost of the glass or metal containers for preserved foods is high relative to the cost of the fresh commodity. For example, 180-gram sized glass containers cost about $0.55, and 180-gram sized metal cans cost about $0.63. At these prices the container alone is more expensive than the amount of most fresh fruits and vegetables needed to fill the containers.

The high cost of glass and metal cans, relative to existing incomes, is caused by expensive raw materials, especially those involving imported inputs. Of the total production costs of these containers, raw materials represent about 50% for glass and 68% for metal, as contrasted to 20% and 15% for labor and about 17% for distribution. Packaging firms are using modern equipment and technology, and appear to be relatively efficient in container manufacturing. Prices of these containers appear to be in line with international market prices.

A possible innovation to reduce container costs in food processing would be the use of returnable glass bottles. These seem to be practical in an economy with low labor costs, and have successfully provided very low-cost containers for beverages in Colombia and other low-income areas. For example, milk bottles cost $0.65 and make an average of about 30 round-trips. However, some processors have argued that extensive use of returnable bottles would tie up many scarce means of transportation, translated into higher freight costs. Additionally, processors believe there is a danger they would be used for adulterated or substitute products. Nevertheless, the potential seems to exist for extending the use of returnable glass containers. Transportation of the returnable containers would not necessarily require extensive additional transportation resources. The transportation study indicates a general unutilized back-haul space. It is suggested that this possibility be studied further. Also, with a developing petro-chemical industry, the possibility of using plastic bottles and other containers will become more feasible.

An effective market exists for reused hemp and paper sacks as well as for wooden boxes. These are used as farm-to-market containers. The gross margins on these reused sacks was found to be about 10%, and about 40% on the resued wooden boxes. Wholesale-retail margins on new sacks appear to be very low, representing no barrier to their use.

While there appears to be little economic demand for expanded use of glass and metal containers for canned fruits and vegetables in the near future, there does appear to be a role for improved packaging in the marketing of fresh foods. While it is very difficult to obtain accurate measurements of food distribution losses, rough estimates can suggest significant losses. Table 4.23 shows estimates of losses as reported by wholesalers and retailers for several commodities. It should be noted that losses reported at a particular level may be the result of deterioration at an earlier level in the market chain.

TABLE 4.23 ESTIMATED LOSSES REPORTED BY WHOLESALERS AND RETAILERS FOR SELECTED FOODS, CALI, 1969

Products	Assembler[a]	Wholesaler[a]	Retailer[b]
	PERCENTAGE LOSS REPORTED		
Plátano	1	6	+
Tomato	+	8	8-13
Potato	1	4	7-15
Cabbage	2	2	+
Onion	2	1	+
Papaya	+	+	16
Orange	+	12	16
Pineapple	+	2	5
Grapes	+	+	8
Grains (dry beans, rice, and corn)	+	2-4	2-4

+Unknown

[a]Data for grains is from PIMUR Technical Report No. 6 and fruits and vegetables data is from PIMUR Technical Report No. 15. The question asked for estimates of the percentage which was unsaleable. Additional deterioration was reported that did not make the product unsaleable.

[b]Data is from PIMUR Technical Reports Nos. 2 and 6, based upon interviews and observations. The range represents differences in losses reported by different classes of retailers. For example, self-service stores reported 7% losses on potatoes compared with 15% reported by *tienda* operators.

Our surveys of market participants indicated that deterioration resulted from the following factors, in order of importance: (a) poor packaging methods; (b) inadequate handling, transportation and storage; and (c) the quality characteristics of the products. Packages do exist which offer better protection for the products than those currently in use. Experimental work by Instituto de Investigaciones Técnicas (IIT) indicated the technical possibility of substantially reducing the deterioration of at least 10 different fruits through the use of improved packaging practices.[24]

The barriers to the use of improved packages seem to be associated with the lack of a grading and standardization system and because of certain beliefs and attitudes of market participants. Wholesalers and retailers seem to think they suffer little income loss from product deterioration. Losses are considered

[24]*Revista Tecnológica*, No. 42, IIT, 1966.

a part of the cost and are added to their gross margin. They also apparently feel that many of the deteriorated products can be sold. At the same time, the new packages cost more than those currently used, and given the belief that the costs cannot be passed on to the consumer, they do not perceive their use to be profitable.

The combination of new packages and a system of grades and standards providing more incentives to protect product quality would reduce food wastes. Also, the introduction of cost-accounting by more of the market participants would stimulate the increased use of product and labor-saving packaging. It would appear that a large scale progressive wholesaler or retailer could gain a differential advantage over traditional operators by controlling deterioration in the system.

The packaging industries are made up of relatively large-scale firms with small numbers of competitors, except for the craft producers of boxes, and some small firms engaged in fabricating activities. These firms have many of the same kinds of institutional and procurement problems as other large manufacturing firms face in Colombia. These general problems are discussed elsewhere in the report. Manufacturers cited as special problems the high costs of raw materials and the high transportation costs, especially when transport services are scarce at harvest time. While the majority of the packaging manufacturing firms are production-oriented, the leading firms appear to be oriented toward the needs of the market and have relatively aggressive attitudes. New improved packages have been developed and are used for several fruits, including grapes and tomatoes.[25]

In summary, for the packaging industry there appears to be no unique barrier to effective performance. Nor do the packaging industries appear to be a significant barrier to the economic performance of the food system. Packaging manufacturers have the plant and technical capacity to provide quantities and types of packages far beyond that currently demanded by the participants in the food system. The barrier that does exist to the economically sound use of increased packaging is the failure of participants to see the advantages, and a failure of the system to reward practices designed to protect product quality. The area of greatest potential for economic expansion of packaging use is to protect fresh fruits and vegetables within the marketing chain from farm to consumers. We have proposed in the recommendations for fruits and vegetables that a regional extension specialist in marketing fruits and vegetables be assigned to Cali and that one of his assignments be to work with market participants and package manufacturers to develop and promote new packages which will preserve product quality and be acceptable to the trade.

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[25]See PIMUR Technical Report No. 2, for an economic analysis of several of these new packages.

Transportation*

Introduction

The transportation function becomes increasingly important as new technologies lead to greater geographic specialization in agricultural production while at the same time there are rapid increases in urban population. Under these conditions "place utility" becomes a more important component of the commodities purchased by both urban and rural consumers.

Agricultural products have physical characteristics that makes their transport particularly difficult. Livestock, milk, fruits and vegetables are examples of products that require special handling. Also, conditions of sale and consumption of food products requires a complex transportation system, with several stages, since products must generally be moved from production zones to storage areas, from these to wholesale centers in urban centers, then to retail establishments, and finally to the homes of the consumers. The seasonal character of agricultural production, also adds to the difficulty of organizing an effective, low cost transport system.

Two additional factors contribute to the difficulty of achieving an efficient, low cost transport system in Colombia: 1) the geography of the country; and 2) the high fixed cost of transportation equipment most of which is imported. The population and economic activity of Colombia are concentrated in the central part of the country which is transversed by three branches of the Andean mountain range. The terrain varies from snow capped peaks to valleys barely above sea level. The high density of mountains makes it difficult to construct acceptable roads while the chronically unfavorable foreign exchange rates limit the acquisition of vehicles and repair parts needed to provide adequate transportation service.

This study was limited to motorized land transport, mainly because most of the agricultural products included in the PIMUR study are transported by this means.

The objectives of this study were: 1) to describe the most important characteristics of the present transportation system for moving the agricultural products from production zones to the city of Cali and within Cali; 2) to identify factors which adversely affect the coordination of the system; and 3) based upon the preceding analysis to formulate concrete recommendations for resolving the problems encountered.

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*Based upon PIMUR Technical Report No. 8, *The Transport System for Agricultural Products in the Cali Area*, 1969.

Some previous transportation studies were consulted.[26] It should be noted that most of these studied dealt with transportation as a public service at the national level, considering especially the regulation of transport firms, legislation and public investment in infrastructure.

The collection of primary data for the PIMUR transportation study is described elsewhere in this report.[27]

Legislation

The most recent transportation legislation of importance created the National Transportation Institute (INTRA) by Decree No. 770 of 24 May 1968. The basic functions of the Institute are to direct the rational use of the transportation resources of the whole country; to carry out the policies of the national government toward this end; to establish, by means of adequate studies, priority needs of the transportation industry; to encourage the creation of mixed economy companies for better provision of the services; to regulate, coordinate and oversee the different means of transportation; to authorize the organization and operation of transportation firms.

A basic law regarding transport in Colombia is Law 15 of 1959, which clearly establishes the power of the State in "the intervention in the automotive transportation industry, in the urban area as well as in providing roads for the movement of cargoes and passengers."[28]

As can be deduced from the PIMUR study of laws and regulations (Chapter 6) there are a large number of laws, decrees and ordinances issued by national, departmental and municipal authorities which are directed at transportation. Some of these laws are self-contradictory, and others are so complicated their fulfillment is impossible. Nevertheless, it is hoped that with the creation of INTRA a positive step has been taken towards effective coordination and control of the different transportation activities.

Public Service Transport Firms and Affiliated Transporters

The agricultural products included in the PIMUR study are transported in public service (for hire) vehicles and in private vehicles used to transport the owner's cargo. A check-point study of trucks entering Cali indicated that

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[26] The most important references on this topic are as follows:
(1) *El Transporte en Colombia*, by Jaime Salazar Montaya, 1958.
(2) *National Transportation Study*, by Parsons, Brinkerhoff, Quade and Douglas, prepared for the Ministry of Public Works, Colombia, 1962.
(3) *Los Transportes en Colombia*, by Dario Samper, 1965.
(4) *Financiacion Publica del Transporte--Carreteras Nacionales en Colombia*, by Victor Contreras Niño.
(5) *El Transporte Automotor de Cargo--Servicio Publico en Largos Recorridos*, by Planificadores Asociados Ltda., 1968.

[27] See Appendix A, Methodology.

[28] Law 15 of 1959, Article 1.

55% of the vehicles entering the city with the products studied were private vehicles, many of which were hauling milk, poultry products and grains. The other 45% of the vehicles were owned by public service transporters.

Colombian legislation clearly establishes[29] that transportation is a public service, subject to regulation and control by the State.[30] Control of transportation is exercised through "transport companies".[31]

The transport companies are private, profit-oriented organizations whose primary objective is to offer transportation services to the public. They are made up of individual truckers who become affiliated members. The system involves a vehicle owner registering his vehicle with a company, carrying its emblem, paying certain fees, and commiting himself to use its services to obtain cargo.

In accordance with Decree 2681 of 1968, the public transport companies must indicate zones, routes and schedules of service; the number and type of vehicles available to render this service; affiliation contracts and the financial position of the enterprise.

In spite of the intent of the law regarding the operation of transport companies, actual operations are somewhat different. The information supplied by 90% of the truckers interviewed, indicated that they did not follow fixed routes or definite schedules and "the route" is the one preferred by the trucker. The owner of a vehicle who wishes to render a public transportation service must affiliate with one of the existing transport companies. According to information obtained in the interviews with truckers, the obligations of the trucker to the enterprise are mostly to "carry the cargo presented by the enterprise"; "comply with the regulations of the enterprise" and "be loyal to the enterprise where transportation is concerned".

Fifty-two percent of the truckers surveyed indicated that "they can operate without the assistance of the companies". Fifty-four percent of the managers of the companies complained about the "infidelity of the truckers to the company with which they are affiliated".

The weak relations between truckers and the companies is further revealed by the percent of truckers who said they were receiving different types of service from the transport companies. (Table 4.24.)

Both the information given in the table and the informal opinions expressed by the truckers lead to the conclusion that the transport companies are agencies that provide some coordination of public service trucking and are institutionalized instruments for complying with certain legal requirements, the most

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[29] *Ibid.*

[30] Decree 2681 of 1958.

[31] *Ibid.*, Articles 2 and 55.

important of which is the issuance of the "*planilla*".[32] Nevertheless, the existence of the companies does not guarantee that the cargo shipper is always protected by the appropriate legal documents, since almost any person can issue a "*planilla*", without complying with the legal requirements. Consequently

TABLE 4.24 SERVICES THE TRUCKERS INDICATE THEY WERE RECEIVING FROM THE TRANSPORT COMPANIES

Type of Service	Percent of Truckers Receiving Services
Elaboration Trip Ticket (*planilla*)	76.3
Warehousing	44.0
Financing of Travel Expenses	40.7
Telephone	32.2
Acquisition of Cargo	32.2

SOURCE: PIMUR, Trucker Survey, 1969.

there is serious insecurity of the cargoes consigned to the truckers. This condition was further verified by transport user complaints about frequent losses of merchandise.

It is important to note that the acquisition of cargoes was one of the services for which most truckers were not highly dependent upon the trucking companies (Table 4.24). Fifty-three percent of the truckers said they conducted their own search for cargo.

The above indicates that coordination of transport services is largely a client-trucker relation, with only moderate participation by the trucking companies. Hence, with no other public or private organization to coordinate cargo movement, particularly those of agricultural products, the result is uncertainty on the part of the client as well as the trucker. The client cannot depend on certain and timely transportation and the trucker doesn't always know where to obtain cargo.

An attempt was made to quantify truckers'use of time for different types of activity. From a sub-group of the trucker sample it was found that 56% of their total time was dedicated to activities other than actual transporting of cargo. The high proportion of time dedicated to activity other than hauling cargo results in low utilization of equipment and low productivity from the total operation.

Transportation Rates

Information on trucking charges were obtained through interviews with the transport companies and the truckers. The following generalizations were

[32]The *planilla* is a legal document required of all truckers when they pass through at police check-points. This document specifies the characteristics of the vehicle and the cargo, and gives the origin and destination of the cargo.

derived from these interviews:

1. There is no fixed rate for transporting a given product from a given source. Rather, personal considerations and special circumstances are taken into account in rate determination. Most prominent among the special circumstances is the classification of a market destination as "*compensada*" or "*descompensada*". "*Compensada*" destinations are those with the capacity to regularly generate a sufficient volume of cargo so that the trucker has a good chance of securing cargo for his return trip. Thus, truckers charge lower rates to haul to a "*compensada*" market as compared to a "*descompensada*" market.

2. The rates charged by individual truckers do not always coincide with those quoted by the trucking companies. This is due to the fact that the company makes the arrangement with the shipper and collects in advance the commission for their services.

3. The rates quoted by one trucking company are not necessarily the same as those quoted by another company. (Table 4.25.)

TABLE 4.25 DIFFERENT RATES CHARGED BY TWO TRANSPORT COMPANIES AND RATES USUALLY CHARGED BY TRUCKERS SERVING CALI

Route from Cali to	Rates Charged by Company A $/ton	Rates Charged by Company B $/ton	Average Rates Charged by Truckers $/ton
Armenia	75	(no service)	75
Barranquilla	320	340	260
Bogota	190	200	140
Buenaventura	70	100	45
Cajamarca	100	140	120
Cartago	70	(no service)	65
Ibague	115	140	130
Medellin	170	180	130
Palmira	35	(no service)	25
Popayan	65	70	65
Pasto	180	(no service)	165
Tulua	60	(no service)	45

SOURCE: Quotations from two transport companies obtained by PIMUR, 1969.

4. Rates fluctuate depending on current conditions, being higher in times of intense demand for transportation.

5. It appears that the most convenient procedure for establishing rates is the agreement between client and trucker. This procedure for coordination and payment for transportation can be better understood if it is remembered that most of the areas of origin for the products studied are small rural locations where no transport companies exist.

6. The truckers pay no attention to the rates fixed several years ago by the national government.

Vehicles Used

Through a check-point study information was obtained on 5,000 vehicles entering and leaving Cali. Data were taken on origin and destination, type and volume of product, make and capacity of vehicle and whether the vehicle was affiliated with a transport company.

There is great heterogeneity in the existing trucking fleet passing through the check-points. Twenty-eight percent of the vehicles had less than three tons of hauling capacity while 10% had capacities of more than nine tons (Table 4.26). The average age of the vehicles was 12.6 years with 70% being more than 10 years old (Table 4.27). There was a large variety of vehicle brands but two brands (Ford and Chevrolet) account for about two-thirds of the total vehicles.

The high average age of the vehicles and the small number of trucks of certain brands add to the problem of maintaining adequate repair parts to keep the vehicles in operation.

In describing the existing system of motor transport a special type of vehicle should be mentioned. This is the "*chiva*", a combination truck-bus, which facilitates the joint transport of both passengers and the produce they bring to the market. This type of vehicle is very important in the rural zones of the country, because it is practically the only means of communication between these areas and the principal trading centers. According to the PIMUR check-point study an average of 55 "*chivas*" entered Cali each day carrying food products, especially fruits and vegetables.

TABLE 4.26 CAPACITY OF THE VEHICLES USED IN TRANSPORTING AGRICULTURAL GOODS TO THE CITY OF CALI

Capacity of the Vehicles	Number of Vehicles	Percent
Under one ton	471	9.4
One to under three	916	18.3
Three to under six	2,026	40.6
Six to under nine	1,105	22.1
Nine to under twelve	402	8.0
Twelve to under fifteen	44	.9
Fifteen to under twenty	17	.3
Twenty and over	19	.4
Total	5,000	100.0

SOURCE: PIMUR, Check-point Study, 1969.

TABLE 4.27 AGE OF VEHICLES USED IN THE TRANSPORT OF AGRICULTURAL PRODUCTS TO THE CITY OF CALI

Age in Years	Number of Vehicles	Percent
Twenty and over	262	5.2
Fifteen to twenty	1,293	25.9
Ten to fifteen	1,787	35.7
Five to ten	904	18.1
Under five	754	15.1
Total	5,000	100.0

SOURCE: PIMUR, Check-point Study, 1969.

Intermunicipal and Interdepartmental Transport

In many cases the products are not transported from the production zone directly to Cali, but pass through collection points in rural areas. Thus, live cattle originating in the Atlantic Coast are transported from cattle ranches to the livestock assembly market at Medellin, and from there are transhipped to Cali. Bananas from Quindio are assembled in the city of Armenia. Potatoes from the southern part of Colombia are assembled in the city of Pasto. Some cities of Valle, such as Palmira, Tulua and Florida are important as collection points for fresh tomatoes. This section deals with the most important aspects of transportation from assembly points to the city of Cali.

The average quantity of products per vehicle entering Cali was relatively small, especially for fruits and vegetables (Table 4.28). If one considers, for example, that over 90% of bananas come from the Quindio zone, some 200 kilometers from Cali, it can be concluded that the average quantity transported (less than three tons) is small in relation to the distance covered. This suggests an uneconomic use of the vehicles. (For greater detail, see the PIMUR technical report on transportation, where the use of the vehicles for each product is further analyzed.

Most products come from a large number of sources that are widely scattered geographically. As was seen in Chapter 3 of this report, one of the factors contributing to the high cost of marketing, especially for fruits and vegetables, is the geographic dispersion of the production areas, most of which produce quantities too small to support a well organized transport service. There are generally no agencies of the transport companies in many of these rural areas.

Therefore, the client who requires transport service must make the necessary contacts in some larger trading center where the transport companies have offices and where individual truckers can be contacted.

The road network connecting the rural trading centers with Cali are reasonably well developed although only a small percentage are paved.

TABLE 4.28 QUANTITIES TRANSPORTED PER TRIP, SELECTED FOOD PRODUCTS, CALI, MAY-JUNE 1969

Product	Quantity Transported	Units
Cattle	9.3	units
Hogs	15.9	units
Chickens	833.0	units
Eggs	7,213.0	units
Milk	938.0	Bottles
Corn	5.6	tons
Rice	7.1	tons
Beans	5.0	tons
Soja	5.8	tons
Potatoes	7.9	tons
Tomatoes	1.1	tons
Bananas	2.7	tons
Pineapples	3.4	tons
Oranges	3.8	tons
Onions	4.4	tons
Cabbage	4.7	tons

SOURCE: PIMUR, Check-point Study, 1969.

(Table 4.29.) According to a report from the Secretary of Public Works for the Department of Valle the conditions of these roads were classified as follows: good condition, 32%; fair condition, 49%; and poor condition, 19%. The roads were also classified by type of terrain as follows: level terrain, 37%; hilly terrain, 16%; and mountainous terrain, 47%.[33] The roads in fair and poor condition represent 68.4% of all roads in Valle. The condition of these roads worsens during the rainy seasons, when many become impassable due to the mud and the frequent landslides on mountain roads. The access roads to individual farms are frequently unimproved roads or even horse trails. Under these conditions, access to the farms becomes even more difficult. Truckers find it difficult, if not impossible, to provide farm-to-market transport in the more mountainous terrain.

Aspects of Congestion and Coordination of Transportation

The conditions for the delivering and unloading of food products in Cali are very inadequate. According to the check-point study, an average of 332 trucks enter the city of Cali each day carrying the 18 food products studied

[33] A report by the Secretary of Public Works, Department of Valle, Cali, 1969.

by PIMUR. There are many other motor vehicles bringing other cargo to the city. Except for certain agricultural products (such as cattle, hogs, poultry and eggs, and fluid milk) most of the other food products (grains, fruits and vegetables) converge on the Central Market area, which is congested with traffic of intermunicipal buses, urban buses, taxis, and all types of public and private vehicles. In this area there are no unloading zones, so the truck drivers are forced to unload their merchandise in the narrow and crowded streets. During this unloading process the transporter runs the risk of losing part of the merchandise. Often he must make several trips around the block and wait for considerable periods of time before finding an adequate place to park his vehicle and proceed with the unloading.

The consequences of this congestion include the risk of partial loss of and deterioration of the transported product, lost time and fuel for the vehicle; difficulty in carrying out the rest of the functions entrusted to the trucker, such as securing return cargoes and delivering documentation regarding the transportation service rendered. According to a feasibility study for a new Central Wholesale Market for Cali, the losses due to unnecessary traffic congestion in the existing central market areas may be as high as 18 million pesos a year.[34]

TABLE 4.29 KILOMETERS OF DIFFERENT TYPES OF ROADS, DEPARTMENT OF VALLE, 1969

	Paved	Gravel	Unsurfaced	Total
Department Responsibility	90.0	2,932.7	267.9	3,290.6
National Responsibility	426.0	471.0	-	897.0
TOTAL	516.0	3,403.7	267.9	4,187.6
%	12.32	81.28	6.40	100.0

SOURCE: Report obtained from the Secretary of Public Works of the Department of Valle, 1969.

The availability of return cargo for trucks bringing agricultural products to Cali has an important effect on the cost of transport services and the overall efficiency of vehicle use. The PIMUR study revealed that 25% of the trucks leaving the city through the principal check-point were without cargo. An earlier transport study also points up the importance of the backhaul problem.[35]

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[34] Promotora de Abastecimientos de Cali, *Estudio de Factibilidad Para la Central de Abastecimientos del Valle del Cauca*, 1969, pp. 12-13.

[35] Salazar Montoya, Jaime. *Transportation in Colombia*, Volume 1, 1958, p. 71. According to this author, the general movement of trucks in Colombia includes many "empty" trucks.

Transportation Within Cali

After products are transported to Cali they still must be transported from the wholesale centers to retailers and from there to the homes of the consumers.

As observed in Chapter 2 of this report the Galeria Central area is the principal wholesale market in Cali. Most of the grains, fruits and vegetables move from this sector to the 8,000 or more retail establishments in the city, including the neighborhood stores and the stalls in the satellite markets. The retailers usually go in person to the Galeria Central to buy, and then arrange to transport their purchases to their retail outlets. Thus there is the problem of distributing small quantities of goods to a large number of locations spread over approximately 5,000 hectares of urbanized area. The narrowness of the streets, the lack of designated loading and unloading zones, and the influx of wholesalers, retailers and consumers make this food distribution center a very congested area incapable of efficiently handling such an intense movement of products.

There is much variation in the methods of transportation used by food wholesalers and retailers in Cali, as shown in Table 4.30. It should be noted that the relatively important category, "Others" includes hand carts, animal-drawn carts, urban buses, and hand carrying. The smaller the retailers, the greater the use of the "other" type of transport. Data on vehicle registrations provided by the *Direccion Municipal de Transito de Cali* show that in 1964 there were 260 hand carts and 523 animal-drawn carts and 98 motorcarts with permits to operate within the city.

TABLE 4.30 USE OF DIFFERENT TYPES OF VEHICLES BY DIFFERENT TYPES OF MERCHANTS IN CALI [a]

Type of Vehicle Used	TYPE OF MERCHANT							
	Wholesaler		Wholesaler/ Retailer		Supermarket	*Granero*	*Tienda*	Galeria Stall
	Purchase %	Sale %	Purchase %	Sale %	Purchase %	Purchase %	Purchase %	Purchase %
Truck	72.7	37.5	14.9	7.7	21.1	1.5	1.1	1.0
Small truck	-	50.0	14.9	38.4	42.4	10.3	4.2	3.5
Taxi	-	-	-	7.7	-	5.9	10.5	1.5
Motorcar	-	-	6.4	-	3.0	22.1	28.9	7.6
Bicycle	-	-	-	46.2	-	-	-	-
Others[b]	-	-	12.8	-	18.2	29.4	39.5	71.2

[a] 100% of vehicles is obtained by including the cases where transport is performed by someone other than the merchant interviewed.

[b] "Others" includes hand carts, animal-drawn carts and on-the-shoulder transportation.

SOURCE: PIMUR, Wholesaler-Retailer Survey, 1969.

An elaborate analysis is not necessary in order to determine that the continual presence of these small vehicles in a city the size of Cali generates considerable traffic congestion due to their slowness.

The cost of transporting food products from wholesalers to retailers is relatively high as compared with the cost of transporting the products from production and/or collection zones to the city of Cali. (Table 4.31.) For example, it costs more to transport a bag of green onions the small distance of two kilometers within Cali than to transport them 28 kilometers from Palmira to Cali.

TABLE 4.31 COST OF URBAN TRANSPORTATION OF SELECTED FOOD PRODUCTS COMPARED TO COSTS OF INTERMUNICIPAL AND/OR INTERDEPARTMENTAL TRANSPORTATION

Product	Cost of urban transportation by hand cart or animal-drawn cart--Galeria Central to Galeria Alameda (distance of 2 kilometers)	Cost of extra-urban transportation from different sources and their distances
	$	
Tomatoes/Box	0.65/2 km.	$1.00/28 km.[a]
Green Onions/Pkg.	1.75/2 km.	$1.20/28 km.[a]
Bananas/Bunch	0.60/2 km.	$1.20/218 km.[b]
Potatoes/Pkg.	1.75/2 km.	$8.11/406 km.[c]
Cabbages/Pkg.	1.75/2 km.	$5.00/271 km.[d]
Oranges/Pkg.	1.75/2 km.	$3.00/28 km.[a]

[a]From Palmira, Valle

[b]From Armenia, Quindío

[c]From Pasto, Nariño

[d]From Manizales, Caldas

SOURCE: PIMUR, Transportation Study, 1969.

Since the retailer must contract to have his small-scale purchases transported on an individual basis, the cost is relatively high as compared with a system that could deliver multiple orders to several retailers using more modern methods of transportation. Also, it should be remembered that the reorganization of the urban transportation system in Cali would be complementary and virtually indispensable to relocating the wholesale market center near the urban perimeter. Under those circumstances hand carts and animal-drawn carts could no longer provide adequate services due to the greater distances that will have to be covered and the probable traffic regulations regarding the use of the access routes to the recommended wholesale center.

Transportation of Foodstuffs by Consumers

Consumers use a wide variety of transportation methods to travel to and from food retailing outlets. (Table 4.32.) The upper income groups tend to use private cars and taxis while low income consumers make their shopping trips by bus or on foot. However, it should be noted that a large percentage of the lower incomes consumers buy most of their food in neighborhood stores. Although bus fares are relatively low (U.S. $0.03) they represent a significant cost to the low income families. Assuming four main shopping trips monthly to the Galeria Central the cost of the four round trips for a consumer in the lower income group would be 5.3% of their Central Market food purchases ($\frac{\$4.00}{\$75.19}$).[36]

TABLE 4.32 DIFFERENT METHODS OF TRANSPORTATION USED BY CALI CONSUMERS TO GO TO ALL FOOD OUTLETS, BY SOCIO-ECONOMIC LEVEL

Method of Transportation	Upper %	Upper Middle %	Middle %	Lower Middle %	Upper Lower %	Lower Lower %
On foot, round	14.0	16.0	25.0	54.0	48.0	42.0
By bus, round trip	0.0	3.3	13.0	21.0	34.0	39.0
By taxi, round trip	14.0	19.0	9.0	1.4	1.2	-
Go on foot - return by taxi	3.5	3.2	15.0	4.0	-	-
Go by bus - return by taxi	10.0	22.5	14.0	10.6	9.0	9.0
Private car (friend)	6.0	6.0	4.0	-	1.2	-
Own car	49.0	23.0	19.0	2.8	1.4	-
Residence	3.5	3.2	-	2.8	0.3	-

SOURCE: PIMUR, Consumer Study, 1969.

Conclusions and Recommendations

This study has revealed a lack of coordination in the commercial trucking industry transporting food products. Although trucking companies perform certain coordinating functions, the truck drivers act with a high degree of independence in obtaining cargoes, fixing rates and determining routes. The result is a very competitive industry, but deficient performance in terms of resource use and the adequacy of services provided by the transport system.

Utilization of the truck fleet is adversely affected by the time lost in making arrangements between the transporter and the client. In the rural assembly areas for the agricultural products studied, the producers and

[36] For additional data on consumer transportation costs associated with food shopping activities see Table 2.17 in Chapter 2.

assemblers must seek out individual truckers, since the trucking companies do not function effectively and/or lack offices in the small trading centers. In the urban centers such as Cali, the truckers experience difficulty in obtaining return cargoes due to insufficient means for finding clients. The seasonal migration of truckers to zones where crops are being harvested -- such as cotton, coffee, etc. -- gives rise to shortages of vehicles in other zones.

There are also indications that the present trucking system is not in a position to offer efficient intermunicipal service for less than truck load lots. As a result, merchants who must transport small volumes of goods either have to pay the relatively high cost for a full truck or do not easily find the service they need. Also, this situation leads to the widespread use of small vehicles even for long distances, when larger vehicles could carry mixed cargo shipments at lower cost.

Traffic congestion and the lack of warehousing installations in the city of Cali substantially increase the time spent by the truckers seeking parking places in the Galeria Central area and in delivering their cargo. Interviews conducted with users of trucking services also indicate considerable preoccupation with the lack of security and the loss of goods entrusted to truckers.

The relatively high cost of urban transportation of food products was discussed in Chapter 2 of the PIMUR report. The present structure of the food wholesale and retail system in Cali requires the use of many small vehicles of various types and the daily movement of a large number of retailers, as well as consumers, who come and go from all parts of the city. The reorganization of the food distribution system in Cali is necessary to reduce the cost of distribution, and the modernization of transportation constitutes an integral part in the improvement of that system in this rapidly growing city.

The study of the production and distribution of milk in the foodshed of Cali has demonstrated the high cost of collecting and distributing raw milk, due to the use of a large number of small vehicles and the duplication of both collection and distribution routes. The adoption of a more rational transportation system for milk could reduce the cost of such service by at least 50% (see Chapter 3, page 170).

The availability of repair parts is obviously a critical factor in the functioning of the trucking fleet. Keeping in mind the data obtained through the check-point studies, which showed the average age of the vehicles used to transport the studied food products to be 12.5 years, with 70% of the vehicles over 10 years old, and recorded 43 makes of vehicles, it is easy to understand that the timely provision of sufficient replacement parts constitutes an important problem.

Recommendations for reducing costs and/or improving transportation services are presented on the next page. In considering costs, our attention is not

limited to transportation rates themselves, but includes the total social costs of the transportation system.

1. *It is recommended that INTRA adopt measures necessary to improve the coordination functions of the present trucking companies and encourage the establishment of completely integrated companies to provide specialized intermunicipal transportation services.*

Before making any decisions to modify existing regulations with respect to the trucking companies, a detailed study of these enterprises should be made for the purpose of exploring the possibility of improving the services provided by the affiliated truckers. It also seems indispensable that, for long-distance intermunicipal transportation, some companies that own and operate trucks of higher tonnage--and who are in a position to do so--provide the service of transporting less than truck load lots. These enterprises could substantially improve the distribution of manufactured goods such as repair parts for agricultural machinery, other agricultural inputs and probably even some processed foods.

2. *It is recommended that INTRA require the trucking companies to accept financial responsibility for the cargo turned over to their affiliated truckers and that an insurance system for freight transport be established to reduce the risk of product losses for the trucking companies as well as their clients.*

The purpose of this recommendation is to increase the security of cargoes turned over to the transporters by the producers and/or merchants but excluding the system of *chivas*, where the individuals transporting products generally travel on the vehicles along with their goods. This recommendation comes under the jurisdiction of INTRA, the institute responsible for regulating, coordinating and overseeing the different types of transportation within national territory. To put this recommendation into effect, INTRA could require the trucking companies to furnish documents to prove they are in a position to accept the responsibility for merchandise turned over to them.

This obviously implies a system of insurance policies for transported goods. The cost of the insurance would be paid by the client, who in turn receives the benefit of a more dependable service. Since this involves a new, somewhat complicated procedure and entails added cost to the system, a trial run should first be conducted involving those products that arrive in Cali in a more or less organized manner, such as cattle and hogs, tomatoes, rice and corn. The clients who own the transported goods would take out the insurance policies. Cali could be the seat of administration of the policies, including payments and claims. The wholesale and commission merchants who ship products to Cali would contract for and pay the insurance through the trucking companies. Although shipments are generally made every day, the insurance policy could be

contracted on a monthly basis. The types of risks that might be covered by the insurance and approximate rates appear in Table 4.33.

TABLE 4.33 PRODUCTS, RISKS COVERED BY THE POLICY, GEOGRAPHIC AREAS, AND PROPOSED RATES FOR TRANSPORTATION INSURANCE FOR SELECTED AGRICULTURAL PRODUCTS

Product	Type of Risk	Geographic Area or Route Traveled	Rate/$100 of declared value of the merchandise transported[a]
Live Cattle	a) Accidental death	All of Colombia	$0.15
	b) Natural death	All of Colombia	$1.00
Tomatoes	a) Total loss	Valle-Valle	$0.08
	b) Partial loss	Valle-Valle	$0.14
Potatoes	a) Total loss	Valle-Valle	$0.38
	b) Partial loss	Valle-Valle	
	a) Total loss	Nariño-Valle	$0.16
	b) All other risks	Nariño-Valle	$0.77
	a) Total loss	Cundinamarca-Valle	$0.30
	b) All other risks	Cundinamarca-Valle	$1.44
Rice	a) Total loss	Valle-Valle	$0.08
	b) All other risks	Valle-Valle	$0.14
	a) Total loss	Tolima-Valle	$0.14
	b) All other risks	Tolima-Valle	$0.25
Corn	a) Total loss	Valle-Valle	$0.08
	b) All other risks	Valle-Valle	$0.45
	a) Total loss	Cauca-Valle	$0.10
	b) All other risks	Cauca-Valle	$0.56

[a]Quotations furnished by the Ernesto de Lima firm, insurance brokers, Cali, 1969.
SOURCE: PIMUR, Transportation Study, 1969.

3. *It is recommended that information on crop forecasts prepared by DANE* (see recommendations on information and communications, page 332) *be forwarded to the trucking companies in the principal agricultural trading centers for products destined for Cali.*

The "migration" of truckers toward zones of intense seasonal demand for transportation could function more efficiently if the trucking companies and their affiliated truckers could obtain accurate information on potential cargoes in particular regions for particular time periods. To accomplish this, DANE should send timely crop forecast information to the trucking companies with a clarifying note to explain the purpose of the information furnished. The main products that should be included in this information service are rice, corn, beans, soybeans, *sorgo* and potatoes.

4. *It is recommended that the new wholesale market in Cali be designed not only to facilitate delivery of food products arriving in Cali, but also to provide facilities for the coordination of return traffic from the city.*

Given the large number of vehicles that enter Cali daily with food products and the degree of concentration of these vehicles that will be caused by the construction of the food wholesale center, it seems reasonable to expect that the center should serve as a coordination center for return cargoes. Such a service would save the transporters time driving through the streets of Cali searching for cargoes.

To facilitate this coordination task, an office should be established in the wholesale center where requests for transport services could be assembled. These requests can come from industries located in the Cali-Yumbo-Palmira zone, merchants, distributors, commissioned agents, etc. The individual transporters arriving at the wholesale center can, after unloading their products and leaving their vehicles parked in designated areas, go to this office to obtain available information regarding cargoes to be transported from Cali. It is also important that the management of the Central Market keep prospective clients (industrialists, distributors, warehouse administrators, etc.) informed of the availability of vehicles through the Central Market office. The management should also encourage truckers that do not have assured return cargo to go to the above office immediately upon arriving at the Central Market, and before unloading, to furnish details on the size of their vehicles, their destinations and departure times.

The office for transport coordination could function as a branch of the Central Market and be financed through brokerage charges assessed as a low percentage of the value of the transportation cost paid by the client.

Other recommendations regarding transportation were presented in Chapter 2 as part of the proposed reorganization of the food distribution system in Cali and in Chapter 3, where a better system of milk collection and distribution is suggested.

Large mass merchandisers located near the Galeria Central. These stores carry a wide assortment of low-priced consumer goods including some food items.

The interior of one of the large mass merchandising stores shown in the picture at the top of this page.

One of the rapidly growing low income housing areas on the outskirts of Cali. There is some electrical service in this subdivision but very limited facilities for providing water or disposing of sewage.

A housing project being developed by the Instituto de Credito Territorial with financial support from the Interamerican Development Bank.

CHAPTER 5

CONSUMER GOODS IN THE INDUSTRIAL TRANSITION

Consumer goods become more important as the industrial transition progresses, and the performance of the industries producing and distributing consumer goods is a very significant factor determining the rate of progress. In this chapter we consider: 1) a selected group of manufactured consumers' goods which have potential mass markets; and 2) residential construction in Cali.

We are interested in the performance of these industries both in terms of their contributions to the level of living and as a source of productive employment. In the dynamics of the industrial transition, the ability of these industries to adjust to new opportunities is critical. Improving the distribution of manufactured consumer goods in rural areas will improve the level of living in these areas and also serve as an incentive to rural producers.

The failure of these sectors to respond by effectively utilizing the labor released from food production and distribution will result in unemployment and dampen the development process.

Manufactured Consumer Goods[1]

Introduction

The vitality of the industrial sector can be considered from three major points of view: productive capacity, financial resources, and marketing orientation. In addition to responding to external conditions, the manufactured consumer goods sector can also affect market size, *i.e.*, effective demand, through imaginative price, product, and distribution policy.[2] There is little question that effective demand for consumer goods is highly restricted for the urban and rural poor, because of their low incomes and the high proportion of income devoted to food. Nevertheless, for certain products, *e.g.*, clothing, personal care items, and household articles, there are markets which can be profitably served. However, to achieve volume, thereby decreasing production costs, the firm must re-orient its price and product policy to a market segment which has largely been ignored. This untapped market calls for products

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[1]This section is based upon PIMUR Technical Report No. 4, *The Production and Distribution of Selected Consumer Goods in the Cali Area.*

The type of investigation and analysis in this report was constrained by difficulties in obtaining financial and operational data from existing firms.

[2]See, for example, D. S. Henley, *Marketing and Economic Integration in Developing Countries*, pp. 82-85 and W. Glade and J. G. Udell, *Marketing Behavior in Peruvian Firms: Obstacles and Contribution to Economic Development*, pp. 159-169, both in R. Moyer and S. Hollander, eds., *Markets and Marketing in Developing Economies* (Homewood, Ill.: Richard D. Irwin, Inc., 1968).

devoid of frills, probably of reduced quality, and low in unit price. To obtain the latter, packaging changes may be needed to reduce the quantity per unit.

To reach these rural and mass urban markets, not only will price and product policy adaptations be required, but changes in distribution methods should be effected. At the present time, there are few distributors who identify market potentials, aggressively merchandise and at the same time handle a wide line of goods which would make it possible to reduce the costs of distribution. A limiting factor is that entrepreneurs wishing to expand their volume, through targeting the urban poor and rural *campesinos*, lack information about these markets. Direct data gathering efforts are required, for little secondary data exists.

Firms were studied in the following six industries: 1) textiles, 2) ready-made clothes, 3) electrical applicances, 4) shoes, 5) agricultural hand tools, and 6) domestic utensils. Although firms in all the major industrial centers were studied, firms in the Valle area were of particular concern to the PIMUR project. Unfortunately, manufacturers of consumer goods in the Cali area were generally unresponsive to our interviewing efforts, which contrasted quite sharply to the responsiveness of manufacturers in Bogotá, Medellin, and other industrial centers. In any case, much of what we are able to say about consumer goods manufacturing is based on information from firms which compete with Cali firms, and we can assume Cali firms face similar problems. Table 5.1 shows the estimated number of firms in the Cauca Valley of the different types studied and the number of interviews completed within each class both in Cali and in other areas of Colombia. The sample was purposive and designed to cover a range in firm characteristics.

The Impact of Government Regulations on Industry in Cali

The major centers of industry in Colombia are Bogotá, Medellin and Cali. Table 1.7, Chapter 1shows a comparison of these areas by various measures of manufacturing activity in 1966. As the table shows, of total value added in manufacture for all of Colombia, Bogotá D. E. and Antioquia each contributed 23.3%, and Cali 21.1%. In recent years there have been indications of a shift in manufacturing from Cali to Bogotá due, at least in part, to the substantial benefits gained from locating close to the seat of government. It is the latter magnetic effect which is of particular concern to those entrusted with the development of Cali and the Cauca Valley.

Importation of machinery, raw materials, and sub-assemblies is strictly controlled by the central government. In the case of machinery, import permission is readily granted if the company needs equipment to initiate or expand exports. Machinery imports are also allowed in those cases where a company can prove that its existing equipment is uneconomic or no longer usable. There is, however, no set formula for determining the economic life of machinery.

TABLE 5.1 ESTIMATED NUMBER OF MANUFACTURERS OF CONSUMER GOODS IN THE VALLE DEL CAUCA AND NUMBER INTERVIEWED, 1969

Consumer Goods Selected	Total[a] Firm Sizes[b]			Overall Total	Interviewed		Total Interviews
	Large	Medium	Small		In Cali	Other Cities	
Textiles	6	3	-	9	1	5	6
Clothing	22	17	2	41	4	10	14
Appliances	4	10	-	14	-	4	4
Domestic Utensils[d]	9	6	-	15	4	7	11
Shoes	6	2	60	68	48[c]	2	50
Hardware[e]	1	6	-	7	1	2	3

[a]Reference area, the Valle del Cauca. The selected products were researched according to the following criteria: 1) brands found in the regional market; 2) strength of the demand for each product.

[b]Each firm was classified according to its assets and number of employees. These criteria were chosen because large variations were noted in the declared capital of the firms (see Technical Report No. 4, *The Production and Distribution of Selected Consumer Goods in the Cali Area*).

[c]Sizes of these firms were determined from questionnaire replies. Data from 47 firms were used.

[d]Made of aluminum, plastic, glass, china, enamel.

[e]Goods researched were kerosene stoves and agricultural hand tools.

And, it is difficult at times to project with certainty the economic impact of utilizing more modern equipment. Much depends on the marketing policies accompanying increased investment. It has not been easy for firms to obtain newer, more efficient equipment under existing government policy. For firms which are located outside Bogotá, the problem is exacerbated by the need for continued development of, and contact with, government officials.

In addition to government controls of machinery imports, there are also regulations affecting the importation of new materials and parts. In an effort to increase exports, the government has permitted exporting firms relatively easy access to necessary imports. For those not engaged in exporting, it has been difficult to gain permission to import. There are a variety of government contacts needed to easily obtain desired import licenses. These contacts must usually be made with officials in Bogotá. In addition a number of products are under price controls established by the Superintendency of Prices. Adjustment in prices is a complex procedure involving petitioning the regulatory office. Given the inflation and changes in cost structures, it is necessary to gain frequent adjustments. Again, an advantage derives from close proximity with the regulatory agency. A variety of other national regulatory activities offer a similar advantage to a Bogotá location.

As a result of the above, the Cali industrial sector has experienced a continuing outflow of administrative offices and plant facilities to the Bogotá area during the last 10 years.

Productive Capacity

In the interviews with firms manufacturing consumers goods, we attempted to get estimates of level of utilization of their physical plant capacity. The most important and objective measure of utilization is the number of shifts plant and equipment were utilized. With the exception of textiles, most firms operated on a one-shift basis during most of the year. If a firm operates only a standard 48-hour week and does not operate on holidays, the capital equipment is used less than one-third of the time.

Estimates of percent of capacity utilization given the number of shifts is more subjective. This is the manager's estimate of the ratio of actual utilization to that which would be possible without significant additional investment in equipment or increases in average variable costs due to inefficient use of equipment. Estimates may be based upon rated capacity of strategic equipment. Our question referred to average annual utilization. A firm may choose to operate far below capacity for several reasons. For example, they may believe demand will expand and want to be in a position to exploit such an increase. They may also choose to operate one shift due to added problems of supervision and variable costs associated with multiple shift operation.

There are, of course, significant differences among firms, and our samples were small. Thus, we do not intend to imply a census accuracy in these estimates. The objective was to determine if capital plant and equipment or other physical limitations such as skilled labor or raw material shortage were limiting factors in expanding production, and to get a general impression of the level of plant utilization. Based upon the interviews there is little doubt that, with the exception of textiles, these firms could greatly expand output in response to increases in demand, without being limited by available plant and equipment.

As the only exception, the textile industry has been operating at 85% to 100% of three-shift capacity. Increasing demands, from both the national and export markets, have prompted two major firms to expand capacity by 30% and 20%. These expansions should ease supply shortages for the next few years. No lack of skilled labor appears to exist in this industry, as the major firms follow the practice of apprenticing untrained labor to skilled labor in their plants. As expansions take place, there is a ready supply of labor trained in the specific skills used by the manufacturer. There was no indication that textile firms are faced with raw material shortages.

In contrast to the textile industry, the ready-made clothing industry has considerable excess capacity. In Colombia there are some 2400 firms in this industry, the great majority of them being small and medium-sized companies. Those interviewed reported operating at about 40% of one-shift capacity during most of the year. Prior to the start of school and the Christmas holidays, however, many utilize 80% of *two-shift* capacity. Thus, high seasonal peaks require capacity which is sparsely utilized during non-peak periods. A shortage of working capital to finance inventories may be a barrier to a more efficient pattern of production. As might be expected, none of the firms interviewed reported any plans for expansion or for machinery purchases. Some shortage of raw materials in the form of cloth from textile firms was reported. The expansion in textile capacity should help to alleviate these shortages. Clothing industry sources estimate that for every 20% increase in production, there would be an 8% increase in personnel. Since they require from 3 to 6 months to train workers, depending upon prior labor experience, short-term changes in demand are met through overtime hours.

Two major international firms and a number of national firms are engaged in the manufacture of electrical appliances. The industry as a whole is currently operating at only 25% of one-shift capacity following a period of rapid expansion. One of the larger national firms, however, is operating at about 70% of one-shift capacity and has plans to increase its capacity by 30%. According to the firms interviewed, the industry has had problems in obtaining

permission for importation of necessary raw materials and sub-assemblies. Apparently there are no difficulties in obtaining qualified workers. For every 50% increase in output, it is estimated that there would be an increase in administrative personnel of 5% and 15-20% in the labor force.

Low levels of capacity utilization are also found in firms manufacturing agricultural hand tools, with the companies in our sample reporting 40% capacity utilization on a one-shift basis. No bottlenecks in raw material supplies or in labor were reported. It is estimated that a 50% increase in output would require approximately 30% more labor. No plans for expansion were reported, but output could be doubled in four months if demand could be stimulated.

We were not able to secure specific data on plant capacity from the major shoe firms interviewed. Their managers were, however, optimistic about their ability to supply a growing market. The indications are that these firms, which are internationally owned and managed, could respond without difficulty to increased demand.

A number of firms, utilizing different raw materials, are manufacturing domestic utensils. Those firms utilizing aluminum as their basic raw material reported the highest capacity utilization in this group, but still operate at only 40% to 50% of one-shift capacity. Easy entry into plastics manufacturing has led to overinvestment, with the result of extreme under-utilization of equipment at only 25% of one-shift capacity. The major glass firm, which supplies 35% of the country's production, is also operating at 25% capacity in its consumer glass division. In the larger, more automated firms, there appear to be no labor or equipment barriers to expansions. However, in the smaller firms which utilize artesan labor there are substantial human resource barriers to expansion. Reported anticipated increased labor requirements with expanded output varied from 0% with a 30% sales expansion for one firm, to approximately 30% increased labor needs with 50% sales expansion for two large firms in the industry.

In summary, there is substantial excess productive capacity in this part of the industrial sector, with the exception of the textile industry. Most firms could expand output on the order of 20% to 30% within a very few months. With the exception of ready-made clothing and artesanal domestic utensil firms, there was no indication that labor availability would be a barrier to expansion. Expanded output will result in increased employment, with approximately 30% increased employment for every 50% increase in output. Thus, there appears to be no major barriers to expanded output in terms of availability of physical plant. It should be noted, however, that despite the lack of mention of supervisory and management talent as a potential barrier, this particular labor skill is generally in short supply in Latin America, and Colombia is no exception. When firms approach two-shift operations, this may be a major barrier to supply expansion.

Financial Resources

Access to capital, according to the firms interviewed, is a major barrier to expansion. In general, the principal concern is with financing working capital requirements. Many firms said that no medium or long-term money was available to them for this purpose, and that they had to resort to short-term sources, generally at high interest rates. The small and medium-sized firms, in particular, reported that the lack of commercial credit was a major problem. In some cases, especially in clothing, wholesalers are financing manufacturers.

There was less concern expressed about the availability of funding for fixed plant and equipment. The large firms, especially, seem to have access to longer-term money. Small and medium-sized firms feel themselves most constricted. A number of these firms claim that while large firms have access to Corporación Financiera loans, the procedures and requirements of these development banks effectively eliminate them as a source of capital for firms of smaller size.

It should be noted that capital shortage is often used by firms as an excuse for lack of market expansion. Many firms, in fact, may wish to have additional capital to use merely as a competitive tool, *i.e.*, to provide extended credit to customers. Also, interviews with banking executives indicate that many medium-size and small firms lack the management capacity to provide the minimum financial evidence necessary to make a prudent bank loan. The bankers suggest this lack of management is now the real barrier, especially since the Colombian government has recently taken steps to increase credit to manufacturers. This is discussed further in the section of the report dealing with credit. The lack of market information is also a barrier to providing evidence to support loan applications. Thus, it is not completely clear that the critical or limiting factor is the availability of credit. It is clear that the credit problem differs from firm to firm. However, about 85% of the firms interviewed said they would have trouble meeting a rapid increase in demand because of a lack of working capital.

The amount of credit which manufacturers give their customers varies by industry. Most manufacturers, regardless of industry, report a lengthening of their credit terms. The appliance industry provides its wholesalers, many of whom are exclusive agents, the longest credit terms of any of the industries studied. Credit of 6 to 9 months is common. Some firms do, however, require a 25% down payment. Others charge 2% per month on the wholesaler's unpaid balance. Credit extension is, of course, a major factor for large appliances, since the final consumer's purchase is often financed for 12 to 18 months. Thus, there is pressure at each step in the channel for increased credit.

The agricultural hand tool firms reported the least generous credit terms, at 30 to 60 days. However, some 2/3 of their sales go through the Caja Agraria, and this may have some bearing on their credit policies.

Most firms in the other industries studied reported giving 60 to 90 days credit, with the receiving firm often stretching this to 120 days. In an effort to obtain prompt payment, some of the larger clothing firms gave a 15% discount for payment within 60 days.[3] The small clothing firms reduce their price drastically in order to receive cash payment for their capital-starved enterprises. Only the textile firms reported that they were moving to a more restrictive credit policy, in terms of the firms to which they would extend credit.

On the basis of our interviews, few firms reported a capital shortage with respect to investment in fixed plant and equipment. For the larger firms, this doubtless reflects a lack of investment activity, since most firms in our sample were operating below capacity and were not planning investments. Small and medium-sized firms, however, did indicate difficulties in obtaining loans, with some mentioning, in particular, the red-tape connected with Corporación Financiera loans.

Finance for working capital needs seems to be in limited supply, on anything other than a short-term, high-interest basis. The squeeze on working capital funds has been exacerbated by wholesalers extending their accounts payable to the manufacturer. In some industries, extreme over-capacity and consequent competitive pressure has forced the manufacturing sector to extend its credit terms and hence put pressure on the firm's capital structure.

Marketing Orientation

Traditionally, management's principal preoccupation has been with producing an item and then trying to sell it. Management with a marketing orientation starts by defining consumer needs and then working to develop a product and marketing mix to satisfy the consumer's requirements.

One measure of the degree to which a firm is marketing-oriented is in its development and use of market information. In recent years, a few large firms have conducted consumer research and have changed their marketing mix, adding new products as a result. Some other firms are beginning to see the value of greater orientation to the consumer and are instituting marketing departments which can be expected to go beyond mere sales activity. However, the majority of firms has not yet seen the value of consumer research and information as a guide to market planning and production planning. Only one firm interviewed

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[3] It may be, of course, that such a large discount for prompt payment is really a disguised price reduction.

has developed market potential figures for each area of the country and is using them as a guide to operating policy. Approximately 80% of the firms interviewed agreed there was market potential in rural areas, but none were willing to do the research necessary to develop a marketing program to tap this potential. They preferred to take the easier route of servicing the established urban area despite the under-utilization of plant capacity.

One major barrier in marketing is the traditional wholesaler and agent. As is true in many other developing countries, wholesalers and agents rarely make a strong selling effort for the manufacturer's product. Too often they wait for the customer to come to them and then provide only minimal service. The manufacturer is thereby stymied in his efforts to coordinate the distribution channel and better service the consumer. Of course, many manufacturers see the wholesaler as customers, and never perceive of the final consumer as being the ultimate arbitrer of the company's success or failure.

However, firms are increasingly perceptive of the need to coordinate and/or control the total marketing effort and by necessity have begun to by-pass the traditional wholesaler or agent. In recent years a number of the major textile firms have established their own sales agencies in the principal cities and trained their own sales personnel. One firm found that direct contact with retailers and final consumers provided information not previously known to the firm, leading the way to product adjustment and subsequent tripled sales. One major manufacturer of agricultural hand tools has begun to take control of the channel to rural areas, and is encouraged by the results of direct sales efforts with retailers in small towns.

Of course, it is often not feasible for the manufacturer to sell directly to retailers. Medium-sized firms are rarely able to absorb the high distribution costs, given their sales volume. Some appliance firms which tried to move into retail operations found it too costly and backed off. If wholesalers could be induced to perform the selling function, and to coordinate with the manufacturer's marketing efforts, it would be more economical for the manufacturer to go through wholesalers. Effective broad-line wholesalers could bring significant distribution savings to the system compared with direct selling.

Given the excess capacity in the industries studied, we would have expected evidence of substantial changes in price and product policy as firms attempted to develop new markets or competed for existing markets. Strong competition exists in ready-made clothing. Small firms have been cutting price and going directly to retail outlets in order to get at least some sales volume. Medium and large-sized firms have been competing principally at the wholesale level; for the most part, price reductions have not been passed on

at the retail level. Some shirt firms which have traditionally specialized in low-cost items have attempted to upgrade their product mix, but have found consumers unwilling to accept their product as a quality item. Firms moving down the quality scale have had more success.

Excess capacity in the plastics industry has caused some firms to add packaging items to their line in an attempt to increase volume. With the introduction of plastic shoes, rubber shoe manufacturers found it necessary to redesign their boots and direct more attention to the *campesino* market. Firms in the appliance and utensil industries have done market research to pinpoint new product opportunities. The available evidence indicates that a number of firms have responded to increased competition in their traditional markets by looking for new product opportunities. Others have responded by price and credit competition to maintain or increase their share of an existing market.

There are signs that at least a few firms are attempting to target the *campesino* and urban working class markets. However, the vast majority of firms remain oriented to traditional markets because of unwillingness or inability to research new market opportunities. Some firms, notably in agricultural tools and work clothes, have moved into the rural markets by changing their distribution policy to one of direct selling in small towns, with little or no change in price and product policy. The major plastic shoe firm has, however, consistently followed a low price policy in order to service low-income consumers. One utensil firm has developed a program to sell to employees of large industrial firms, and is able to extend credit because the employer collects payment directly out of the paycheck.

A number of firms have responded to the government's efforts to encourage exports. One firm sells at cost and takes its profit from the 15% government bonus. The development of the Andean Common Market group will undoubtedly expand the export possibilities.

While Colombian firms are still largely traditional in their marketing orientation and operations, there are encouraging signs of change. At least one major firm in each of the industries studied has shown a dynamic orientation to new market opportunities. This is certain to force response from more traditional firms. There is a need for more secondary information on market size and consumer needs. At present, manufacturers are held back, partly by their own lack of imagination and partly by lack of information. With the excess capacity existent in many industries, the economics of entering rural and low income markets would seem to be favorable. However, price, product and/or channel policies will have to be modified by most firms in order to serve these consumers successfully.

Conclusions and Recommendations

With the exception of the textile industry, considerable excess capacity exists in physical plant and equipment in the manufactured consumer goods industries. Although most firms reported there would be no difficulty in expanding output, almost all firms interviewed said they would be hampered in the expansion of sales by a shortage of operating capital for financing inventories and accounts receivable. Other evidence indicates that many firms are limited in effective use of more credit and in expanding sales by the attitudes, practices and talent of the management.

An increased demand for manufactured goods is one of the payoffs of successful development. By releasing resources from the food system and by expanding incomes, potential resources are available for the production and purchase of consumer goods. To the extent that the consumer goods sector fails to respond to new market opportunities, however, the development process is dampened.

Research on the consumer goods sector suggests that in fact this area is not achieving high levels of performance.

Management of most consumer goods by manufacturers interviewed is very traditional. They did not consider marketing as a problem, and didn't see modern market modernization as offering a set of opportunities. Despite the fact that most plants operated at less than even single-shift capacity, managers do not report that the function of the firm is to actively seek consumers' needs and market potentials. Management did not discuss the need to develop marketing programs based on new product ideas, distribution and merchandising innovations or price promotions. Problems were viewed in terms of credit shortages rather than customer shortages. This then defines the rather narrow context of entrepreneurial perception in which this industry group functions.

Most manufacturers sell either to traditional wholesalers or directly to retailers. The former course results in indifferent sales levels since most wholesalers are unwilling or unable to engage in aggressive selling. The latter course is expensive, given small volumes achieved by most retail outlets.

A major unexploited economic opportunity exists: expanded output and significant price reductions in the manufactured consumer goods industries are possible. The potentials of mass production and distribution are as yet unrealized. The question becomes, how can the traditional system be changed to a consumer-oriented mass production-distribution pattern. Aggressive innovative action should be introduced to improve coordination and bring increased pressures for performance in all areas of the system.

Several forms of business enterprise have the potential to introduce constructive change into the consumer goods sector. Any or all of these forms could be stimulated by government credit policies, training and technical assistance.

Larger-scale manufacturers could be encouraged to extend operations by establishing their own stores or franchised outlets. However, this alternative appears to have limited feasibility for the Colombian situation. Viable retail outlets, especially in rural areas, would require a line of merchandise considerably broader than seems practical for most manufacturers.

A second approach would be to promote large-scale retailers. The larger chain stores in foods and consumer goods operating in the three major cities of Colombia may have the potential to expand enough to impose discipline on the system. This alternative seems to have proven itself in Peru, Argentina and Mexico, where several very large-scale operations have been able to make major changes in food and manufactured goods price structure in at least three cities of Latin America. However, more is needed to bring efficient distribution to the smaller towns.

The third model is a concept apparently new to Latin America. The basic idea is to develop full-service wholesale firms which would have contractual arrangements with both manufacturers and retail stores. This concept is similar to the full-service wholesaler proposed for the food system and might be made part of a common development program.

Ideally, the initiative for these new types of business firms would come from the private sector of the economy. And as more young men are trained in business management and administration, we would expect them to break with traditional business patterns and develop these types of firms. Certainly government regulations and credit policy should foster such private development. Yet a case can be made for more positive government action. The independent private firm will have difficulty achieving the minimum level of technical competence and capital in order to achieve the scale of operations essential to bring significant change to the system. And many of the changes will benefit society at large but will not be profitable to the firm. Thus, the firm is not likely to invest sufficiently in the technical assistance and training. It is for this reason we propose positive government action.

It is our recommendation that careful consideration be given to a national program to develop franchise-wholesalers for manufactured consumer goods.

This program would include supervised credit, training and on-the-job technical assistance to a small number of firms which would in turn develop chains of franchised retail stores. The franchise would involve a contract specifying the wholesaler as the primary procurement agent of the retailer. In addition to the procurement service, the distributor would provide a wide range of retail management services, primarily in the form of detailed operating policies and procedures. The distributor would also help in selecting store sites, layout, and financing. Working capital would be provided in the form

of credit for merchandise. The wholesale firm would also provide merchandising and promotion services.

On the procurement side, the franchiser would act as a specification buyer. As a specification buyer, he would offer technical assistance to firms needing it. For example, he would help a small firm prepare the necessary plan for a bank loan needed to fulfill a contract with the distributor. And with a firm order, the manufacturer could get the loan. Through the process of specification design and supervision, considerable technical assistance in both production and management could be imposed.

The specifications in buying would be based upon market research and would be derived from the needs of consumers. They would be designed to expand the market. The product specifications would be part of a marketing program involving product design, price, and merchandising. A large distributor could afford the market research, partly because he could extend it over a large number of products, while even fairly large firms often cannot recover research costs for specialized products.

The franchising wholesale firm thus becomes a "channel captain", imposing discipline and coordination upon the system. It is, of course, impossible to simply legislate the existence of such innovative firms. However, positive government action is required. We would propose that a government agency be established which would work with or as part of an established credit institution. This agency would operate as a small specialized development bank. It would be responsible for identifying and developing the necessary management for these new types of firms. It would also organize the technical assistance and supervise the credit to these firms.

In order to establish these firms, it may be necessary for the government agency to become a partner in the firm. The agency would share the risk by supplying part of the risk capital. The agency could use concessionary loans which would initially represent equity in the firm. (The ten-year USAID concessionary period may be extended in part to the borrower.) This equity or share in the firm could be converted to bonds or debt investment at a later date, based not upon the value of the initial capital, but on the market value of the share in the firm.

Another approach would be for IDEMA or some other agency to enter directly into this kind of wholesale franchise activity. However, after the franchise chain is established (using professional technical assistance and experienced management) it could sell the wholesale operation to the franchiser establishing the entire system as a buying cooperative owned by the independent merchants.

We have not attempted to quantify either the costs or benefits. Costs and benefits would be related to the scale of the program. A program designed to create from 5 to 6 franchising firms, each serving 50 or more retail stores by

the end of 4 or 5 years of operations would have a significant impact on the economy. The benefits of this proposal are many. It offers a very efficient method of organizing and multiplying technical assistance and scarce management skills. The effect will extend far beyond those firms directly involved, for the new kind of competition will force a change in practice among manufacturers, wholesalers and retailers. It offers an effective way of supervising credit with a minimum of bureaucratic involvement. Perhaps most important, it would stimulate mass marketing and mass production, lowering costs of both distribution and manufacturing, thus stimulating employment and an improved level of living.

Residential Construction*

The purpose of studying residential construction in Cali was to assess the trends in construction activity, to study potentials in the industry for productively utilizing a larger proportion of the unemployed and under-employed of the community,[4] and to identify some of the barriers to improved performance and expansion of effective demand in construction. The technical study concentrated on the Cali urban area was based primarily on secondary data and supplementary interviews with officials and managers working with or within the industry.

The Existing Situation in Cali

Urban residential construction is intimately related to the adjustment implicit in the process of transition from a traditional agrarian economy to an industrial one. Specialization, technical knowledge, etc., in the food production-distribution system reduces the proportion of farm to nonfarm jobs, and urban life becomes relatively more attractive. As a result of this process and natural growth, the population of Cali has been growing rapidly. The labor force has grown much more rapidly than the urban economy has been able to offer productive employment, as evidenced by extensive unemployment and under-employment. At the same time, those families with very low productivity and incomes have insufficient purchasing power to purchase or rent housing of reasonable quality under existing conditions.

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*Based upon PIMUR Technical Report No. 16, *An Economic Analysis of Residential Construction in Cali*, 1969.

[4]See L. Currie and H. Belalcázar, *Proyecciones de la Demanda de Construcción y de Materiales para Construccion en Colombia*, 1963, for an earlier analysis and discussion of reasons for the Colombian government to put emphasis on the stimulation of residential construction. Some of the arguments originated by Dr. Currie were examined in the PIMUR study.

Urban residential construction is thus an area of economic activity deserving special attention in economic policy. There are several arguments for subsidizing and stimulating urban residential construction. Construction uses materials produced mainly in the Valle region, and all other necessary construction materials are produced within Colombia. Relatively little heavy equipment is required in actual construction or for manufacturing materials. (A significant exception is transportation equipment.) Thus, expanded residential construction makes little initial demand on foreign exchange. Construction is relatively labor intensive -- about 31% of urban building costs in Cali are for labor, and a high proportion of the costs of materials also goes to local labor. Construction can use large numbers of unskilled labor -- builders in Cali reported that about 70% of the construction workers used are essentially unskilled, needing only a little experience in digging ditches and maintaining their balance in construction activities. Nevertheless, construction firms resist hiring inexperienced workers recently from the farm in order to avoid the modest investment required to orient them to construction work. The unskilled workers are paid low wages and the low-income groups of Cali have very high income elasticity of demand for food and other Colombian produced products. Again, increased construction activity could add significantly to effective demand with relatively little pressure on the balance of payments. Thus, construction appears to have a good leverage effect on other economic activity.

The need, potential demand and labor-using possibilities of residential construction are illustrated by the following estimates and projections. There are currently an estimated 103,800 houses in Cali. Of these, municipal officials classify over 28,000 as hovels in slum areas, representing housing which should not be used for human habitation (*clasificadas viviendas por erradicar*). (Another 50,000 are classified as living units in need of repair -- *por mejorar*). Based upon the PIMUR survey of Cali families, it is estimated that an additional 34,600 living units would be required if those families crowded two or more in a living unit were to have separate housing for each family.[5]

This current housing deficit of about 63,000 units plus the housing required to meet the needs of the projected increased population over the next 20 years, amounts to an estimated need of 356,000 new housing units by 1989. (This does not include an estimate for replacement of housing which will become dilapidated or torn down for street improvement, etc.) Assuming the deficit were made up over the twenty years, this would require that an average of 17,000 new units be built each year.

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[5]PIMUR Technical Report No. 16, *An Economic Analysis of Residential Construction in Cali*, p. 109.

We can roughly estimate the additional employment which might be generated and the magnitude of the investment needed for this level of residential construction. In 1968 about 343,000 square meters of residential construction were completed in Cali. Assume this level of building would meet the needs of middle class families over the next 20 years, representing 2,000 units per year. This leaves a need for 15,000 housing units per year beyond the 1968 level. Assume these 15,000 units average 70 square meters, which is probably near the minimum adequate for an average-sized family. Further assume they are a quality sufficient to prevent them from becoming immediate slums. Based upon the cost of a current ICT financed housing project, we estimate the cost of each unit to be about $22,000 including urbanization *but not including the land*. Assume $5,000 per lot is paid for the land. Total funding on the order of $405,000,000 would be needed each year, over and above present levels of expenditure, unless some savings could be achieved.

The estimated increase in residential construction is about 1,050,000 square meters. At current levels of productivity of 60 square meters per man per year of construction labor, an additional 17,500 workers would be employed directly in residential construction. An examination of the source of building materials would suggest that perhaps an additional 17,500 might be employed locally supplying materials and related services. Thus about 35,000 new jobs would be created to build these 15,000 units per year.

The 35,000 additional jobs are considerably less than the estimated number of currently unemployed in Cali. However, not all the unemployed are employable in construction, and the skilled workers needed in construction could not be recruited from their ranks. At the same time, the added jobs are much less than 10% of the estimated addition to the economically active in Cali in the next 20 years. Thus it would appear that a plan programmed over 20 years to provide minimum housing for all families projected to live in Cali: 1) would not solve the longer range problem of providing jobs for the great number of new workers; 2) is very much within the means of the community in terms of the availability of real resources, but represents a major challenge in terms of securing the financial means to organize them; and 3) would add significantly to the level of effective demand in the city.

Actually, rather than moving toward solving the housing-construction problem, Cali has been regressing since 1963. About 343,000 square meters of residential housing were built in 1968, compared with 628,000 in 1963. From 1962 to 1968 the square meters built per inhabitant has declined at the rate of nearly 10% per year.

Another very serious construction need in Cali is for classroom space in the schools. We estimated that to meet the current classroom deficit needed to put all school-age children in school and to meet the needs of the projected

population to 1989, an average of 317 new classrooms would have to be built each year. (This assumes half the classrooms will be used by two classes of children each school day.) Based upon current estimates of square meter costs, this would require an annual investment of around $16 million and would add about 700 jobs annually directly in construction plus perhaps 700 jobs in supplying local materials and related services, again assuming current levels of productivity.

Residential construction is the major component of fixed investment in building construction. During the 1955-1968 period, residential construction amounted to 83% of all building construction, contrasted to 10% for commercial, 2.5% for industrial, 3.5% for social and 1% classified as official. The small and irregular investment in industrial construction is a reflection of the city's industrial base. The recent construction decline in Cali appears to be an aspect of a serious depression in economic activity. The construction lag is both a cause and effect of the economic process involved in the depression. The year 1969 shows some signs of recovery, especially in construction for the Pan American Games scheduled for 1971.

Public works is an important source of construction employment. In 1968 it was estimated that of the approximately 8,000 employed directly in construction, about 1,200 were employed in public works. Expanded construction is currently under way in the form of major street improvements, a new airport, sports facilities and a new campus for the University. In addition, a new hotel will be completed before the start of the Pan American Games. These construction activities will surely stimulate the economy between now and 1971. New residential construction projects might be timed to maintain the momentum of this construction activity.

Labor productivity in construction is low, requiring 35 man-hours per square meter. For example, as long ago as 1900, bricklayers in the U.S. typically laid 120 bricks per hour; in Cali, in 1968, bricklayers averaged 44 bricks per hour. The low productivity reduces workers' income and increases the construction costs. If construction were to expand to meet the projected needs, skilled workers and construction management would be in short supply; with increased productivity, the projected demand for construction labor would be less. Yet by increasing productivity, costs can be reduced, making new housing available to a larger part of the population. The training potential of construction workers is limited by their general low level of education. More than 60% of the people employed in construction have less than four years of education.

The labor code also appears to add some costs to construction. Since the code differentiates between firms according to size, it may contribute to the predominance of small construction firms. Of the 124 firms affiliated with the Colombian Institute of Social Security in Cali, 62% employed less than 10

workers, and only 5 had more than 100. This small size reduces the contracting capacity of the firm and limits its capacity to achieve scale economies.

The price of developed land is high relative to family incomes. For example, a lot in a current development of modest houses financed by ICT represents one-third the price of the house and is more than four years cash-disposable income for more than half the families in Cali. The costs of urbanization are also high, currently adding from $40 to $50 per square meter to the cost of single family units. This represents about one-third of the price of the lot for the modest ICT-financed house. Builders face significant problems in getting services supplied and in financing them for large projects. The city lacks funds to finance the urbanization costs during a development process.

The municipal building permit tax used for general revenue also adds to the total building cost. This tax is graduated from 3.3 to 5% of the estimated cost of building the house in such a way that multiple-family or larger buildings pay a higher tax per unit. Given the high costs of land and urbanization for single family units, the cost of new housing could be reduced by construction of more multiple-family units. This kind of building is discouraged through a lack of working credit for builders, and by the higher taxes on multiple-family units.

The cost of building materials seems to have increased more rapidly than the consumer price index. Because of a lack of working capital and uncertain demand, distributors have not held sufficient inventories to avoid some shortages in materials. If a substantial increase in construction took place, supply problems would develop, at least in the short run, in the production of crushed rock, tile and bricks due to a shortage of both fixed equipment and working capital. Most building materials are distributed directly from the factory to builder. Those distributed through wholesale-retailers have a gross margin of from 10% to 30%.

Under current circumstances there is little private commercial incentive to build more housing in Cali. Building to rent appears unprofitable, obtainable rents being low relative to the investment. Although housing built since 1965 is not under rent control, the anticipation of possible rent control most likely discourages building.

The total amount of credit available for financing residential buildings presently does not appear to be a limiting factor. The public mortgage institutions have more funds available than prospective home buyers are borrowing, given the down payment, repayment and qualification requirements. However, private investment in home finance, to assume risks for down payments on persons not qualifying for public mortgage, appears very limited. The legal limit

of 17% annual interest on mortgages discourages private investment in mortgages. Private investors can obtain interest rates above 17% in short-term commercial loans, and the anticipation of inflation makes a long-term loan at 17% unattractive. Similarly, commercial bank credit is an almost negligible factor, financing only 4% of housing, 9% of industrial building, and 1.3% of other building investments in Cali in 1967. Some firms and public employers have special provisions for making loans to their employees for home purchase. Also, the extended family must be a source of funds for some home buyers.

The Territorial Credit Institute (ICT) and the Central Mortgage Bank (BCH), two specialized official entities for financing construction, provide most of the credit for construction. The ICT is intended to finance and stimulate construction of housing for lower-income families. The BCH provides more general mortgage loans, including the financing of apartments and hotels. The BCH usually requires a high down payment, normally about 35%, but in some cases less, repayment in 15 years and charges interest rates of from 10% to 13%, significantly below the market rate for commercial credit. An important source of its funds is the ICSS (Social Security program) which is required to invest 40% of its reserves in the BCH.

The BCH is financing 8 apartment buildings currently under construction in Cali, with 12 more such loans approved. This accounts for much of the current residential construction activity of the city.

The ICT has several different finance programs with varying terms. They have loan programs involving slum clearance with 20-year, no down payment, and 8% to 10% interest rates, but funds from other sources must be made available as part of the project. Few of the other sources of funds have been available, however. Similarly, a program financing materials for self-construction of homes with no down payment but the lot, 20-year repayment and 10% interest is on the books. However, in Cali, ICT loans are made primarily to families with incomes well above the median, since most of the population cannot qualify for available loans. It would appear that a practical house cannot currently be constructed, including the lot, for much less than $30,000 (and a popular low-cost housing project financed by ICT is selling houses at about $55,000, including about $16,000 for the lot). Currently ICT requires a minimum of $1000 per month income of any family buying a house costing less than $30,000, and about 29% of Cali families have cash incomes of less than $1000 per month. More important, the 20% down payment and repayment requirements, based upon 10 to 15-year loans at about 15% interest, put these loans for a minimum price house beyond the capacity of at least 60% of the families in Cali. Nevertheless, the ICT has been a very important source of funds for housing in Cali, financing more than 20,000 units since 1960.

The problem in supplying housing is not within these credit entities' means to solve. The problem is essentially that the majority of families have incomes too low to afford the housing which can be built and financed at existing prices and interest rates. The level of productivity and income distribution does not provide an effective demand for low-cost housing. These credit entities have the capacity to lend to many more families than can qualify for the loans. In this sense, credit is not the limiting factor. As it is, loans for these agencies are subsidized in that the rate of interest charged is significantly below open market rates. The credit organizations have an obligation to maintain their capital funds, and, given the inflation, are lending at the minimum terms consistent with this obligation. Of course, any reduction in interest charges would reduce the repayment requirements and place housing within the means of additional families.

Conclusions and Recommendations

Since 1960 in Cali, the construction of square meters of housing per inhabitant has been declining at a rate of 10% per year. The population has been increasing at a rapid rate, yet total housing construction in 1968 was substantially less than in 1963. We estimated that an average 17,000 new housing units would be needed each year for the coming 20 years in order to eliminate current slums and congestion and to provide for projected population growth. At current prices and productivity levels, this would require an annual investment of about 400 million pesos in additional investment in residential construction to build minimum non-slum homes. The direct employment effect is estimated to be 17,500 man-years annually in active construction and an additional 17,500 in production of materials. This represents about half the number of the currently unemployed in Cali, but given the multiplier effect, this level of housing expenditures would most likely result in full employment in the next several years.[6] However, by 1989, this amount of construction would employ directly only about 5% of the projected labor force.

The housing problem in Cali is easy to summarize: most of the families in Cali cannot afford rents or mortgage payments sufficient to pay for housing costing 25 thousand pesos, the cost of a minimum unit under current conditions. But, the same could be said of adequate diets, clothing, etc. This simply

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[6]It is not possible to accurately predict the effect of this level of construction on unemployment levels. If the Cali economy were closed it would without doubt virtually eliminate unemployment during the first several years. However, the availability of employment and housing could influence the level of migration to Cali, affecting both levels of unemployment and housing needs. Residential construction and unemployment must be viewed in a regional and national context.

describes a structure of poverty. There is no evidence that poor families would prefer more housing over a number of other possible improvements in their level of living. As an area of public investment, housing does have the characteristic of being relatively labor intensive, and it would put little pressure directly on the balance of payments.

There are other significant barriers to expanded housing construction than the lack of effective demand. While more mortgage money is available through ICT and BCH than is demanded, given the down payment and repayment requirements, there is a lack of risk capital. This might be invested in second mortgages to allow some of the middle income group, who could afford the payments, but cannot accumulate the relatively high down payments to buy a house. *We therefore recommend that the law restricting interest rates on mortgages to 17% per year be modified to allow a higher rate on second mortgages.*

We recommend that rent control be eliminated. It seems to serve no useful purpose during a period when prevailing market rents are below the level required for profitable building. While controls apply only to buildings constructed prior to 1965, their existence may discourage private investment, can distort the economic use of existing space, and probably add unnecessary costs to aggregate housing through procedures designed to avoid the control.

The high costs of land and urbanization, relative to incomes, are significant barriers to expanded residential construction. And with the greatly expanded population projected for the near future, a very substantial expansion in basic utilities will be required in Cali. *It is therefore recommended that the city government embark upon a major program of planned urbanization with the help of the Colombian government and international loans.* This program would include : 1) expansion of basic water and sewer facilities (a loan is now being negotiated); 2) the acquisition of land to be set aside for housing (an urban INCORA) and to be urbanized in a rational pattern, reducing land speculation gains, provide economies of scale in urbanization, and eliminate delays and frustration among builders in getting developed lots; 3) financing the costs of urbanization and land for builders while building is under construction. In this connection, *it is recommended that the national mortgage institutions be permitted to lend to both the city and builders to finance urbanization costs;* and 4) obtaining sufficient funds to implement the low-income housing provisions of ICT. The ICT will lend money to purchase construction materials to be used by the home owner in self-construction, but the home owner must provide his lot. We recommend that as part of this urbanization program, lots be provided through the city on very long-term second mortgages at rates as low as are possible.

In connection with the planned urbanization, *it is recommended that school facilities be included as part of the developments.* We estimate a need for an average of 317 new classrooms per year over the next 20 years, at an estimated investment cost of 16 million pesos per year.

It is suggested that changes in tax laws and/or their administration be effected in order to reduce taxes per family living unit on multiple-family dwellings and increase the tax on unused urban land in order to discourage land speculation and associated higher land prices. The lower tax rate for multiple-family units, if coupled with changes in requirements for approval of such buildings by Planeación Municipal and with more credit available for the necessary urbanization work, should stimulate construction activity in that type of dwelling.

Finally, *it is recommended that SENA in Cali place new emphasis on practical training for construction work supervisors.* Efforts should be made to perform time and motion studies for present work methods in order to devise more efficient ways of performing common construction tasks. Technical assistance from a well-trained industrial engineer with construction industry experience is suggested to help identify potential areas for improving worker efficiency and to develop training programs. The low labor productivity makes housing costs high relative to purchasing power.

Little economic cost is involved in modifying the regulation of mortgage rates and rents or in altering the structure of taxes on new buildings. The benefits of such changes in terms of greater employment and increased housing will be large compared with the cost, but will be small compared to the magnitude of the problem. The unemployed labor and ready availability of resources for construction indicate that the *real cost* of added construction is low. This is true, not only for residential construction, but also for school buildings, retail stores or the wholesale supply center. Even though the opportunity costs of unemployed labor and resources are low, the budget costs for construction in any of these areas is substantial. Those construction projects with the best possibility of returning the budget costs should be built first. But, subsidized construction is needed to stimulate employment. The suggested program of planned and subsidized urbanization for residential construction requires detailed feasibility studies after realistic assessment of the political constraints. (For example, could long-term bonds be used to acquire the needed urban land?) A pilot project could test procedures and provide realistic information useful in estimating costs and benefits. A flexible program should be developed which would be adaptable to changing economic conditions -- that is, the level of subsidy to residential construction would vary with the level of unemployment and other construction activity. The detailed feasibility study for this program should receive a high priority.

We have looked at residential construction primarily because it is an area of economic activity with potential for productive employment of people who will be displaced in the process of industrializing the economy. It was not a definitive study, but was conducted to illustrate the magnitude of the problem and potential benefits possible from improving the organization of the economy.

CHAPTER 6

SOME PUBLIC ASPECTS OF MARKET COORDINATION OF THE FOOD SYSTEM

Introduction

In this chapter three important aspects of government participation in the coordination of the food system are considered. First is a discussion of laws and regulations. Market regulation can facilitate economic activity and contribute to the process of development. However, a regulatory code can also impose barriers to the effective exploitation of new economic opportunities. Laws and regulations appropriate for the economic and technical conditions of yesterday become inappropriate for today.

Good communication is essential to effective coordination in a modern industrial food system. While information can be provided privately, there are good arguments to make the collection and distribution of certain types of market and production information a public function in the interest of improving the performance of the system.

Finally, credit is considered. The credit system represents a special set of rules and regulations influencing how an important part of the production assets of the community are used and to whom they are given access. The The micro and macro credit decisions play an important part in the performance of the economy.

Laws and Regulations*

Introduction

A technical report describing important laws and regulations related to the economy and especially to the food system was prepared as a reference document for this study. The legal system is very complex, and a great number of laws and regulations influence the organization and performance of the economy. An attempt was made to codify groups of laws and regulations most relevant to the issues of this study. There are always differences between the written law and the law or regulations as applied. An attempt was made, therefore, to obtain some observations on the application of laws and regulations. Our purpose here is to generalize about the influence of some aspects of the *de facto* legal and regulatory system on the coordinating functions of the market.

Market coordination of economic activity derives from the interaction of individuals as they seek to gain profits by exchanging goods and services. The

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*Based upon PIMUR Technical Report No. 10, *Laws and Regulations Affecting Market Coordination in the Cali Area*, prepared by Luis Arévalo, who was trained as a lawyer and practiced law in Colombia, later obtained a Ph.D. in Economics at the University of Wisconsin.

prices resulting from market transactions are a matrix of incentives directing economic activity. Laws and regulations structure this incentive system by imposing rights, obligations, and prohibitions upon the participants in the economy.

Broadly defined, economic policy consists of establishing the rules of behavior for the participants in the economy, and these rules have a great deal to do with the functioning of the economy. In a dynamic economy the economic rules must be constantly modified to insure that economic activity is socially beneficial. If new technologies are to be exploited to the benefit of society, new economic rules are often required to facilitate their use and to protect against potentially harmful external effects. All societies enact laws and regulations which may have undesirable effects upon the economy at later dates. Thus an important aspect of purposeful economic development is the reform of regulatory laws. The necessity for reform in Colombia is well recognized by its leaders, as is illustrated by the following statement by President Lleras Restrepo, "This country . . . continues being held back by institutions which have lost their usefulness and have become an obstacle to the social process . . ."[1] The President proposed a program of institutional remodeling, including "democratic restoration, economic development, social change and continuing action in international relations." Recent government actions to achieve institutional reform have included: 1) selecting the Ministry of Agriculture as the directing organization of agricultural policies; 2) defining and fixing the course of the government's planning actions; 3) strengthening the Institute of Industrial Development (IFI) to carry out expansion objectives in the nation's production and direct new forms of social capitalization; 4) establishing new rules for changes based on criteria of flexibility, adequate use of foreign exchange and encouragement of exportation; and 5) studying fiscal policies in order to reduce tax evasion, maintain a balanced budget and unify the tributary legislation.

Regulation and Coordination - Some Problems

Market coordination is never independent of the laws and regulations which circumscribe the conduct of the market participants. Regulation is essential in order that individuals acting in their own interests contribute as well to the benefit of the community at large. Policy makers in a complex and changing society face an imposing task in attempting to predict the actual consequences of regulatory codes and to modify them as the needs of the economy and society change. All changing societies have a problem of regulatory lag.

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[1] *El Tiempo* (Newspaper): "Message from President Carlos Lleras Restrepo to the Congress." (Bogotá, November 5, 1968).

Our emphasis in this study has been upon the problems of market coordination in the process of moving from an agrarian economy to a scientific industrial one. The modern industrial economy requires a much greater reliance on specialists performing essential coordinating functions than was true of an earlier economy. Thus, it is not surprising to find a general attitude, reflected in the regulatory policies, that some of the functions essential to the performance of a modern food system are unnecessary and that those who perform these functions add unnecessary costs to the system. This is especially true of the assembly, wholesaling and storage functions. Here there is a general distrust of intermediaries. This attitude is evidenced by efforts to eliminate intermediaries by establishing farmers' markets, by direct government performance of distribution functions and by various policies which appear to discriminate against intermediaries. Such attitudes and the policies they stimulate can become significant barriers to the development of an improved food system.

A special problem derives from the existence of regulatory codes which tend to be unrealistic in the sense that standards are established which cannot be met by the market participants or enforced by the governmental authorities. Key problem areas are laws and regulations establishing standards in production and distribution which control sanitation, quality, weights and measures, and prices. Certain quality standards are set by the Colombian Agricultural Institute (ICA), and health control standards are established by the Ministry of Health as well as local governments. The majority of the quality control regulations are specified in advanced technical or scientific terms defining requirements of purity, preparation, conservation, and product classification. For such requirements, local control authorities are confronted with many problems including the lack of adequate testing equipment, lack of transportation equipment and very inadequate technical training.

The current national milk regulations are an example of codes which are unrealistic in the existing situation in Cali. Farmers are required under the code to provide for cooling of milk, yet less than 20% of the farmers in the Cali milk supply area have adequate facilities to meet the standards. Milk is to be transported in refrigerated trucks, yet nearly all of the milk enters Cali in cans. It is illegal to transfer milk from one container to another in the street, yet this is a common practice in the delivery of raw milk.

When faced with a substantial number of unattainable and unenforcable requirements, the tendency is to regard regulation as a hurdle to be avoided. This may lead to a general climate tending to corrupt both market participants and enforcing officials if the code makes it impossible to operate within the law and survive. Moreover, frequently despite intent and care, market participants may be in danger of a legal transgression. The fact that few firms can meet the full conditions of the law puts unintended power in the hands of

enforcement personnel. The problem is compounded when there are too few local officials to provide enforcement and those available are poorly trained and underpaid. The difficulty and expense in establishing evidence and the potential arbitrary application of the regulations stimulates unproductive evasive action as defensive measures. The permanent exposure to these conditions can seriously undermine the exchange system and the effective government regulation of economic conduct.

The regulatory system appears to be adding unnecessarily to the cost of economic activity. The administrative costs and frustrations in meeting the regulatory requirements are significant. Requirements abound in complementary documents available from several agencies, procedures requiring official paper, stamps, sight inspection by various authorities, consignations to fiscal agencies, costly publications, etc.

Simplification of the codes and some unification of regulatory function to provide convenience in compliance, at least in regard to location within the local communities, could reduce the costs of compliance.

Also, the costs of the system are increased with no related benefits to the extent that evidence of compliance is substituted for compliance with a regulation. For example, it has been reported that the required treatment of cattle for foot and mouth disease has been met by the purchase of certificates of vaccination without vaccination having taken place. To the extent these reports are true, the cost of the purchased certificates is added to the system without adding the benefits intended by the regulation. Similarly, the well-intended regulation requiring bills of lading in shipping has to some extent increased costs without benefits. The trade has reported several devices in widespread use that have been adopted by truckers to avoid fiscalization.

Conflicting and unrealistic regulatory codes also discourage investment of capital and managerial talent in industrial and commercial activities. The uncertainty created by the possible arbitrary applications of the regulations, the added costs of doing business imposed by them, and the possible loss of prestige through legal entanglements discourages new enterprises. This has the side effect of diverting capital to safer investments such as land, thereby increasing the price of land.

Most economic firms are organized and attempt to operate within the law. They have fulfilled the requirements for installation, inscription, registration of uniformity of accounting systems, and registry of products; physical, technical, and sanitary adequacies of the establishment, taxes, physio-chemical and biological analyses of periodic product samples; quality selection, presentation and packaging of the product, etc. It is also evident, however, that there are firms which are installed and operate in the shadow of the law. The firms which do not meet the standards established by the regulatory codes often

have an advantage over legitimate firms. This makes if difficult for the latter to compete, especially for commodities which have quality characteristics which cannot be easily recognized by the buyer. For example, it may be difficult for a legitimate fertilizer firm to compete with those who falsify the analysis of their fertilizer; the milk distributors who do not water their milk may find it difficult to compete with firms where watering the milk is a common practice; and meat from unregulated slaughterhouses offers unfair competition to that produced under sanitary regulations.

The threat of this unfair competition may again discourage investment of capital and managerial talent in important areas of business. In like manner, the uncertainty of the application of conflicting regulations and unfair competition from illicit firms may discourage firms from achieving a scale of operations that might otherwise be economically justified.

The detailed and specific regulatory codes create special barriers to the adoption of new technologies and methods of economic operation. A new technique or product might be illegal under the code while offering superior results. Thus, to the extent possible, codes should be written in terms of desired results rather than as specific requirements. The limiting constraint in moving to such codes is that much better trained personnel are required for their enforcement.

A very important and unplanned consequence of complex government economic regulation without effective geographic decentralization of administration stimulates the concentration of industry in the capital city. There is some evidence this is adversely affecting the regional development in Valle. For example, firms requiring import licenses or who are manufacturing goods under price control find it advantageous to locate their management in Bogotá. *It is recommended that those interested in and responsible for regional development insist upon the effective decentralization of administrative offices in order to minimize the incentive for geographic centralization inherent in economic regulation.*

Modification in some specific laws and regulatory codes are suggested in other parts of this report. Examples are the modifications proposed for the regulations of milk and meat in the Cali area. A more general suggestion involves the process of formulating regulations. *It is suggested that procedures be developed to improve the communication between the policy makers and those participating in the regulated activity in order to insure the regulation applies to the actual situation and to test for administrative feasibility.* Similarly, it is suggested that more technical studies evaluating existing regulations be funded and carried out. Special attention should be paid to the tendency for regulations to lag behind and inhibit technical innovation.

Importance of Contracts

Trade and industrial organization are greatly facilitated by the existence of reliable intangible instruments specifying rights and obligations. The reliability of such instruments always rests very heavily upon the honesty and trust of the contracting parties. It also rests upon the efficiency of the legal system to enforce agreements. This study found that a number of merchants do not use or believe in negotiable instruments or contracts. They have found or at least believe that redress for failure to meet the obligations requires long and costly judicial procedures. The problem is important for the many small merchants who deal in very small transactions. To the extent trade is limited to cash transactions or transactions on the basis of personal knowledge of those involved, the market is narrowed and economies of scale in organization are limited. These attitudes and related legal procedures seriously limit the capital market which is exceedingly important in the organization of industrial firms.

Because contracts are difficult and expensive to enforce, their use as instruments in improving vertical coordination is restricted. Contracts for future delivery of commodities of specified quality have significant potential in reducing costs of assembly, processing, and retailing. Some processing and export demands cannot be met without assured supplies of commodities of specified characteristics. Reliable contracts thus become an important factor in market coordination.

Noting the negative economic impact of current practice concerning contracts and claims procedures, *it is recommended that a careful study be made by competent individuals for the purpose of streamlining contract legalization and small claims procedures* .

A Possible Problem with Agencies Having Special Privileges

The government has established special privileges for certain wholesalers, retailers, and processors, including cooperatives, the Cajas de Compensación, some official agencies, such as IDEMA retail stores, and labor unions with some commercial functions. The participation in the market of the official agencies and the privileges granted the others are intended to stimulate and complement private initiative, to stabilize certain markets and reduce consumer costs. There are a number of economic services which will not be adequately performed by private firms or which will be performed adequately only by grant of privilege, and public initiative is required. However, it is important to understand the consequences of such governmental activity. It is possible that private initiative capable of providing superior economic service will be discouraged. These market agents enjoy tributary exemptions from all kinds of sources because they operate without profit motivation. As legal entities,

they have autonomy, juridical personality, and their own patrimony. These organisms do not consider many of the administrative and supporting costs charged implicitly to the state or private industry. None of these establishments require licenses to function, and the requirements of the codes specifying quality, sanitary conditions, units of measurement and identification can be passed over although they usually are not. Cooperatives enjoy, besides this, the following prerogatives: lower discounts than those of the commercial obligations of banks which make loans to them; rights of preference as a creditor against third persons; and judicial enforcement of credit with a simple copy of debt liquidation in their favor; preferential transport of first priority foods and a lowering of 15% on freight rates fees of national or subsidized transport firms; free space in national newspapers for documents that must be published, etc.

In addition to the special privileges listed above, the Cajas de Compensación receive what amounts to a public subsidy from a mandatory contribution (a tax) of 4% of the total salaries paid by those firms large enough to be covered under the law. These funds can be used for a variety of purposes, including subsidizing retail stores. And, as contrasted with the cooperatives and IDEMA stores, the Cajas de Compensación are not open to the general public, their use being limited to workers or affiliated companies. As it turns out, the workers who have access to the differential advantages in prices, quality, sanitation and correct measurements offered by these subsidized retail stores have higher incomes than a large part of the population excluded from their use.[2] Furthermore, the Cajas de Compensación stores, which tend to handle the higher margin food items and serve a part of the population with higher, more reliable incomes, siphon off a part of the market important to the successful operation of larger scale, more complete line retailer service to all the population. Thus, the Cajas store may be indirectly contributing to higher food costs for the lower income families.

The Dilemma of the Labor Code

The most important resource in any economy is its working force, including the technical skills and knowledge it possesses. The productivity of the economy is highly dependent upon effective coordination of the workers' activities. At the same time, a worker cannot be treated as any other economic resource. Employment security and working conditions are important. And workers' income involves more than a return to a factor of production. It represents a share in the total productivity of the economy and is a major component of effective demand.

[2]For example, the consumer study estimated that 28% of the families living in high socio-economic levels bought in the Caja food stores, compared with less than 2% of those families in the lowest socio-economic areas.

Colombia's labor code is extensive including laws and regulations emphasizing two types of standards: (a) those which define the relationship of the employee to the employer including conditions under which an employee may be dismissed; and (b) those which specify minimum compensation and benefits associated with employment.

There are several features of the labor code which have a serious effect on the coordination and productivity of the economy. The transformation to an industrial economy requires that increased employment be found in the urban sector of the economy. At the same time, especially in a capital-short economy, it is important to make full economic use of available capital, plant and equipment. The survey of consumer goods manufacturers found that these firms were generally operating at only a fraction of one shift capacity. This means that capital plant and equipment is generally utilized a very small portion of the time it is potentially available during a year. Simply limiting use to a one-shift operation results in utilization less than 25% of the time during a year. At the same time, very high levels of unemployment exist.

The code established 19 basic benefits (*prestaciones sociales*) which are at different levels according to the capital of the firm. This has several consequences. It may force a pattern of benefits upon workers inconsistent with their preferences. Most important, they may prefer to work longer hours at somewhat less pay per hour and a higher total income. The differential costs according to size may also discourage achievement of size sufficient to achieve significant economies. The study of the truck transportation, for example, indicated that a number of institutional factors created a substantial added cost to larger scale operations. And this affected the coordination and effective use of the limited available trucking equipment.

Minimum wages and benefits limit the number of workers a firm is willing to employ. It will employ only those who can be expected to contribute more to the firm than the cost in anticipated total compensation. Thus, the minimum may be a barrier to expanded employment.

Perhaps the most significant rules affecting the utilization of scarce plant and equipment are those requiring 35% extra payment for night work, 25% extra for daytime overtime and 75% for night overtime, and triple salary for Sundays and holidays. By far the most important of these is the 35% added labor cost involved in extending production to multiple shifts. This is an important factor limiting the use of plant and equipment in manufacturing, causing an uneconomic substitution of capital for labor and, by increasing the cost of consumer goods, limiting the market for consumer goods.

The rules regulating dismissal and the level of severance pay seem also to be influencing industry's productivity. The law states that after a two-month trial period a worker is entitled to severance benefits ranging from 15

days pay for employees with less than 1 year's seniority to 615 days pay for 20 year employees. The scale of payment also varies by size of firm. The employee may bring suit any time within three years less one day and if unable to prove just cause for dismissal, the employer must pay all back wages. In the case of collective dismissals (layoffs arising from economic or technical factors) the employer must obtain prior approval from the local office of the Labor Ministry. Firms report that such approvals are often delayed by several weeks. Moreover, since new workers can be dismissed within 60 days without legal recourse, there is an incentive to use short-term employees to meet demands which may be temporary. This may result in a loss of efficiency and a failure to take advantage of training and experience.

The dilemma of the labor code is that legitimate claims of individual workers, as provided in the labor code, may have aggregate consequences which are to the disadvantage of all members of the society. And the code, while seemingly helpful to those already employed may be a significant barrier to employment for those entering the labor force. Thus, we find much higher levels of unemployment among the young. In the process of the transformation from an agrarian economy to an industrial one, labor mobility is extremely critical. Finally, a fuller utilization of equipment could contribute significantly to increased productivity for the economy and lower cost operation would expand the market.

Because of the critical importance of these regulations, we suggest the formation of a commission, representing various segments of the economy, to carefully review the labor code. Their charge should be to suggest modification of the code, to stimulate improved use of labor and capital equipment, and to devise alternative means of providing the welfare features embodied in the code, making them more generally available. We suggest special attention be given to elimination or modification of the requirement for 35% extra payment for work at night.

Price Supports

The most direct control of the coordination of the private economy is through price regulation. Legal specification of differential interest rates is another example. Credit policy is extremely important to the coordination of the economy and will be discussed in a separate section of the report.

The Colombian government operates a system of price supports for a number of agricultural products through the operations of IDEMA (Instituto de Mercadeo). The commodities covered by the price support program include corn, soybeans, beans, cotton, rice, sesame, sorgo, wheat, barley and anis. Price floors have often been set below the market price, and have not required large-scale government purchases. Recently purchases have increased. During the first semester

of 1969, IDEMA purchased 92,134 tons of seven commodities including 40,000 tons of rice, 30,000 tons of corn, 6,400 tons of beans, and 12,000 tons of wheat.[3]

The IDEMA objective has been to contribute to price stability through the minimum price guarantee and the management of storage stocks. In addition, some provisions in the support program are intended to stimulate the use of improved agricultural inputs. IDEMA efforts have been restricted by a limited capital reserve for purchase and storage operations and by a general lack of reliable information concerning commodity supply and demand. Our studies and other observations indicate that commercial farmers in Colombia are generally responsive to relative prices. And a number of studies have indicated that minimum price guarantees will stimulate production by reducing producers' uncertainty. A well-managed price support program can contribute to the coordination and development of agricultural production.

It should be recognized, however, that price supports averaging above market levels would, given the land distribution and income in Colombia, result in income transfers from the poor to higher income groups. To the extent prices are increased, the major burden will fall on the great mass of the population living at low income levels. And the benefits from a price support program are distributed in proportion to the quantity of the supported commodity which is produced. These benefits will tend to be capitalized into the land value. Thus, benefits tend to be in proportion to land ownership.

The Problem of Price Control and Speculation

With the objective of contributing to price stability, curbing inflation and regulating monopolistic and speculative profits, Colombia has adopted a number of price control regulations. The National Superintendency of Prices has the authority to fix prices for "goods of prime necessity" and a number of other goods and to determine margins in the marketing of commodities. Included among the commodities of prime necessity with prices controlled by the Superintendency are milk, meat, sugar, coffee, rice, oil and soap. Prices of some goods have been declared frozen at the levels existing at specific dates. These products include pesticides, feed concentrates, agricultural machinery, and replacement parts. Changes in the fixed prices are made in response to petitions by producers who must supply evidence to justify a price increase. For those commodities upon which prices or margins are not fixed, the mayors (*alcaldes*) have the authority to impose controls. Given the great latitude of local authorities, price control becomes a matter of significance to regional development as well as to national policy.

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[3]Based upon comments from Ministry of Agriculture who cited *La República*, September 18, 1969.

A series of sanctions for those who alter prices and margins for prime necessity goods consist of fines, suspension or cancellation of import licenses and functioning licenses, arrest, or closing of the establishment and seizure of the goods.

Price control is also approached by laws against *acaparamiento* or speculation. Thus, "the purchase and retention of basic food products, merchandise, and effects (*efectos*) in order to produce an unjustifiably high price" is illegal.[4] This judgement is to be made by competent authority. In addition, the law on speculation makes the following illegal:[5]

1. Selling at higher than fixed price.
2. Selling at higher than current *plaza* prices unless Superintendent of Prices authorized higher price.
3. Fraud in weights and measures, quality and origin of product.
4. Retention of exhorbitant profits as judged by local authorities or Superintendency of Prices.
5. Failure to fulfill laws and decrees about prices, discounts, profit margins, and illegal competition.
6. Changes in product name, packaging, quality, or quantity, without authorization.

The consequences of the price control legislation need careful assessment. It is possible to mention here only some of the apparent and potential effects as they relate to our study. We have not attempted a general evaluation. The intent of these regulations is not to be disputed. Price instability and monopoly behavior are very real problems. Neither can a purely theoretical argument be made against price controls. Given extensive external effects, monopolistic structures, the pressures of inflation and concentrations of wealth and goals of rapid development, a theoretical argument can well be made for price regulations other than those originating in the market. However, the formulation and administration of such prices is exceedingly difficult. Price regulation can be much more successful for some commodities than others, depending upon the characteristics of the products, supply conditions, and distribution methods. For example, the regulation of pasteurized milk prices may improve the use of resources and be administratively feasible, while the control of meat prices may be impractical. Regulations must be judged on the basis of their effects under current conditions and not upon their intent or possible theoretical justifications.

These laws create all of the problems created by unrealistic and unenforceable laws as discussed previously. The administrative and judicial skill and

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[4]National Decrees Nos. 46/65; 1469/63.

[5]National Decree No. 437/66.

cost for effective administration would be very high. In Cali, at least, these laws are not effectively enforced. The enforcement agency consists of four people, some of whom are very poorly trained for the positions. In many cases, enforcement consists of requiring the posting of fixed prices, which are then largely ignored. Profitable operation of some retail outlet may well be impossible under the letter of the law. For example, *tiendas* offer a special service of convenience and often buy in very small lots in the Central Plaza at very near to Plaza retail prices. They cannot sell them at the Plaza price and cover their costs.

Price controls always have great problems in adjusting to differences in economic conditions between types of outlets, geographic areas and time periods. Failure to make appropriate adjustments has significant effects on resource allocation and the organization of economic activity.

Even when unenforced or not applied to a particular area of activity, the threat of price control affects the use of resources. For example, Cali has a rent control which does not apply to buildings constructed since 1965. However, in decisions to build, investors consider the probability of rent controls in estimating their investment return. This barrier to investment in construction is very serious in a community in great need of both housing and the employment additional construction can offer. Actual and potential price control has similar effects on private investment and initiative in many other areas of activity. As contrasted with the price support program, the price control laws increase uncertainty. The threat of expensive litigation with serious penalties discourages investment. Since the losses to a large business, especially with a large consumer clientele, could be large, scale of operations may be restricted.

Perhaps the most significant example of negative effects of the speculation regulation is on the legitimate and important function of storage. Along with negative attitudes toward middlemen and discriminatory credit policies, the law appears to have greatly reduced the storage function usually performed by merchants. They do not wish to risk the litigation against speculation, which may be costly. The tendency of assemblers, wholesalers, and retailers to avoid performing the storage function increases price instability rather than reducing it. The very nature of storage is buying commodities and storing them in order to achieve a higher price in the future. The essential price differences serve to ration the use of commodities over time. Since price variations are uncertain, storage typically results in some gains and some losses. If the gains do not exceed the cost of storage by enough to compensate for losses, the storage function cannot be profitable. Since an inspector may interpret any gain from storage as "speculation" under the law, performing the

economically justified storage function subjects the merchant to possible litigation. Some evidence exists that the threat of the laws is a barrier to efficient large-scale retailing. One of the services of such retailers is to provide reliable suppliers, requiring the maintenance of sizable inventories. As long as an inspector can identify any stock in storage as an attempt to gain speculative profits, these stores are discouraged from performing efficiently.

It is recommended that price controls at all levels be reviewed immediately, commodity by commodity, and that controls be eliminated or revised where: 1) *effective enforcement is not practical,* as seems to be the case for meat; 2) *it is found to give significant advantage to those who operate outside the law* and the illegal operations cannot be effectively controlled; and 3) *the controls are causing significant distortion in resource use,* as may be the case, for example, in pesticides, where it is reported controls may eliminate some products from the market. And, for those commodities under control, it is suggested that a simple price adjustment formula, tied to external factors, be utilized for making automatic price changes, which would then be subject to review by regulatory authorities.

It is also recommended that the laws on speculation and "acaparamiento" with their arbitrary application be suspended. Product storage in expectation of higher prices is an important part of the marketing function of rationing to meet consumer demands over time. This function is currently inhibited by adverse laws with resulting wide seasonal price fluctuations and occasional product shortages. The law thus encourages the very thing it was designed to prevent. As a deterrent to unwarranted speculation, greater emphasis could be placed upon *IDEMA's purchase and storage policies to provide stocks for sale in periods of scarcity in order to hold prices in line.* The effective collection and dissemination of timely information on product inventories in the market would be a further deterrent. (See related recommendations in the following section on Information and Communications.) We believe that these measures will make the anti-speculation provisions of the law unnecessary and will result in improved use of resources.

Conclusion

This has been a very incomplete discussion of some generalizations concerning the legal regulation of market coordination in Colombia. Those interested in the detail of the codes regulating market activity are referred to PIMUR Technical Report No. 10, which attempts to codify this extensive body of law and regulation.

While the discussion has raised questions about some of the current regulatory practices and concluded that some are significant barriers to effective utilization of resources, there is no intent to question the wisdom of state

regulation of the market. The market must be regulated in the interest of the community in order to work effectively. Many other sections of this report deal more specifically with the relationship of the rules of the market to the effective coordination of economic activity. And a significant portion of the recommendations from this study deal with potential actions by governmental units to improve economic coordination.

Information and Communication*

Availability and Use by Market Participants

The information available to market participants affects important economic decisions on what, where, and when to sell. The market process generates the most important guide to these decisions, that is, the prices of various products and inputs. One purpose of the information and communication study has been to assess the process by which prices and other relevant information are communicated to those in a position to use it. In this summary, discussion will be limited to the communication of market information.[6] The technical report also assesses mass media and interpersonal communication of technology to farmers.

Valle has numerous mass media channels accessible to most food market participants. There are more than 4 daily newspapers and 29 commercial radio stations. This is reflected in the percentages of farmers reporting daily newspaper purchases, the readership of the weekly agricultural page, the ownership of radios and the listening audience for radio agricultural programs as shown in Table 6.1.

The problem in communicating market information is not the lack of channels, but rather the messages themselves; relevant market and production data are not being systematically collected, organized, and presented in a timely and useful manner. While IDEMA collects weekly price information at the wholesale level on selected agricultural products, the bulletin in which this information is reported goes to few of the potential users, (*i.e.*, farmers, assemblers, food processors, etc.). Of 288 bulletins mailed each week, 36% go to IDEMA branch offices, 20% to governmental and semi-governmental agencies, and 17% to foreigners working in Colombia (*e.g.*, Peace Corps). Interviews with bulletin receivers in the Cauca Valley (2 cooperatives, 2 seed-producing firms, a governmental agricultural agency, a credit entity, and 2 agricultural associations) revealed that they generally do not regard the IDEMA service as providing timely and accurate information.

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*Based upon PIMUR Technical Report No. 9, *Market Information and Communication in the Cali Area*.

[6]Including price information, quantity harvested forecasts, actual estimates of total production, stocks available and quantity movements in the market.

TABLE 6.1 REPORTED AVAILABILITY AND USE OF NEWSPAPER AND RADIO BY DIFFERENT TYPES OF FARMERS IN THE VALLE AREA, SPRING 1969

Type of Farmer[a] %	Buys News-paper Daily %	Read Weekly Agricultural Page of News-paper %	Own Radio %	Listen to Agricultural Programs Regularly %	Sample Sizes
Grains	81	84	95	30	292
Poultry	78	96	100	44	27
Eggs	91	93	100	39	57
Milk	75	75	98	41	98
Cabbage, Onions, & Oranges	28	45	54	52	85
Tomato	15	65	92	65	13
Plátano	51	51	96	49	45
Pineapple	43	64	89	43	28

[a]These were not random samples. The grain, poultry, eggs, and milk producers are representative of large commercial farmers producing these commodities in Valle. The fruit and vegetable samples are of much smaller farmers in selected supply areas for Cali. See Appendix A to this publication and the PIMUR Technical Reports for these commodities for details of sampling.

Other agricultural production information (areas seeded, amount harvested, etc.) is collected by agencies such as DANE, Banco de la República, Caja Agraria, and various producer federations. However, since this information is published almost solely in semestral and annual reports of limited printings, often with as much as a year's time lag, it is relatively unavailable to users at a time and in a form useful to them in making important economic decisions.

While newspapers and radio could communicate market information rapidly to producers at all levels, these media are currently rarely employed. Producers generally responded negatively when asked if they had received any information from newspapers or radio useful for decision-making on when and to whom to sell their products. The percentages of negative responses for the newspapers by type of producer were: grains 63%, eggs 64%, milk 58%, cabbage, onion and oranges 76%, tomato 67%, *plátano* 65%, and pineapple 67%. The percentages of negative responses for the radio were: grains 52%, poultry 92%, eggs 77%, milk 46%, cabbage, onion and oranges 71%, tomato 45%, *plátano* 82%, and pineapple 58%.

In the absence of official, mass media-communicated market information, Cauca Valley market participants are depending principally on interpersonal channels to obtain information. A few statistics on the communication channels employed by grain farmers to obtain price information illustrate the general practice both in respect to other commodity producers and other kinds of

market information (*e.g.*, production estimates, quantities sold and stored). While only 13% of the grain farmers obtained price information from the mass media (radio, newspapers and magazines), 22% obtained it by talking with other farmers and 21% with intermediaries (assemblers, truckers, etc.). However, 30% of the grain farmers responded they did not look for price information. This indicates that these farmers generally accepted offered prices, though they might have received a better price elsewhere. This does not mean that the farmer is not economical or rational, rather that he probably views the attempt to obtain information as time-consuming and often futile. For, even though the information is produced and exists throughout the system, it is not readily available to the potential users. When asked if they wanted more price information, 84% of the grain farmers responded affirmatively, which may indicate a need not currently being satisfied.

The dependence on interpersonal channels of communication was also found to predominate among assemblers, food processors, wholesalers, retailers, and consumers. In the grain market, for example, assemblers depend largely on farm visits during planting season, prior to and during the harvest, and on phone calls to obtain information upon which to base decisions. Much of this information (*e.g.*, area seeded by crop, production estimates, etc.) is also sought by food processors, however, they have less direct contact with farmers. While we do not have quantitative cost estimates of such private information, wasted and duplicated efforts are clearly evident, and the quality of information which can be economically acquired by any firm must be low.

Though merchants could employ the mass media or other publicity means to communicate their prices or other information to potential buyers, the percentages of merchants who do not employ any publicity means are quite high: wholesaler, 68%; wholesaler/retailer, 79%; *tiendas* and *graneros*, 93%; and stall operators in galerias, 96%. Only supermarkets advertise to any extent using as their principal channels: radio, 23%; newspapers, 16%; or posters, 16%, and the advertising they do carries little price, quality or new product information. Since supermarket sales comprise only a small portion of the total volume of food sold on any given day, it is obvious that information available through the mass media seldom enters into consumer food-purchasing decisions.

A major barrier to effective communication of market information is the lack of a uniform and accepted system of grades and standards for most commodities. When price information is unrelated to quality it is of little value. The absence of a grading system for major commodities requires sale either on the basis of inspection or personal description by someone known to be reliable. In either case, the market is limited and transaction costs are increased. More important, a grading system with price differentials known by many

possible producers improves the market effectiveness in directing activity consistent with consumer demand.

Conclusions and Recommendations

At the present time in Colombia and in the Cauca Valley, there is no regular source of timely information on quantities and prices of food products at various levels of the marketing system. Through special bulletins IDEMA collects and distributes wholesale market price information for grains and a few other products on a weekly basis. Also, both DANE and the Banco de la República collect and publish monthly wholesale prices of major foods in the principal urban centers. However, PIMUR interviews with farmers, assemblers, processors, wholesalers, retailers, and consumers of various major food products in the Cauca Valley indicate that this information is of very limited value to decision-makers. Major weaknesses are the lack of timeliness and the limited availability of the information to market participants.

On the other hand, the PIMUR interviews with producers, marketers, and consumers of major food products indicate there is a strong desire for certain kinds of timely production and marketing information. At present, the major source of market information is the necessarily imperfect and sometimes costly medium of personal communication. Yet PIMUR interviews show that the vast majority of those same market participants have ready access to newspapers and radios which could serve as the distribution channel for timely market information.

While both the Banco de la República and DANE currently collect and disseminate information on acreage planted and quantities harvested for major crops, neither has been able to achieve timely and accurate reporting of these important decision-making statistics. As a result, producer associations, assemblers, processors, wholesalers, retailers and IDEMA must go out and gather informally their own information in order to estimate actual quantities harvested. Many market participants must make important marketing decisions on the basis of hearsay. Effective, low-cost market coordination under such circumstances is extremely difficult.

There is a need for three kinds of information: 1) crop forecasts and timely production estimates at harvest time; 2) regular product inventory reports and current price information; and 3) consumer-oriented market information. While the benefits of such information programs are impossible to quantify, a strong logical argument can be made supporting recommendations to establish public programs to collect and disseminate all three types of information. Nevertheless, it is our opinion that if priorities must be established, the greatest need is for crop forecasts and immediate production estimates followed by inventory and price information and finally consumer information.

By recent decree, DANE has been given responsibility for the collection and publication of official national statistical data for use in both public and private planning and decision-making. Plans are being made to transfer gradually all such responsibilities to DANE from the Banco de la República and other agencies. DANE has begun to substantially reorganize and strengthen its program and personnel to provide improved statistical services. In order to avoid undue stress on financial resources and personnel and because of the differences in methods required, *we urge that DANE not attempt to take over the price reporting service from IDEMA at this time.*

We recommend that DANE, as a part of its on-going review of agricultural statistics, consider the following:

1. Data on the national acreage planted and production which are now included in the semi-annual agricultural surveys should be supplemented with similar information from other public agencies, *e.g.*, IDEMA, Caja Agraria, Banco de la República, etc., as well as information from seed producers, credit institutions, farmer associations and agri-business trade groups. The data should be collected, tabulated, adjusted and disseminated early in each semester providing the best estimates of acreage planted in the current semester and the revised best estimates of production in the previous semester. In order to insure timely dissemination, preliminary estimates for major crops should be released to the press as quickly as they can be obtained (by the end of February and August for the second and first semesters, respectively). This timely information is vital to farmers, wholesalers and processors in formulating their plans for the short run (*i.e.*, production decisions for farmers, storage plans for wholesalers, product purchase and production scheduling for processors). Revised estimates and further details would be included in the semi-annual bulletin of agricultural statistics. Every effort should be made to publish those bulletins before the end of November for the first semester, and May for the second.

2. DANE statisticians should collaborate with public and private agri-business groups in an effort to prepare and widely disseminate monthly crop condition reports for major crops in the major producing areas. Several groups such as IDEMA, Caja Agraria, Fedearroz, Fedealgodón, Federación de Cafeteros, Acocaña, etc. are already preparing such reports for internal use. With their cooperation and the assistance of ICA extension agents, monthly consensus reports could be fairly easily prepared and disseminated through the mass media. Just before harvest in each semester and in cooperation with the above agencies, DANE should prepare major crop production forecasts for release through the mass media. Again, the decision-making value of such information for the groups mentioned above and for farmers, processors, wholesalers, retailers, agricultural input manufacturers and distributors is substantial.

After making these changes, DANE could provide the following types of information during each semester.

	Information	Timing	
		1st Sem.	2nd Sem.
a.	Acreage planted estimates	February	August
b.	Revised acreage planted estimates	May	November
c.	Monthly crop condition reports	end of each month	
d.	Semester production forecasts	July	January
e.	Production estimates	August	February
f.	Revised production estimates	November	May

The added costs of the suggested changes should not be prohibitive, DANE already has the basic staff for the agricultural survey. Some additional personnel may be required to gather information from other agencies. Preparation and dissemination of preliminary estimates and monthly crop condition reports will require additional personnel, and the emphasis on speed of analysis and publication may imply a slight increase in all interviewing, tabulating, and publication costs.

Judging from the opinions and apparent needs of market participants for timely and accurate production information, the benefits in terms of more efficient market coordination should far exceed the projected costs. Until these kinds of changes are made in content and timeliness in dissemination of the DANE agricultural survey data, its potential decision-making value for market participants will remain only that -- a potential. While historical production data is somewhat useful as a planning indicator, it is probably difficult to justify the expensive data collection process with such small benefits. The real payoff to such information programs is generated by the private and public cost savings made possible by decision-making based on information which is more complete, accurate, and timely than decision-makers can afford to gather for themselves.

It is recommended that the IDEMA Price Information Service, within the context of its national program and previous experience, implement certain adjustments in current operating procedures in the Cauca Valley region and its major market cities. The suggested adjustment steps are specified below and are recommended as an economical means of:

a. Concentrating information collection resources on only those assembly and consumption centers through which flow large volumes of important food products;

b. Adapting the current information collection and dissemination procedure to meet more practically the expressed needs of Cauca Valley market participants.

STEP 1:

At the outset, ample time should be devoted to detailed planning, training existing personnel and, where necessary, recruiting and training additional personnel. The Agency for International Development has expressed its willingness to provide technical assistance for planning, training, and operational phases of market information programs.

One extremely important aspect of preliminary planning should be a review, and, where necessary, adaptation of current grades or establishment of new official product grades in the light of informal grades currently used by market participants. A market information program must base its price quotations on standard grades acceptable to market participants. (See the recommendations on product grading in earlier sections of this report.)

STEP 2:

Meetings should be arranged to explain the benefits of the market information service to assemblers, wholesalers and retailers in the cities where information will be collected. Only if these market participants believe: (a) that the information will be useful to them; and (b) that any data asked from them will be treated in the strictest of confidence and reported only as aggregate figures is it likely that they will cooperate. Additional meetings should be held with representatives of the press and broadcasting media in each city to inform them of available information, its form, the advantages of communication with market participants, and the important role they could play in the periodic broadcasting or publication of market information.

STEP 3:

Market reporters should be located near the following major assembly or consumption centers for information collection:

a. Assembly centers:

- Cartago (eggs, corn, rice, beans, soybeans, sorghum)
- Tuluá (tomatoes, corn, rice, beans, soybeans, sorghum)
- Buga (eggs, corn, rice, beans, soybeans, sorghum)
- Palmira (tomatoes, corn, rice, beans, soybeans, sorghum)
- Pasto (potatoes)

b. Consumption/Wholesale centers:

- Bogotá
- Cali — all products listed above
- Medellin

Market reporters in assembly or consumption/wholesale centers would be responsible for collecting the following information from a representative sample (to be more clearly specified in the detailed planning phase in Step 1) of assemblers, wholesalers or processors of products listed above for each city.

a. Current prices paid to farmers
b. Quantities purchased

Initially this information would be collected on Monday, Wednesday and Friday covering that day's market activity, at least up to 3 p.m. on each day. The market reporter would tabulate the information, make the appropriate statistical projections, and communicate the information immediately to the other cities on the Telex network. Upon receiving information from other market centers, personnel in each office would be responsible for preparing a market news bulletin and distributing it to local newspapers and radio stations for publication and broadcast on the following day. These bulletins should also be available for public distribution at the market information office or other information centers (*e.g.*, public markets, *retenes*, etc.).

It is especially recommended that the Cali market information office be established in the new wholesale market facility (recommended earlier in this report). The Cali area should be used as a test market to examine the feasibility of collecting and disseminating daily price information (only within the wholesale market) by loudspeaker, bulletins, etc., and to local news media on a much wider range of products than recommended for the larger network. This might include *plátanos*, yuca, pineapple, cabbage, onions, lettuce, oranges, and other important fruits and vegetables. The test could include experimenting with descriptive grades for these products and testing their acceptance and usefulness with traders in the market center.

It is further recommended that the market news reporter conduct a weekly survey of volumes of products in storage in the market center. This survey would be conducted and results tabulated on Monday through Thursday, and all data would be communicated to other market cities by Telex before 5 p.m. on Thursday. Each office would then prepare a bulletin on storage stocks in major markets to be released to newspapers and radios late Friday afternoon.

The number of products to be covered by the news service and the number of days to be reported have been purposely limited in order to ease pressure on personnel and funds in the early phases of implementation. The PIMUR commodity studies and the information and communication study indicate that the most urgent need for price and storage stocks information exists among producers and distributors of the products mentioned in this recommendation. As program administrators and staff build on previous and new experience, products such as beef, pork, *plátanos*, and other fruits and vegetables should be added to the list, only, however, if careful analysis indicates there is a definite need for the added information, rendering the extra expense of collection and dissemination worthwhile.

The added cost of the suggested program (above current resources and personnel in the IDEMA Market Information program) should not be great. Three assembly centers listed in the above recommendation do not now have Telex

facilities -- Palmira, Tuluá and Cartago. It would be necessary to install such facilities in Cartago and Palmira because of their importance. But Tuluá market information could be collected and disseminated from the Buga office Telex. Except in Cali, Bogotá and Medellin, the market information offices should require no more personnel than a market reporter and a secretary for operating the Telex and preparing mimeographed bulletins. It may be possible to re-assign current employees in the IDEMA price information system to avoid hiring additional personnel. A consultant with experience in market news reporting should be sought to assist in the planning and initial operation of the program's first three to six months.

The benefits of such a publicly supported price and storage stocks information service are many. Producers are provided with objective information to assist them in obtaining the best possible prices for their produce. Marketing firms are given an objective base on which to negotiate trades. Storage and transport costs can be reduced by more effective spatial and temporal market coordination. Problems involving local market gluts, scarcities, and backhauling are reduced. Reliable price, production and stocks information discourages economically undesirable speculation and encourages economically desirable storage. The proposed information system is thus a substitute for the anti-speculation regulations and would be less expensive compared to the costs inherent in a system of anti-speculation regulations. These factors cannot easily be quantified. But even the casual food marketing observer in Colombia is aware of the cost effects of these problems on market participants and ultimately on consumers. Given the low consumer incomes and the high percentage expended for food in Colombia, the relatively small recommended public outlays for market information would seem to be justified.

We have emphasized the need for better information to improve the coordination of the food production-distribution system. However, it is not only important for those who supply goods and services to be well-informed, the consumer also requires information. Only when consumers can make wise purchasing decisions can the market direct resources to their best uses.

Market information of the type needed for consumer purchasing decisions is scarcely available in the Cauca Valley. The only other sources of information other than direct observation are occasional advertisements and IDEMA price quotations. But none of these sources begins to satisfy the need for timely, unbiased market data.

We therefore recommend that a pilot consumer education program be developed to complement the IDEMA market information program previously recommended. The program might be sponsored by IDEMA as a part of its market information or it might be carried out by ICA as an expansion of its extension education activities. Data emphasized in the program should include the following: 1) methods

of identifying quality in different foods. The consumer information specialist would work closely with those attempting to develop grades and quality standards and would help consumers become aware of those standards. 2) special attention to the relative nutritional values of different foods and to the importance and means of obtaining sanitary foods. The specialist might work closely with University of Valle nutritionists, public health officials and the National Institute of Nutrition (PINA) in preparing such information. 3) identification of foods in abundant supply at low prices by following IDEMA market information, DANE crop forecasts, and through observation at the new wholesale market, the specialist should identify such foods for consumers ; and 4) collection of retail price information for a few standardized products at different types of outlets. Reporting regularly to consumers would improve price competition at the retail level and direct consumers toward lower priced stores.

Since radio is by far the most available medium of mass communication, the information program should emphasize the presentation of regular radio consumer education messages. However, a weekly column in the two major Cali newspapers might reach as many as 75% of all Cali families.[7]

Credit

Credit was not the topic of a separate technical report in this study. However, because of the unique role credit plays in the coordination of economic activity and the potential uses of credit as an instrument in directing development, this short section is included. We have attempted to briefly describe the general availability of credit from the various banks and credit agencies. In Colombia a great deal of emphasis has been given to special credit institutions, lines of credit, and regulations providing special incentives and subsidies designed to stimulate selected areas of the economy. The specific development objectives and economic rationale for such special programs may vary, but in all cases the credit provides a way for individual entrepreneurs to expand their businesses or to buy new equipment, new production inputs that will in some way improve efficiency.

As a broad generalization, government credit policy should direct the flow of credit toward those economic activities where additional financial resources will yield the greatest marginal social benefits in terms of development goals. For national development purposes, credit should be directed into the hands of innovative entrepreneurs who will use it most intensively and

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[7]PIMUR Technical Report No. 7, *Study of Consumers in Cali -- Incomes and Food Shopping Patterns*, p. 134.

efficiently. Thus, credit allocation is an important aspect of programming in stimulating economic development.

General Credit Situation in Colombia

Table 6.2 presents the value of loans outstanding on December 31, 1968, by the major credit institutions in Colombia and by type of loan. Over 37 percent of all loans outstanding were agricultural loans, with industrial and construction loans accounting for just over 20% each. Loans to commerce accounted for only 11% of bank loans outstanding on December 31, 1968. Agriculture and livestock loans are channeled primarily through public or semi-public agricultural banks, though commercial banks are also important agricultural credit sources, partly because they are required by law (Law 26) to set aside at least 15% of their portfolio for that sector. Maximum permissable interest rates on Law 26 loans have recently been increased to 10%, with an added 1/2% for each additional year.[8] Commercial banks and the Caja Agraria can also make loans under the Fondo Financiero Agrario to commercial grain and other crop producers who plant more than 10 hectares of a particular crop. In this case, the farmer is charged 13% per year on one-year loans, plus 1/2% more for each additional year of the loan contract. The bank can than re-discount 65% of the loan at 9% interest with the Banco de la Republica. Ordinary loans from the Caja Agraria can be made only to farmers whose assets are less than 1.5 million pesos. The interest on these loans ranges from 8% per year on a one-year loan of less than 5000 pesos to 12% per year on a five-year loan of more than 5,000 pesos. Thus, farmers are paying low interest charges in comparison to the maximum of 14% permitted by bank loans and the interest charges prevailing in most other sectors.

It should be noted that the interest rates mentioned above and those used throughout this discussion are the nominal rates. In order to make a precise comparison between the effective interest rates under different lines of credit and for different banking institutions, it would be necessary to take into account a number of loan practices such as advance discounting, required compensating balances and other lending practices. Commercial banks use such practices to varying degrees, but public banking institutions seldom do. While it is difficult to quantify such practices and to calculate effective interest rates, it appears that the actual minimum rate of interest often ranges from 16 to 18% at commercial banks. Because of variable loan practices, effective interest rates vary significantly between different types of loans and, of course, between clients.

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[8] Interest on nearly all bank loans in Colombia is discounted at least 3 months in advance.

TABLE 6.2 VALUE OF LOANS OUTSTANDING BY TYPE OF CREDIT AGENCY AND BY DESTINATION OF LOANS, COLOMBIA, DECEMBER 31, 1968

Credit Agency	Loans to:					
	Agriculture	Industry	Commerce	Construction	Other	Total
	(Millions of Pesos)					
Caja Agraria[a]	3132.0	150.6		134.8	176.5	3593.9
INCORA	504.0					504.0
Fondo Ganadero	546.2[b]					546.2
Banco Ganadero	554.5	7.0	109.1	22.5	15.0	708.1
Commercial Banks	2289.9	2001.4	2351.4	435.1	1740.6	8818.4
Almacenes Generales de Depósito	878.3[c]			4.0	1.6	883.9
Corporación Financiera		2270.5[d]				2270.5
Banco Central Hipotecario		178.7		2575.9[e]		2754.6
Instituto de Credito Teritorial				1200.0		1200.0
TOTAL	7904.9	4608.2	2460.5	4372.3	1933.7	21,279.6
% of Total Loans	37.2	21.7	11.6	20.5	9.0	100.0

SOURCE: Revista Superintendencia Bancaria and Annual Reports of the respective banking institutions.

[a]The total loans for the Caja Agraria is the correct figure for December 31, 1968, but the division of that among different types of loans is an estimate based on the division of the bank's portfolio on June 30, 1968 (Annual Report of the Caja Agraria, Industrial y Minero).

[b]This represents the value of livestock on loan to producers in 21 of 23 divisions of the Fondo. The data reported by seven offices referred to loans outstanding on June 30, 1969 rather than December 31, 1968.

[c]Portions of this total were probably loaned to food processors and other manufacturers who are eligible to use warehouse receipts as collateral for loans.

[d]This total is for loans only and does not include direct investment.

[e]These are both loans to construction companies and home mortgage loans.

Loans for the industrial sector are derived from several sources. Banks may use their own loanable deposits, charging a maximum of 14% per year, or they may draw on re-discount privileges (usually for no more than 65% of the loan) from the Banco de la República under one of several special credit lines. The Fondo Financiero Industrial line, which is available primarily to small and medium-sized firms for working capital purposes, carries a maximum interest of 14% for one year with an added half percent permissible for each year up to

5 years. The Fondo de Inversiones Privadas is similar, except that the credit is available only for long-term capital goods purchases with an interest of 15 1/2% for up to five-year loans. Loans for feasibility studies, market promotion, and working capital related to exports are available through the Fondo de Promoción de las Exportaciones. Interest rates and lengths of loans vary from 3 to 12% and 6 months to 5 years, respectively. The Instituto de Fomento Industrial and other *corporaciones financieras*, in addition to having access to the above special lines of credit and their own resources, can count on a variety of special sources for loanable funds. In addition to acting as a loan agency, they may invest directly and participate in the management of industrial firms.

The major sources of commerce loans in Colombia are private banks, product or input suppliers (*i.e.*, manufacturers or farmers), and private individuals. Bank loans at the minimum nominal interest rate of 14% per year are difficult to obtain for all but the largest commercial firms. Supplier credit usually carries an interest rate of 1.5 to 2% per month and "street money" ranges as high as 2.5 to 3% per month. Virtually all loans to the commercial sector are short term (6 to 18 months).

The Banco Central Hipotecario and the Instituto de Crédito Teritorial (ICT) provide most construction and home mortgage credit at interest rates ranging from 10% at ICT for low-income housing to 14% for upper income homes. Mortgage loans usually carry a pay-back period of 15 to 20 years.

The government has established a ceiling interest rate of 14% on short-term bank loans. It seems likely that without that ceiling, the free market interest rate would go significantly higher. The government has also passed a number of laws designed to ration credit to different economic sectors by special regulations, lines of credit, etc. Major emphasis in that rationing process has been given to agriculture and industry, with no special provisions for the commercial sector. Market intermediaries are left to compete for the small amount of unrationed bank credit or to obtain high interest private loans.

Credit Availability and Needs in the Cauca Valley

The value of loans outstanding in the Department of Valle del Cauca at the end of 1968, is shown in Table 6.3. Because Cali is primarily a manufacturing center, industrial loans were most important (33.8% of total). Agricultural loans were next in importance (31%). In contrast to the national situation, Cauca Valley commercial banks are the best source of loans for all economic activities in the department. In the agricultural sector, commercial banks are, no doubt, more important in Valle because of their use of Fondo Financiero Agrario with large grain farmers and due to the large amount of credit with the sugar industry.

TABLE 6.3 VALUE OF LOANS OUTSTANDING BY TYPE OF CREDIT AGENCY AND BY DESTINATION OF LOANS, DEPARTMENT OF VALLE DEL CAUCA, DECEMBER 31, 1968

Agency	Loans to:					
	Agriculture	Industry	Commerce	Construction	Other	Total
	(Millions of Pesos)					
Caja Agraria[a]	145.4	8.9		3.2	35.9	193.4
INCORA[b]	49.5					49.5
Fondo Ganadero	39.3					39.3
Banco Ganadero[d]	24.7	1.1	3.9	1.2	.7	31.6
Commercial Banks	341.8	385.0	233.9	30.9	131.6	1123.2
Almacenes Generales de Depósito		c				
Corporaciones Financieras		237.2				237.2
Banco Central Hipotecario		22.9		238.7		261.6
Instituto de Crédito Teratorial			c			
TOTAL	600.7	655.1	237.8	274.0	168.2	1935.8
% of Total Loans	31.0	33.8	12.3	14.2	8.7	100.0

SOURCE: Revista Superintendencia Bancaria and Annual Reports of the respective banking institutions.

[a]See Footnote "d" to Table 6.3.

[b]Loans outstanding on June 30, 1969.

[c]Data for these agencies are not available by department.

[d]These data refer only to the Cali branch which is the largest in the department.

Agricultural Credit - Credit is widely used by "commercial" farmers (*i.e.*, grain, egg, broiler and tomatoes), except for milk producers. (Table 6.4.) A relatively small percentage of *plátano*, orange, and cabbage producers use credit. The average value per loan was significantly higher for grain, egg, broiler, and milk producers than for fruit and vegetable growers. This is undoubtedly related to the size, tenure, condition and management ability of the farmer groups considered. Agricultural loans, for the most part, are relatively short-term. Only in the case of broiler, egg and orange production does one commonly encounter loans of more than 12 months. The major sources of credit for larger farmers were commercial banks and the Caja Agraria. INCORA and the Caja Agraria were most frequently mentioned as credit sources by smaller farmers. But in the case of processing tomatoes, nearly all credit was supplied by the processor, while egg and broiler producers mentioned feed concentrate suppliers as an important credit source.

TABLE 6.4 USE OF CREDIT IN 1968 BY FARMERS INTERVIEWED BY PIMUR

Producer Group	% Borrowing	Average Value of Loan (Pesos)	Most Common Length of Loan[a] (Months)
Grain	76	131,800	4 - 6
Broiler	63	42,650	4 -36
Eggs	68	86,300	4 -24
Milk	26	53,482	3 - 5
Plátano	29	12,068	4 - 7
Tomatoes Processing	100	15,037	4 - 7
Tomatoes Fresh	48		
Oranges	21	31,187	6 -42
Pineapple	61	29,887	9 -12
Stem Onions	61	6,900	6 -12
Potatoes	74	4,642	b
Cabbage	39	b	6 -10

SOURCE: PIMUR, Farmer Surveys, 1969.

[a]The time period given here includes 70% of the loans made for each producer group.

[b]Data not available.

Small farmers with limited collateral appear to want more credit than they are now able to get. In the first semester of 1969, the Caja Agraria branches in Valle received requests for "ordinary" loans (non-Fondo Financiero Agrario) for over 80 million pesos and were able to lend only 55 million. INCORA has recently obtained a 17 million dollar loan to provide additional credit for small and medium-sized farmers in Valle and Tolima.

Industrial Credit - Credit for larger-scale firms, frequently more capital intensive, does not seem to be a problem in any of the industries considered in the PIMUR survey. Commercial banks are quite willing to provide capital for the needs of well-established enterprises. The Corporaciones Financieras and the Instituto de Fomento Industrial are also important sources of longer-term financing of capital equipment purchases among the larger industrial firms.

The most unsatisfied credit needs exist among the more labor-intensive small and medium-sized consumer goods producers (*e.g.*, clothes, kitchen utensils, leather shoes, hand tools, and kerosene stoves) and among food processors of the same size. The lack of working capital is a frequent complaint. The rapid development of the Corporaciones Financieras and the recent installation

of the Fondo Financiero Industrial may alleviate some of the credit problems for these industrialists. Nevertheless, banking institutions complain that it is often impossible to make loans to the smaller firms, because their poor financial management makes it impossible for them to qualify as acceptable credit risks.

The credit shortage for such labor intensive small and medium-sized industries must be considered carefully in the light of Cali's high unemployment rate, the projected rapid growth in the urban labor force, and the existing underutilization of industrial plant capacity. Special technical assistance programs in industrial and financial management may be needed to help insure more efficient use of the credit resources already directed to that sector. A supervised credit program with credit tied to technical assistance may be practical for these firms.

Commercial Credit - The studies of intermediaries in the food distribution system in the Cauca Valley revealed that most commercial credit originates with large-scale rural assemblers, urban wholesalers, or processing firms. Since most intermediaries in the present distribution system provide few services other than buying in large lots and selling in smaller quantities, with much emphasis on rapid turnover (especially among wholesalers), the need for short-term working capital far exceeds longer term capital equipment credit needs. Thus, the 6 to 12-month bank loan to a large wholesaler or processor is passed along in the form of 60 to 90-day credit to other intermediaries, who may in turn offer 15 to 30-day credit to their customers. While the initial bank loans often carry interest rates at or near the maximum current levels, subsequent customer credit may not carry an interest charge, especially for 60 days or less. In such cases, higher product prices reflect the cost of money.

Post-dated checks are also an important source of credit to intermediaries, as are planned bank overdrafts, and check "kiting". Post-dated checks are used by intermediaries most frequently for paying out-of-town suppliers. After some delay in mail delivery, the supplier is expected to hold the check for payment at a still later date specified on the check. Planned overdrafts are special kinds of bank loans carrying interest charges of 20-21% per year. The depositor is authorized by the bank to overdraw his account up to a certain amount. This is very short-term credit, usually only a few days. Check "kiting" is a procedure whereby an individual maintains bank accounts in several different cities. He pays for supplies with a check to the most distant bank; while that check is being cleared, he may write another check to overdraw that same account, then before the second check reaches his bank for payment, the goods from the first purchase are sold and paid for so a deposit can be made to cover the potential overdraft.

In summary, the financing of distribution inventories is currently accomplished by a "trickling down" of credit from producers, processors, assemblers and large wholesalers who are able to get regular bank loans or planned overdrafts, and by such techniques as check "kiting" and post-dated checks. Thus, one might conclude that the present credit policies afford adequate credit to finance the flow of goods. This conclusion however ignores: 1) the need for financing new marketing facilities to handle growing urban demands; and 2) the urgent need to finance marketing innovations which could lower marketing costs and/or improve services. There are currently no special credit programs in Colombia to assure that these needs are adequately fulfilled. In contrast, the agriculture and industrial sectors in the Cauca Valley appear to be well-served (though certainly not saturated) by special credit programs. Through specially allocated credit, agriculture and industry are expanding facilities and adopting innovations which will permit greater production and productivity improvements.

Consumer credit can be an important factor in expanding consumer durable sales, such as furniture, appliances, etc., and can have an important impact on all marketing margins. Consumer credit for durable goods appears to be increasingly available in Cali, but at relatively high interest rates and/or with higher product prices. Consumer credit is similarly available for the purchase of non-durable consumer goods under the same conditions. Limited and high cost consumer credit, of course, limits effective demand for consumer goods and may impede mass production and mass merchandising practices, which could potentially reduce consumer prices. Cali consumers purchase about 10% of their food on credit.[9]

Construction and Mortgage Credit - The major sources of construction credit in the Cauca Valley are the Banco Central Hipotecario (Central Mortgage Bank) and the Instituto de Credito Territorial (Institute of Territorial Credit), both public institutions organized to provide residential construction financing. At the present time the Cali offices of both agencies appear to have more funds available than home buyers can borrow under present down payment, repayment and qualification requirements. Commercial banks, insurance companies, and other private investors provide relatively little housing credit. This is apparently due to the low effective demand for such credit and to the legal interest limit of 17% per year on mortgage loans. Under these circumstances, private investment funds seek higher returns in shorter-term loans where the risk of inflation is less. Commercial banks, however, apparently do finance some industrial and commercial construction projects.

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[9] PIMUR Technical Reports No. 6 and 7 offer a more detailed discussion of food sales on credit showing differences by type of store and by consumer income level.

In summary, home mortgage credit does seem to be available, but is not being utilized presently in Cali because of low effective demand. The factors producing this situation were analyzed in Chapter 5 of this report and recommendations presented which should help to alter conditions limiting effective demand for housing credit.

Conclusions

Credit allocation is an important tool in the planning and stimulation of economic development. At the present time in Colombia, interest rates are controlled and credit is being largely rationed to selected economic activities. The major beneficiaries are larger farmers and industrialists, though efforts are being made to channel credit resources to smaller firms through INCORA, the Caja Agraria, the Fondo Financiero Industrial, and the Corporaciones Financieras. *A careful study of the credit system, analyzing the effect of the current allocation process is needed.* Since one of the critical problems in getting existing credit to small and medium-sized industries is their lack of financial and managerial competence, the suggested study should examine alternatives for combining credit and technical assistance to small industrial firms.

The recommendations for many of the subsectors of the economy included proposals involving credit. We recommended special credit consideration for food distribution, including credit for the food wholesale center, food retail stores, specialized meat stores, and special supervised credit to stimulate a more progressive urban food distribution system. We recommended a new credit policy for the small farmers in fruit and vegetable production which would encourage greater individual and area specialization in production of particular products, without encouraging large scale farming or extensive substitution of capital for labor. We recommended a specialized line of credit to stimulate innovative development in the distribution of consumer goods, and expanded credit and modification of credit practices for urban land development, designed to stimulate residential construction.

Current credit practices seem to discriminate against activities involving distribution, especially in providing working capital, and against small firms, including small farmers. The problem of the small firm is a combination lack of collateral and the necessary technical and financial skills needed to satisfy the demands of lending agencies. Thus, the recommendations have emphasized programs tying technical assistance or supervision to credit allocations. While some increase in the aggregate available credit is assumed, many of the recommendations deal with the allocation of existing credit and the lending practices.

CHAPTER 7

A SUMMARY DIAGNOSIS

Introduction

The primary objective of the PIMUR project was to describe and analyze the existing urban-rural marketing processes in the Cali area.[1] On the basis of the analyses, recommendations were to be presented that would improve efficiency in the production-distribution process and stimulate production and consumption. In considering market process changes, the underlying goal was to achieve greater productivity in food production and distribution as a means of raising per capita incomes. The immediate sub-goals were to identify marketing improvements that would reduce food prices to consumers, and/or improve marketing services by reducing market uncertainties for farmers and marketing firms. More certain and stable markets should encourage farmers and intermediaries to adopt improved technologies and management practices which could increase productivity, raise their incomes and lower real costs of food production and distribution. If a major portion of these lower costs can be passed on to consumers, there would be an increase in effective demand for food and for nonfood consumer goods. This increased demand would contribute to a dynamic development process emphasizing interaction between the rural and urban components of a regional economy. Agricultural and industrial production should be stimulated; employment would expand; incomes would rise; and social and economic conditions would be improved for the entire region.[2] Additionally, a more efficient food system is a necessary pre-condition for expanding trade with other regions or foreign countries.

The first six chapters of this report have described and analyzed the food system serving Cali, including the manufacture and distribution of technical farm inputs. If full advantage is to be taken of potential improvements in the food system, related adjustments are required in the consumer goods and residential construction industries. Thus, these industries were examined. In Chapter 6, some public aspects of facilitating and stimulating improved productivity in the food system and related economic activities were critically reviewed.

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[1]Terms of Reference for the PIMUR project as stated in the Contract of September, 1968, which was signed by Michigan State University, the CVC (Corporación Autónoma Regional del Cauca) with approval of the Colombian National Department of Planning.

[2]This is not to argue that improved market coordination is a panacea for stimulating economic development but that market reforms can be an important component of a more general development strategy.

The diagnosis of market coordination problems has taken a pragmatic approach in terms of improvement possibilities. Recommendations have been formulated within a general strategy for fomenting regional development, but this report is not a regional development plan. Where feasible, costs for investments and related technical assistance have been specified for particular market improvement programs. The anticipated effects of market improvement programs have been indicated although specific estimates of benefits and their distribution were impractical, if not impossible. Nevertheless, policy makers, government administrators, specialized development technicians and managers of private enterprises should find this summary report and the related PIMUR Technical Reports valuable sources of information. The reports should contribute to more comprehensive and effective efforts to accelerate economic development in the Cauca Valley Region and will be useful in other regions confronted with similar problems.

This chapter presents a restatement of regional economic development problems, a review of the potential role of improved market coordination as a stimulator of development and a summary diagnosis of existing market processes in the Cali area. The chapter concludes with a summary discussion of some of the barriers to change and suggests the need for public action to accelerate and give direction to changes in market processes as part of a more general development strategy.

Regional Economic Development Problems

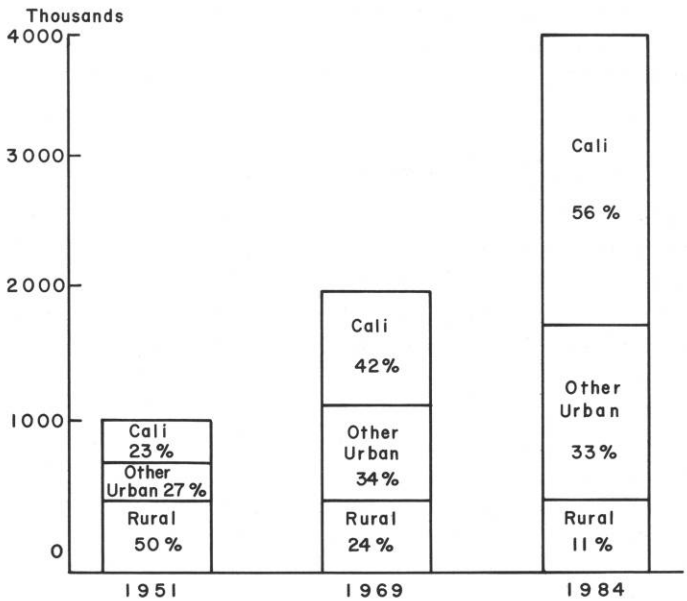
From demographic data one might conclude that the Cauca Valley has already shifted from an agrarian to an urban-industrial society. However, the potential economic gains from such a shift are far from realized. By 1969, approximately three-fourths of the people in the State of Valle were living in urban areas. This compares with 50 percent in urban areas as recently as 1951. During the 1951 to 1969 period it is estimated that the rural population remained essentially static while the overall population for the region increased around 3 1/2 to 4 percent annually. The continuous and rapid migration from rural areas is reflected in the 7 percent annual growth in Cali's population and a 5 to 6 percent rate of growth in secondary cities and county seats. The dynamics of this rural to urban migration was not a part of the PIMUR project. However, it must be recognized as an important aspect of the regional development problem.

It appears that if recent trends continue, the city of Cali will grow to over 2 million people by 1984, with other urban centers in Valle growing to about 1.3 million. By 1984 only 11 percent of the population of Valle

(Figure 7.1) will be living in rural areas.[3] This points up the increasing importance of the market processes linking the rural and urban areas and the need for programs and policies to deal with the problems of coordinating the region's economy.

Productive resources in the Cauca Valley region were not being fully utilized at the time of this study. Unemployment in Cali in February, 1969, was estimated at about 20 percent. Many of the industrial plants in Valle were operating far below capacity. There was a lack of effective demand for their products at existing prices. Furthermore, over the past decade there is little to indicate any significant improvement in the income of the lower income groups in Cali. Thus, even though the Cauca Valley is richly endowed for agriculture, and significant advances have been made in industrial and agricultural technology, a large part of the society has realized very little gain in real income.

Fig. 7.1 GROWTH AND DISTRIBUTION OF POPULATION IN VALLE, 1951 AND 1969 WITH PROJECTIONS TO 1984



SOURCE: See Table 1.2, Chapter 1.

[3]According to the census definition "rural" includes all people living outside cities and county seats (*cabeceras*). Several very small rural villages are therefore included as part of the rural population.

Based upon surveys made in the spring of 1969, more than half the people in Cali lived in households with per capita cash incomes of less than 240 pesos per month and one-fourth lived in households with less than 125 pesos per month. The median monthly family income was 1500 pesos, and the median household had between six and seven members. As an average, the one-fourth of the families with the lowest per capita incomes had available three pesos per day per person for family living expenditures. If all three pesos were spent for food and the food was carefully selected and evenly divided in the household, hunger can be allayed, but it is clear that a large part of the Cali population subsists at a low nutritional level.

Although the PIMUR project did not undertake a detailed study of income levels and rural living conditions it is apparent from secondary data, and the observed rates of migration to urban areas that levels of living and economic opportunities must be relatively worse in many rural communities as compared with conditions faced by migrants to the cities. A special case study in four rural trading centers and a related survey of conditions in 42 county seat towns (*cabeceras*) indicated the relative disadvantages of people living in some of the more isolated communities in terms of health and educational services, job opportunities and availability of consumer goods, agricultural inputs, technical assistance and credit.[4]

Market Processes and Development

The PIMUR project was not needed to point out that poverty and economic stagnation actually exist in the Cauca Valley Region. These conditions are evident and the seriousness of the rapid population expansion is becoming widely recognized. What seems to be needed is a better information base and relevant analyses to help policy makers identify practical ways to raise incomes and improve living conditions.

But, higher incomes must ultimately come from increased productivity of human effort. To a large extent people are poor because their output is low. A redistribution of existing income flows away from the few rich to the many poor would result in an average per capita income of only US$270-$290 per year.[5] Therefore, the solution must be through the introduction of technological and institutional changes that will increase the productivity of human effort. Recognizing this fact, development planners have pursued strategies for stimulating technological change in agricultural production and in increasing industrial production capacity. Relatively less attention has been directed toward

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[4]PIMUR Technical Report No. 1, *Some Aspects of Market Integration of Rural Trading Centers in the Cauca Valley*, 1969.

[5]Based upon estimates of gross domestic product data published by the Banco de la Republica, Bogotá, Colombia, in their periodic reports.

increasing productivity in marketing activities and to the problems of coordinating development between agriculture and industry. Increasing agricultural productivity through mechanization and other production technology has reduced potential employment opportunities in the rural areas and stimulated migration to urban areas. This has created an "urban problem" which is, in part, a result of agricultural modernization.[6] What seems to be needed is a more comprehensive approach to development policy making and programming giving greater emphasis to the system interrelationships between rural and urban-based activities.

The food system is the major economic activity linking the rural area and urban centers. Broadly defined, it includes not only the forward flow of agricultural products from rural areas to the urban centers but also the counterflow of technical farm inputs and consumer goods (Figure 7.2). Much of the consumer goods flow can be considered as involving necessary inputs for maintaining the agricultural labor force. As pointed out above, the human migration from rural to urban areas is also an important dimension of the rural-urban relationship in a developing region.

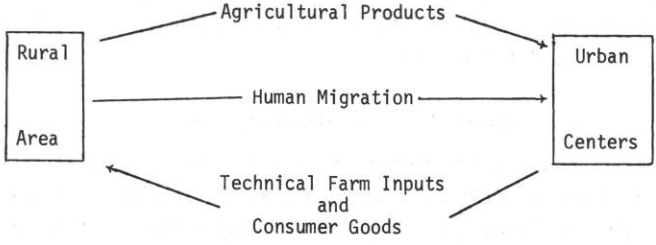

Figure 7.2 INTERRELATIONSHIPS BETWEEN RURAL AND URBAN-BASED ACTIVITIES IN A DEVELOPING REGION.

A sizeable gain in productivity in the food system would have a significant impact upon the economy of the Cauca Valley Region. In 1969, more than 40 percent of total consumer expenditures in Cali were spent for food. It was estimated that at least 40 percent of the labor force in Valle in 1969 was employed in food production, distribution and closely related service industries.

If urban food prices could be lowered by 10 percent through improved coordination within the food production-distribution system it is estimated that the demand for nonfood consumer goods by Cali families would increase by about 5%,

[6]For a more definitive diagnosis see Lauchlin Currie, *Accelerating Development - The Necessity and the Means*, McGraw-Hill, 1966, Chapter 12.

while the quantity of food purchased would increase by 2%. (See Table 1.1, Chapter 1). A conceptualization of the dynamic effects of such a change in food prices is described below.

The increase in demand for food along with greater stability of commodity markets that can be achieved through institutional reforms could serve as a stimulus to farmers to expand output and to adopt more modern production practices. This in turn would increase the demand for purchased inputs such as fertilizers, improved seeds, pesticides, feed concentrates and machinery which are manufactured in urban centers.

In addition, the increase in demand for nonfood consumer goods by both urban and rural residents should also stimulate the demand for industrial products. This stimulus could be reinforced by efforts to create a market-oriented production-distribution system for manufactured consumer goods. Improvements in the consumer goods distribution system could also reduce retail prices and broaden the market for these goods.

The aggregate effect of improved market coordination as described above would stimulate economic growth, increase productivity and income, and alter income flows in favor of lower income groups. But in attaining these gains, careful attention must be given to the employment effects of modernizing the food system. Many of the improvements in food production and distribution will reduce labor inputs in relation to output. However, growth in the economic system will probably require a continued increase in the number employed in the food system and those that are employed will be earning higher wages. Given the current unemployment condition in Cali (and other urban centers in the Cauca Valley Region) the food system reform program by itself will not generate full employment within the region. Thus, a regional economic development program must place high priority on creating other employment opportunities.

The PIMUR project has made some preliminary assessments of residential construction as a means of increasing urban employment. Other such exploratory and diagnostic studies are needed to identify sub-sectors of the urban economic system which could absorb the unemployed in productive activities.

The above conceptualization of the effects of improved market coordination on regional economic growth emphasizes resource use efficiency as a major goal. But a comprehensive regional program to improve coordination in the food system requires a balance between efforts to reduce food prices and the need for activities to improve food quality and increase consumer services. As new technologies are introduced into the food system, the cost of existing products and services should decline. But as incomes increase consumers will demand cleaner, higher quality and more easily prepared foods. Market improvements to satisfy these changing demands often tend to increase food costs.

The PIMUR project has emphasized the short-run need to reduce food marketing costs while maintaining a longer run perspective on the need to foment a progressive food system to meet changing patterns of demand and provide effective coordination of the production-distribution process.

A Summary Diagnosis of the Cali Food System

The urban food distribution system serving Cali is becoming increasingly unsatisfactory for a population center of nearly one million people. Most of the food arriving in Cali passes through the Galeria Central area located in the center of the city. Each morning several thousand small retailers converge on this market to buy supplies and haul them back to their neighborhood stores or to market stalls in the six public markets. The physical congestion of vehicles and people coupled with logistical problems of using old residences as warehouses adds unnecessary costs to the system. The condition worsens as the city grows. Handling practices for fruits and vegetables result in unnecessary product loss and deterioration, while unsanitary conditions in meat handling expose consumers to health risks and reduce product palatability.

Nevertheless, the combined wholesaling and retailing margins for basic foodstuffs appear to be relatively low as compared to more developed countries. But margins are relatively low, largely because of the low returns to labor and the small amount of marketing services provided. Consumers frequently travel long distances to buy food, especially meat, fruits and vegetables. Low income families in the newer areas of the city have the least access to the public markets and larger retail outlets. Their alternative is to buy from small neighborhood stores where product variety is limited and prices are significantly higher than in the more distant public markets or large food stores. Entry into food retailing is relatively easy, the size of operations are typically very small and business failure rates are high. There is little evidence of excess returns to capital or labor, associated with monopoly exploitation, (with the possible exception of beef wholesaling and retailing where returns to labor and management are relatively high compared to the very low returns in most aspects of food wholesaling and retailing).

Although the system is very slowly evolving toward more modern food distribution practices, there are substantial barriers to this process of change. Individual retailers find it difficult to enlarge their businesses, broaden product lines and reduce costs. The existing wholesale system makes it difficult and time consuming to acquire a broad line of merchandise and to arrange transportation. Retailers have limited knowledge and skills in managing food operations and credit is usually not available from commercial lending agencies. Public intervention frequently discourages private intermediaries through

subsidized competition and arbitrary application of regulations. Most of these constraints on innovation are beyond the control of individual food distribution firms. Hence, public or group action is needed to break the low-level equilibrium currently existing and create an environment that will encourage desirable patterns of change in the food system.

Before the PIMUR study began the municipal authorities in Cali had approved a plan to eliminate the Galeria Central and improve the physical appearance in the center-city. To carry out this plan the retailing operations in the Galeria Central and the associated Calvarios must be terminated or transferred to the satellite public markets by early 1970, and other food wholesaling and retailing activities moved out of the Galeria Central area over a longer period of time.

Based upon the PIMUR studies it appears possible to carry out a market improvement program in Cali that could reduce urban food distribution costs by 20 to 25 percent[7] while at the same time substantially improving services to consumers, especially those in the lower income areas. In the proposed system larger neighborhood stores would be established offering a full line of the food products consumed in particular *barrios*. These larger stores would be linked with a wholesaler handling a broad line of products and who would provide management assistance and credit. These wholesale-retail units can achieve lower costs through increased scale of operations, and improved coordination of the wholesaling-retailing operation that will reduce transportation and transactions costs. The investment costs of extending this retail system into new *barrios* would actually be less than the cost of extending the present system of *tiendas* and public markets.

These new retail outlets would carry meat and a limited line of fruits and vegetables, making it possible for consumers to buy nearly all their food needs within walking distance of their homes. The urban food distribution program also includes a major activity to improve meat handling through larger wholesaling and retailing units, better merchandising practices, and by remodeling the existing slaughterhouse.

A new food wholesaling facility is needed as an integral part of the modernization program to reduce food handling costs and to eliminate the undesirable social and aesthetic conditions now existing in the center of the city. The detailed planning of this center is already underway based upon the

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[7]A 20 to 25 percent reduction in urban food distribution costs would reduce retail food prices by about 5 percent. This is exclusive of possible cost reductions in farm production and product assembly operations.

findings of the PIMUR project.[8] The new wholesale center will be located on the periphery of the city near the junction of major incoming highways and principal belt-line avenues connecting all the major sections of the city. If the center is properly constructed and operated, the logistical costs of food handling should be significantly less than if the present wholesale-retail system continues to expand.

In order to achieve the potential cost reductions and product improvement advantages of the proposed wholesale food center and the related changes in the organization of food wholesaling and retailing, it will be necessary to foment a series of improvements in the organization of commodity sub-systems providing food for the Cali market. The major products flowing through the wholesale center are fruits and vegetables, grains and meat. Milk, poultry and eggs move largely through specialized wholesale channels, although as time passes processed dairy products, poultry and eggs will probably move through the wholesale center in greater volume.

The existing grain assembly system which links into the urban food system is performing relatively well. Large assemblers are competing with each other and with large processors for grains produced on large commercial farms. Assembler's margins are relatively low for services rendered. However, the coordination of the assembly system with urban centers could be further improved by a more accurate and timely price information system and a reliable system of estimating crop size. There is an apparent need for additional grain storage capacity in Northern Valle. A shift from bag toward bulk handling can reduce costs of moving grain that is transported directly from large farms to grain processor s' bulk storage facilities.

There are many conditions in the fruit and vegetable sub-system which contribute to relatively high marketing costs, poor product quality and unstable prices and supplies. Production tends to be widely scattered geographically and nearly all phases of production and distribution are carried on by small firms operating with relatively low levels of technology. Production seasonality is, of course, related to climatic conditions but modern technology can reduce short-term supply fluctuations. There have been recent efforts to introduce more modern systems of production and distribution for pineapples and oranges, and processing tomatoes are produced under contracts closely supervised by processors.

Further efforts are needed to encourage geographic concentration of fruit and vegetable production and the adoption of improved production and handling

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[8]A preliminary feasibility study has been completed by the Promotora de Abastecimientos de Cali, see *Estudio de Factibilidad para la Central de Abastecimientos del Valle del Cauca, Informe Preliminar*, Cali, Colombia, 1969, 64 pp.

practices. Credit policies can be used as a tool to achieve these changes. The coordination between urban wholesalers and rural assemblers can be facilitated by an improved market information system based upon a rudimentary system of product classification. The organization of local producer associations and concentration centers are also means of improving the assembly market function and stimulating efficient production methods.

At present, the domestic market for processed fruits and vegetables is very limited. A favorable climate makes it possible to have a year-round supply of a great variety of fresh foods. Domestic help is plentiful and inexpensive. Few families have incomes sufficient to pay the additional expenses involved in processing. And the cost of the glass or metal containers for preserved foods is high relative to the fresh commodity. (For many fruits and vegetables, the container is more expensive than the amount of fresh food it holds.)

The most important problems confronting fruit and vegetable processors involve procurement of raw materials. It appears especially difficult to obtain reliable supplies of desired quality fruits and vegetables at reasonable prices. The proposed program to foster greater geographic concentration of fruit and vegetable production and the development of producers' cooperatives should case processors' procurement problems.

Several of the packaging firms appear to be progressive and have the technical capacity to provide specially-designed containers. Our studies indicate there is an opportunity to improve product quality and reduce costs by using improved packaging for fresh fruits and vegetables. Improved farm-to-consumer packages can reduce product losses and labor costs in handling. The combination of new packages and a system of grades and standards, which would provide incentives to protect product quality, would reduce food wastes.

The diagnostic study identified several major problems in the milk production-distribution system. First, unsanitary handling methods and adulteration, especially among raw milk distributors and at the producer level, are a danger to the consumer's health. Currently, more than one-half of the milk supply is sold as raw milk. Second, milk supplies decline by 20 to 30% during the dry season when consumer demand is at a seasonal peak. Yet present milk price regulations do not permit higher prices as an incentive for farmers to expand output during the dry season. Finally, milk production per cow remains low because of the extensive nature of farm production. Through compulsory milk pasteurization and a comprehensive milk regulation program it appears possible to greatly improve the safety and quality of milk without increasing consumer prices. Sanitary regulations, seasonal price adjustments and assured markets for producers would encourage the adoption of more adequate milk handling practices and an expansion in production. Assembly and distribution

costs could be much less in the more modern milk system. Furthermore, some of the smaller trucks now used for milk hauling could be used in urban food transportation when the new wholesale food center becomes operational.

The production and distribution of poultry and eggs has become rapidly commercialized during the past 10 to 15 years. Most of the output comes from relatively large production units. Several producers are integrated into product distribution and a few into feed concentrate mixing. Two producer associations are major egg distributors. Egg marketing could be further improved through grading and differential pricing at the wholesale level, although no substantial cost reduction seems feasible. The quality and availability of broilers could be increased through a central slaughtering facility with some cost reduction likely as volume increased and distribution became better organized.

Increased agricultural productivity is an important aspect of regional economic development. Productivity increases as technical farm inputs are substituted for traditional inputs--labor and land. The PIMUR study of some of the major technical inputs--improved seeds, fertilizers, pesticides, farm machinery and feed concentrates--found fairly well-developed distribution channels and reasonable margins. For domestically produced inputs, there appears to be more plant capacity than will be needed to meet short-run increases in demand. Furthermore, most farmers, other than some fruit and vegetable producers, are making extensive use of these technical inputs. Nevertheless, actual grain yields and feed conversion rates in poultry and egg operations fall considerably short of productivity levels agricultural technologists indicate are achievable.

The major problem in using technical farm inputs seems to be the lack of practical information identifying the most economical input combinations under the different existing physical and economic conditions. There is a high degree of complementarity in the use of technical farm inputs. For example, the application of fertilizer to traditional crop varieties may produce little or no yield increase, while application to newer crop varieties may significantly increase yields. A second general problem is that many distributors are unable to effectively control product inventories and predict demands for the technical inputs, resulting in both excessive inventory maintenance costs and frequent out-of-stock conditions for individual products. Credit availability did not appear to be a significant deterrent to the use of technical inputs among commercial farmers (especially grain, poultry and egg producers), but is more of a limiting factor for small producers, many of which are located in the mountainous areas of the region.

In order to improve the output results from the use of technical farm inputs it has been recommended that ICA expand its program of applied research

on optimum combinations of inputs and disseminate this information as rapidly as possible. A training program for farm input manufacturers and distributors is recommended as a means of improving inventory control and physical distribution.

On the basis of the diagnostic studies of the food system serving Cali and the expected results of the recommendations that have been proposed, it seems possible to reduce real costs of food to urban consumers by at least 10 percent over the next decade, and at the same time achieve significant improvements in marketing services. Approximately one-half of these savings could result from changes in urban food distribution while the other half might result from increased productivity in farm production and assembly market operations.

The technological changes in farm production will tend to reduce production costs and stimulate expanded output. This will lead to lower farm product prices, but if output per farm increases sufficiently income per farm will increase. Rising levels of farm income are most likely to occur if there is a sustained migration to urban areas and the migrants are productively employed.

If substantial productivity increases are achieved in the Cali food system what can be said about the effects on levels of employment? Will the changes merely add to the already high levels of urban unemployment? Clearly, a reduction in urban food distribution costs could only be achieved through increases in output per man hour (or a net reduction in services rendered). This is a general condition underlying the achievement of increases in real per capita incomes, a principal goal of development, be it through modernization of agriculture and industry or through changes in distribution processes. Projected operational budgets for the proposed modern neighborhood food stores call for 50 percent fewer man hours of labor per unit of sales as compared to the use of labor in the *tienda* public market system which now exists. But labor payments in the new stores would decline by less than 20 percent since wages per employee would be greater than those being earned in the present system. It is also anticipated that the number of street peddlers would decline, especially if other employment opportunities were created.

Given the rapid population growth of approximately 6 to 7 percent annually, it would be possible over a period of five years to increase labor productivity in the food system by about 30 percent, without a net reduction in the total number of people employed in food distribution. An increase of 10 to 20% in labor productivity would permit continued growth in the total food distribution labor force. Therefore, it seems unlikely that the anticipated changes would cause a critical net reduction in jobs in urban food marketing, although there might be considerable change in the composition of the labor force engaged in food distribution.

This line of reasoning leads to the conclusion that over the next decade increased percentages of the urban labor force will need to find employment in activities other than in food distribution if reductions in real prices of food are to be achieved. The most probable areas for absorbing this increased proportion of the labor force are manufacturing, construction and the service industries.

A complete analysis of the regional employment problem is beyond the scope of this project. However, studies were made to examine the ability of consumer goods manufacturers to expand output in response to increased demands that might occur if real food costs were reduced. Also, the capacity of the residential construction industry was evaluated as a potential absorber of the unemployed.

With the exception of textiles, firms in the consumers' goods industries studied reported operating far below physical plant capacity. For example, the firms in the ready-made clothing industry reported they generally operate at 40% of one-shift capacity during most of the year. Thus, plant capacity would not seem to be a barrier to expanding output. Although there are variations by type of manufacturing, it was estimated that a 50% increase in output would require an approximate 30% increase in the labor force. With several notable exceptions, the management of consumer goods manufacturers revealed very traditional views. They saw their problems primarily as a lack of demand for their products, insufficient credit or difficulties in production processes. And for many, these problems are real enough. Few managers were oriented to the idea of identifying consumers' demands and then developing products, distribution methods and merchandising techniques to achieve high volume while operating on low per unit margins. Manufacturers generally must choose between selling to traditional wholesalers or directly to retailers. Most wholesalers are unwilling or unable to engage in aggressive selling and offer little merchandising assistance to either manufacturer or retailer. And selling direct from manufacturer to retailer is expensive, considering the small volumes achieved by most retail outlets. Lacking is the mass marketing required for mass production and related economies of scale in both production and distribution. If the manufactured consumer goods industries are to expand they must take advantage of the potential increased productivity of the economy made possible by the release of workers from the food system. The PIMUR recommendation is to explore the possibilities of developing distributors who would have contractual arrangements with both manufacturers and retailers and who could exert pressures to hasten the adoption of more progressive production and distribution practices.

Urban housing represents a special problem in the development of an industrial economy. Migration to the cities plus natural population growth creates the need for large capital investment if the city is to provide the level of

urbanization and house construction needed to meet housing standards above slum level. The magnitude of the problem for Cali is illustrated by the estimated need for an average of 17,000 new housing units each year for the next 20 years in order to eliminate current slums and congestion and to provide for projected population growth. At current prices and productivity levels, this would require an additional annual investment of about 400 million pesos in housing in order to build minimum non-slum houses. It is estimated that this level of construction would provide direct employment of 17,500 man-years in actual construction and about the same number in the production of materials. This represents about half the number estimated to be unemployed in Cali in February, 1969.

Adequate housing is not being built because few families can afford the payment or mortgage requirements for housing costing 25 thousand pesos, the cost of a minimum unit under current conditions. But this is not unique to housing, the same could be said for adequate diets, clothing, etc. The problem is not a lack of mortgage funds, for more mortgage funds are available for residential construction than are being used. However, some families who could meet the payments on a mortgage cannot manage the down payments.

The arguments for special programs to stimulate construction are several. Construction uses materials which are, for the most part, produced in the region, can be labor intensive and can use large numbers of essentially unskilled workers. Thus, the demand on foreign exchange is slight relative to the employment effect. And adequate housing is of value to the whole community, not simply those who live in it, thus justifying public support. The major recommendation is that the city government embark on a program of planned and subsidized urbanization with the help of the national government and international loans.

Some Barriers to Change

The lack of productive employment and the low incomes of a broad segment of both the urban and rural population continues to dominate any overall evaluation of regional development problems. The obstacles to breaking out of this relatively low level equilibrium condition are numerous and complex. Currie[9] and others have described the "vicious circle" which tends to perpetuate low productivity and low incomes.

The PIMUR project has attempted to identify ways to achieve more rapid rates of economic growth and rising levels of employment and income through improved coordination of market processes. But, there are several conditions

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[9]Lauchlin Currie, *op. cit.*, Chapter 4. Also see, *Obstacles to Development* by the same author, Michigan State University Press, 1967.

that should be explicitly recognized as barriers to the implementation of the recommended market reforms. These barriers include: 1) some government policies and underlying attitudes toward intermediaries and their contribution to total economic output; 2) some of the existing laws and regulations which adversely affect efficient resource use; 3) the limited ability and willingness of existing firms to innovate.

A pervading attitude of distrust and antagonism toward intermediaries prevails and is reflected in policies establishing direct government intervention in distribution activities, rules against speculation and various forms of price control. There has been a notable lack of technical assistance and special credit programs to improve productivity and incomes among food system intermediaries. This seems to imply a belief that "production" is largely the physical creation of products on farms or in factories, and that marketing services add little to the final product value. Public policies seem to place high values on reducing prices to consumers while maintaining favorable prices and incomes to farmers. Little concern is shown for the incomes of intermediaries or the creation of an institutional environment that would encourage innovative behavior in this economic sub-group.

The PIMUR recommendations emphasize the role of government in fomenting economic development through regulation, research and educational efforts and through direct intervention when critical services are not being provided by the private sector. However, there is considerable evidence that individual initiative is an important ingredient in economic development and that the discipline of a properly regulated competitive market contributes to high levels of economic performance. Regulations are seen as necessary to deal with anti-social or anti-economic conduct, *e.g.*, unethical trade practices or misuse of monopoly power. However, the role of government as a catalyst and facilitator of private efforts in distribution warrants some careful reconsideration within the Colombian political system if a progressive and productive food system is to be realized.

The PIMUR study has identified several laws and regulations which appear to have some very undesirable effects on the efficiency of resource use. For example, the Colombian labor code requiring substantial wage rate premiums for work at night and on weekends or holidays discourages firms from making fuller use of manufacturing plants and other expensive capital equipment. There are other regulatory codes that tend to be both idealistic and over specified. The result is that these regulations become barriers to the adoption of new techniques which do not fit the codes, and they encourage unproductive behavior in avoiding the legal requirements. Chapter 6 of this report and Technical Report No. 10 identify specific instances in which careful revision of regulatory codes would seem desirable.

There are structural, attitudinal and knowledge barriers to progressive behavior among participants in the food system serving Cali. The existing urban food distribution system is predominantly atomistic in structure. Small retailers and small wholesalers are limited in their ability to make major changes in their operations. Many live close to the level of subsistence. They cannot command significant amounts of credit nor can they afford to risk large losses. Most have relatively low levels of formal education and have little knowledge about modern food distribution systems and management practices. A major change in this system will either require new operators willing and capable of managing larger, more complex firms or significant training and technical assistance for existing operators.

There are substantial elements of relatively large-scale units engaged in farming, product assembly, food processing and consumer goods manufacturing. Some of these firms are relatively progressive and most have the financial capability to make significant changes in their operations. However, they are slow to adopt new methods of operation, which may reflect some of the basic attitudes and practices of the owners and managers of these large firms. In the PIMUR study we found very few of the industrial entrepreneurs or managers who were market oriented -- that is they did not see attractive profit opportunities in attempting to identify unexploited markets and then organizing to provide new products and services. Most firms were "one man shows" which is probably a reflection of the lack of confidence in their employees and perhaps even a lack of competent employees. Business slows when the top man is absent; few decisions can be made in his absence. In large-scale farming there appears to be a reluctance and inability to fully exploit available farm production technologies. This may be due to lack of knowledge, a lack of motivation to seek additional income through intensification of farming operations or possibly a realization that hired supervisors and farm laborers cannot be relied upon to carry out more complicated tasks.[10]

The conditions described above constitute significant barriers to rapid economic development. In addition to these barriers it would be reasonable to expect that political leaders will be reluctant to support changes that will displace or adversely affect any large or politically powerful group of market participants.

It is not anticipated that consumer resistance will be a serious barrier to the recommended changes in the urban system of food retailing. Our studies

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[10] For an interesting analysis of the latifundia situation in the Cauca Valley see James E. Grunig, *Information, Entrepreneurship, and Economic Development -- A Study of the Decision Making Processes of Colombian Latifundistas*, Ph.D. Thesis, University of Wisconsin, 1968.

indicate that consumers desire more convenient food outlets, especially if the new stores can provide low prices and higher quality food. In some instances information and education programs may be needed to encourage changes in consumer food buying practices.

Chapter 7 has provided a summary diagnosis of market processes in the economic development of the Cauca Valley. This concluding section serves as a reminder that informed public action is needed to establish desirable patterns of economic growth. Chapter 8 follows with a detailed summary of the PIMUR recommendations with suggestions on implementation.

CHAPTER 8

ON IMPLEMENTATION

Introduction

The PIMUR project has diagnosed several deficiencies in the existing processes of market coordination in the Cali area. These deficiencies have been described in Chapters 2 through 6 of this report and were summarized in Chapter 7. Recommendations for improving market coordination were formulated, taking into account several goals of overall economic development.

However, the recommendations do not specify in detail all the actions which should be taken. The recommendations are only part of the information which will be useful to those in positions to carry forward the proposed marketing reforms. The degree of specification for the recommendations varies considerably, since not all possibilities for changes could be investigated in depth. Information generated by formal research is expensive and judgments were made as to where the greatest payoff from additional efforts might be made. In some cases we have identified areas for further investigation.

Detailed feasibility studies will be necessary on some of the major proposals for market changes after the appropriate policy-makers commit themselves sufficiently to a direction of action to justify the investment in the study. Data and analyses generated by the PIMUR project should contribute significantly to such feasibility studies.[1] Technicians who were trained in the PIMUR project could assist with these studies and related implementation activities.

In this chapter we present a summary of the PIMUR recommendations to indicate the comprehensiveness of the project and to emphasize the interrelatedness of the various components in the economic system being studied. The major financial and technical assistance requirements for implementing the recommendations are estimated. Priorities and timing of different program activities are proposed. We point up the need for an agency to foment and coordinate the implementation of the PIMUR recommendations. Finally, we propose the establishment of an office to coordinate and foment regional economic development through applied research, program planning and related implementation activities.

The PIMUR Recommendations

The recommendations which were presented in Chapters 2 through 6 are summarized in Table 8.1. The entities which we believe should take major

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[1]For example, the feasibility study for the Central Wholesale Market recently completed by the Promotora de Abastecimientos drew heavily on the PIMUR research reports which included preliminary specifications for the wholesaling center.

responsibility for implementation are indicated. A double asterisk (**) has been placed in the left margin beside those recommendations which we believe could be implemented by existing agencies largely with existing resources. Many of these recommendations involve changes in regulations or other public actions which would create a more favorable environment for private sector activities and would in turn improve market coordination and contribute to more general development goals.

TABLE 8.1 SUMMARY - PIMUR RECOMMENDATIONS AND SUGGESTED IMPLEMENTING AGENCIES

	PIMUR Recommendations - Summary	Suggested Implementing Agency (s)
I.	Urban Food Marketing Program	
	A. Reorganize the Promotora de Abastecimientos de Cali into an agency to coordinate the development of the urban food distribution system in Cali and to foment the implementation of the other PIMUR recommendations.	CVC EMC EMSIRVA IDEMA ICA INCORA Caja Agraria
	B. Establish a centralized food wholesale center located on the outskirts of the city that will rent space to wholesalers and provide complementary services.	Promotora de Abastecimientos de Cali
	C. Foment the development of broad-line, broad-service wholesalers with the concurrent development of larger volume, full-line[a] neighborhood retail stores. A pilot project is suggested as the way to begin, followed by a more general program of supervised credit and training for food wholesalers and retailers.	Promotora de Abastecimientos de Cali
	D. Modernization of the existing system of slaughtering and distributing beef and pork.	
	1. Remodel slaughterhouse to improve sanitary conditions and achieve more complete utilization of by-products.	EMSIRVA
	2. Development of specialized meat stores and a group of modern meat wholesalers in the new wholesale food center.	Promotora de Abastecimientos de Cali
**	3. Revise and strengthen enforcement of regulations dealing with movement of *forranea* beef and pork into Cali. Also, increase enforcement of regulations affecting sanitation practices and weighing of meat by wholesalers and retailers.	City of Cali EMSIRVA
II.	Commodity Marketing Programs	
	A. Poultry and Eggs	
	1. Provide additional technical assistance to commercial poultry and egg producers and to producer associations.	ICA IDEMA
	2. Construct a poultry slaughtering and distribution facility in Cali.	Promotora de Abastecimientos de Cali Association of Producers or a private firm

[a]A full-line retail store is a neighborhood store which would handle all of the food items commonly purchased by families in the particular neighborhood and some nonfood household goods. On the lower income areas this would mean something like 3 or 4 hundred items.

TABLE 8.1 CONT'D.

	PIMUR Recommendations - Summary	Suggested Implementing Agency (s)
**	3. Organize a national poultry commission including representatives from poultry and egg producers, chick hatcheries, feed producers, drug producers and the Ministry of Agriculture (ICA, IDEMA).	ICA IDEMA
	B. Milk	
	1. Establish milk regulation office with legal powers to require pasteurization of all fluid milk sold in Cali, to license milk producers, processors and distributors, and to fix wholesale and retail milk prices in the Cali milk supply area.	Office of Planning of the Ministry of Agriculture IDEMA ICA
	2. Organize a milk producers association and increase technical assistance to commercial milk producers.	ICA CVC
	C. Fruits and Vegetables	
	1. Revise government policy, including credit practices, for the fruit and vegetable subsector, keeping in mind three criteria: 1) improving farm productivity; 2) lowering assembly and distribution costs; 3) stabilizing production and prices.	Ministry of Agriculture Caja Agraria ICA
	2. Provide an extension agent specialized in fruit and vegetable production and marketing in the ICA regional office in Cali.	ICA
	3. Intensify efforts to develop useful classification and grading guides for selected fruits and vegetables.	IDEMA ICA
	D. Grains	
	1. Intensify efforts to produce more accurate guidelines on the most profitable levels of use for major technical farm inputs.	ICA
**	2. Initiate an improved market information system on a pilot basis for the Cauca Valley. (See Recommendations V-B-3).	IDEMA
**	3. Revise grain grading and classification standards and offer grading services in major assembly centers.	IDEMA
	4. Build additional grain storage facilities in Cartago.	INAGRARIO
**	5. Encourage changeover to bulk handling of soybeans, sorghum, and corn moving directly to processors.	IDEMA INAGRARIO
**	6. Change regulation on grain storage to permit wholesalers to use warehouse receipts as collateral for loans (*pignoración*).	INAGRARIO IDEMA
	III. Specialized Industry Programs	
	A. Technical Farm Inputs	
	1. Expand the ICA program of applied research on economically optimum uses and application rates for various combinations of complementary technical farm inputs, using a task force approach.	ICA

TABLE 8.1 CONT'D.

	PIMUR Recommendations - Summary	Suggested Implementing Agency (s)
	2. Develop a special series of training courses to teach effective methods of inventory control, traffic management and order arrangements for technical farm inputs distributors.	SENA ICA Promotora de Abasticimientos de Cali
**	3. Encourage distributors to establish forward sales contracts with farmers.	ICA
	B. Transportation	
	1. Adopt measures to improve the functioning of the "*empresas*" including an insurance system to protect *empresas* and shippers against cargo losses.	INTRA
**	2. Disseminate crop forecasts to the *empresas*. (See Recommendation V-B-1).	DANE
	3. Design and operate the central wholesale market in Cali not only to facilitate truck delivery but also to coordinate backhauls.	Promotora de Abasticimientos de Cali
IV.	Consumer Goods	
	A. Manufactured Consumer Goods	
	1. Conduct a feasibility study of a national program to develop franchise-wholesalers for manufactured consumer goods.	FENALCO
	B. Residential Construction	
	1. Embark upon a major program of planned urbanization with the help of the Colombian government and international loans.	City of Cali INVICALI
**	2. Modify the law restricting interest rates on mortgages to 17% per year in order to allow a higher rate on second mortgages.	Monetary Board ICT BCH
**	3. Eliminate rent controls.	Superintendent of Price Controls Congress
**	4. Change tax laws and/or their administration in order to reduce taxes per family living unit in multiple-family dwellings and increase the tax on unused urban land in order to discourage land speculation and associated higher land prices.	City of Cali Valorización
**	5. Place new emphasis on practical training for construction work supervisors.	SENA
V.	Public Policies and Programs Affecting Market Coordination	
	A. Laws and Regulations	
**	1. Devise methods for more effective decentralization of administrative offices in order to minimize the incentive to geographic centralization inherent in economic regulation.	
**	2. Develop procedures to improve the communication between the policy-makers and those participating in the regulated activity in order to ensure the regulation applies to the actual situation and to test for administrative feasibility.	

TABLE 8.1 CONT'D.

	PIMUR Recommendations - Summary	Suggested Implementing Agency (s)
**	3. Conduct a study of contract legalization and small claims procedures for the purpose of identifying potential improvements.	
**	4. Form a commission representing various segments of the economy, to carefully review the labor code for the purpose of suggesting modification of the code to stimulate improved use of labor and capital equipment and devising alternative means of providing the welfare features embodied in the code, making them more generally available.	
**	5. Review price controls as a basis for elimination or revising those where: 1) effective enforcement is not practical; 2) it is found to give significant advantage to those who operate outside the law; 3) the control is causing significant distortion in resource use.	
**	6. Eliminate or modify the laws on speculation and "*acaparamiento*".	IDEMA
	B. Information Programs	
	1. Revise acreage and production estimation procedures in order to disseminate more useful and timely information.	DANE
	2. Prepare monthly crop conditions reports, estimates of planted acreage, and production forecasts just before harvest time.	DANE
**	3. Effect improvements in the IDEMA market information program on a pilot project basis in the Cauca Valley in order to assure timely price and storage stocks reports in major assembly and consumption centers.	IDEMA DANE
	4. Develop a pilot consumer education program in the Cauca Valley as a complement to the price information service.	IDEMA PINA

An Agency for Implementation

The list of PIMUR recommendations is long and diverse. Yet, they do not constitute a complete or fixed plan for marketing reforms. Any development activity is a sequential process. What can best be done next depends on what has happened in the immediate past. The PIMUR project provides an information base and a general approach for fomenting desirable patterns of change in the food system serving Cali. Several specific suggestions have been made on how to accomplish these changes.

Many of these suggestions are relatively simple and can be carried out by existing action agencies. However, there is a need for the promotion of these ideas with these agencies, if the changes are to make their greatest contribution to improved market coordination. Furthermore, no existing agency has a

clear mandate to implement a large part of the recommended program in urban food marketing.

Therefore, we are recommending that the Promotora de Abastecimientos de Cali be reorganized to function as an implementation agency for the PIMUR recommendations. The original mandate for the Promotora was to plan, arrange financing for, and construct a new wholesale food marketing facility for the city of Cali. The initiative for the organization of the Promotora was taken by EMCALI and IDEMA. It was established as an autonomous entity in 1967. It has been funded by IDEMA, EMCALI, and EMSIRVA with additional support from the CVC and the University of Valle. The Board of Directors consists of ten members: four appointed by the director of IDEMA; four appointed by the mayor of Cali, and two appointed by the director of EMSIRVA.

We recommend that the reorganized Promotora be given a mandate to do the following:

1. Promote the organization and financing of a mixed company that will own and operate the new central wholesale market in Cali.
2. Foment the recommended food wholesaling and retailing program in the city of Cali.
3. Coordinate and promote the implementation of other PIMUR recommendations through the appropriate action agencies.

The central focus of the agency should be the modernization of the food system serving Cali. With the approval of the Board of Directors, the agency's activities could be extended to other cities and villages in Valle.

A five-year PIMUR implementation program is outlined in a subsequent section of this chapter. We suggest that the reorganized Promotora carry out this program, providing the technical staff to support the major activities. The Director will need competent foreign technicians who in the early stages of the program will not only advise on the implementation activities, but will also train Colombian staff members to carry the program forward. Based upon continuing observation and evaluation of changes being effected in the food system, the Promotora staff should be prepared to modify the program to meet changing conditions.

If this recommendation for reorganizing the Promotora is accepted, the sponsoring agencies probably should be expanded to include ICA, the Caja Agraria and INCORA, since all operate programs related to PIMUR recommendations.

As the end of the five-year implementation period approaches, the Promotora Board of Directors should evaluate the need for such an agency and decide whether it should be continued, reorganized, or its remaining activities turned over to more permanent entities.

Timing of Implementation Activities

Table 8.2 summarizes the suggested timing for the implementation of the principal PIMUR recommendations over a five-year period. In general, we are suggesting that the recommendations be carried out as soon as possible, keeping in mind that there are certain sets of activities that are highly complementary. In a subsequent section of this chapter we will give further consideration to priorities.

Actions are already being taken by local authorities to construct a new wholesale food market. This is a large project and one that requires careful coordination with the program recommendations described in Chapter 2. During 1970 the Promotora plans to complete a detailed feasibility study for the wholesale center, to organize a corporation that will own and operate the center, and arrange for financing of the project. The first stage of the market should be constructed as soon as possible, with a goal of beginning actual market operation by early 1972. By 1974 the second stage of construction should be planned.

We believe it is critically important that the Promotora initiate a pilot project in 1970 to foment the development of more modern wholesaling and retailing units. Given the lack of technical knowledge among existing food wholesalers and retailers and their limited access to credit, it seems unlikely that there would be a rapid improvement in the Cali food system merely by building a new central market facility. During 1970 and 1971 a pilot project should attempt to develop at least one closely coordinated wholesaler-retailer group such as described in Chapter 2 (one wholesaler and about 10 to 15 retailers). This program should be carefully reviewed and expanded in 1972 with a goal of organizing at least two more wholesaler-retailer groups in 1973 and 1974.

Two other activities are highly related to the central wholesale market and the wholesale-retail modernization program. One is the reorganization of the urban transport system linking retailers with the central market and the other is the remodeling of the slaughterhouse. These activities must be planned jointly with the central market project.

The milk program is not closely interrelated to the central market project. However, some of the trucks used by raw milk dealers might be shifted to hauling food from the central market to retail stores. Also, the more modern retail food stores to be fomented by the pilot project would be important sales outlets for pasteurized milk. The reorganization and supervision of the fluid milk system for Cali is a sizeable task that should be undertaken at an early date, in view of the potential for greatly improving the quality of the product with little or no increase in costs to consumers.

TABLE 8.2 SUGGESTED TIMING FOR IMPLEMENTATION OF PIMUR RECOMMENDATIONS

Recommendations	YEAR 1970	1971	1972	1973	1974
1. Organize an Agency to Promote Market Improvement Program	Initiate Action	Coordinate the Implementation of the Recommendations and Revise Programs			
2. Central Wholesale Market	Form a Corporation and Initiate Construction →	Complete Construction →	Initiate Operations and Carry Out First Stage of Project →		Plan Second Stage
3. Pilot Project for Urban Food Distribution	Plan and Initiate First Stage →		Evaluate First Stage and Plan Second Stage →		
4. Slaughterhouse Improvement	Prepare Detailed Project and Obtain Financing →	Complete Remodeling and Initiate Operations →			
5. Milk Marketing Program	Establish Appropriate Regulations →	Initiate Programs →			
6. Technical Farm Inputs	Plan Activity →	Initiate Programs →			
7. Fruits and Vegetables	Plan Activity →	Initiate Programs →			
8. Poultry Slaughterhouse	→	Complete Feasibility Study →	Construct and Begin Operations →		
9. Grain Storage	Plan Facility →	Construct and Put into Operation			
10. Transportation	Develop Detailed Plans	Initiate Programs			
11. Information	Plan Programs	Initiate Programs			
12. Consumer Goods		Conduct Feasibility Study	Obtain Financing	Initiate Programs	

The recommendations for improvements in commodity assembly markets and farm input distribution and use could probably be implemented in the near future. Agencies such as ICA, IDEMA, Caja Agraria and INCORA are well organized and the suggested programs appear to be within their capabilities and interests.

The recommended feasibility study of consumer goods distribution could be delayed until 1971 or 1972 if funds and personnel were not available earlier. It is anticipated that the impact of the food marketing programs on demand and employment would be sufficiently great by 1974 or 1975 to give importance to this program, as well as to the program for residential construction.

Financing and Technical Assistance

The costs of a five-year program to implement the PIMUR recommendations are summarized in Table 8.3. There are three categories of costs : 1) capital investments; 2) foreign technical assistance and training; and 3) additional costs to Colombian agencies for personnel and logistical support.

The central wholesale market requires the largest capital investment. However, a feasibility study by the Promotora de Abastecimientos shows how this investment can be amortized with expected operating incomes.[2] The first-stage investment is $44 million, with subsequent investments of $22.3 million and $18.2 million over a ten-year period. The most likely sources of equity investments are regional and national agencies concerned with improving Cali's marketing facilities (*e.g.*, the municipal government, the CVC, EMSIRVA and IDEMA) as well as the Cali wholesalers who would use the facility. The remaining funds might be obtained through long-term loans from Colombian commercial banks, the Banco Central Hipotecario or from international lending agencies.

The food distribution pilot project will require a total investment of about $10 million in the first phase and about $16.5 million in the second phase. Since credit lines are not now available for this type of investment, action will need to be taken to secure new credit sources, although part of the capital should be advanced by the individual investors in the wholesale and retail units. It is recommended that the granting of loans be part of a supervised credit program involving technical assistance and the adoption of recommended operating practices. Consideration should be given to the possibility of having a wholesaler supervise loans to franchised retailers.

In order to get this pilot project started as soon as possible, it is recommended that IDEMA and/or an international agency make available to the Promotora an investment fund of approximately $2 million. This fund could be repaid as the loans are refinanced through a more permanent credit institution.

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[2]See *Estudio de Factibiblidas para la Central de Abastecimientos del Valle del Cauca*, a Preliminary Report prepared by the Promotora de Abastecimientos, December, 1969.

TABLE 8.3 ESTIMATED IMPLEMENTATION COSTS FOR A FIVE-YEAR PROGRAM FOR IMPLEMENTING PIMUR RECOMMENDATIONS

Program Recommendations	Investment Costs	Foreign Technical Assistance and Training Costs[a]	Implementing Agency Costs[b]
Food Distribution Development Agency	.4	1.62	3.6
Central Wholesale Market[c]	44.0		
First Stage Urban Food Distribution Pilot Project		6.70	3.0
Wholesale-Retail chain	9.0		
Specialized Meat stores	1.0		
Second Stage - Pilot Project			
Wholesale-Retail chain	15.5	2.22	2.00
Specialized Meat stores	1.0		
Fruit and Vegetable Extension Agent	-	-	.52
Meat Slaughterplant Improvement	1.7	-	-
Milk Distribution Program	2.9	1.10	2.08
Poultry Recommendations	2.6	.27	.52
Grain Recommendations	4.5	-	.52
Technical Farm Inputs Recommendations	-	-	1.56
Information Program	-	.54	1.56
Manufacturing Consumer Goods Feasibility Study	-	.54	.26
Planned Urbanization Feasibility Study	-	-	.78
Regional Development Office[d]	-	2.70	2.08
TOTALS	82.6	15.69	18.48

[a]An average total cost of $540,000 per man-year of foreign technical assistance was assumed. See Table 8.4 for total man-year estimates.

[b]These costs include salary and fringe benefits for professional personnel as well as logistical support costs, *e.g.*, office rental, supplies, administrative support, and travel. In most cases all such costs were estimated at $130,000 per man-year. The costs per man-year were increased for the urban food marketing program to permit higher salaries and to cover higher logistical support costs. See Table 8.4 for total man-year estimates.

[c]This is the estimated first stage cost for an eventual three-stage construction program. The second and third stages would require $22.3 and $18.2 million, respectively, but would not be started until previous stages were in operation.

[d]The Regional Development Office is described later in this chapter.

TABLE 8.4 ESTIMATED MAN-YEARS OF FOREIGN TECHNICAL ASSISTANCE AND ADDITIONAL COLOMBIAN PROFESSIONALS REQUIRED TO IMPLEMENT PIMUR RECOMMENDATIONS OVER A FIVE-YEAR PERIOD

Program Recommendations	Foreign Technical Assistance	Colombian Professionals
Food Distribution Development Agency	3.0	15.0
Urban Food Distribution Improvement		
Stage I	12.0	18.0
Stage II	4.0	12.0
Fruit and Vegetable Extension Agent	-	4.0
Milk Distribution Program	2.0	16.0
Poultry Recommendations	.5	4.0
Grain Recommendations	-	4.0
Technical Farm Input Recommendations	-	12.0
Information Program	1.0	12.0
Mfg. Consumer Goods Feasibility Study	1.0	2.0
Planned Urbanization Feasibility Study	-	6.0
Regional Development Office	5.0	16.0
TOTALS	28.5	121.0

A special line of credit for financing slaughterhouse improvements has already been established at the Banco Ganadero through an AID loan. The recommended improvements in the Cali slaughterhouse appear to qualify for financing under that program.

Capital investment financing for the expansion of milk pasteurizing facilities and for constructing a modern poultry slaughterplant should be available from existing credit institutions. Equipment imported from the United States could be financed through the IFI - AID line of credit. Domestically produced equipment can normally be financed through the manufacturer or distributor for two to three years at about 1.5% per month. The remaining capital needs could probably be borrowed from commercial banks or the Corporación Financiera del Valle, or internally financed by each firm and its investors.

The PIMUR report recommends a program to foment an improved consumer goods distribution system and a major effort to expand residential construction. Detailed feasibility studies will be needed to assist public officials in deciding on the level and nature of program activities to initiate as part of a general development effort.

Technical assistance is a critical element in the implementation program. The largest outlay is associated with the urban food distribution program to be coordinated by the Promotora de Abastecimientos. During the first three years of the program approximately 12 man-years of foreign technical assistance are recommended. This would include the services of a wholesale market specialist, a wholesale-retail specialist, and specialists in meat and fruit and vegetable marketing. During the second phase of the pilot project, the foreign technician input might be decreased as Colombian technicians assume greater responsibility for the program.

The technical assistance costs for the wholesale market could probably be included in the project loans and be paid for from the income generated by the operation of the market. Similarly, part of the technical assistance for the pilot project could be charged to the loan recipients. Additional support for technical assistance could probably be obtained through FAO, USAID or an international foundation.

The additional personnel and logistical support costs to Colombian agencies for the implementation of the PIMUR recommendations have been estimated. The urban food distribution program accounts for a large part of the total. This apparent imbalance is partly due to the current lack of such activities among existing agencies. Also, there is a great need to assemble a critical mass of technical staff so as to stimulate modernization in a sector of the economy that has clung to traditional methods of operation.

The benefits from this program will accrue not only to the residents of Cali but also to the agricultural producers who provide the city's food supply. Also, the Colombian technicians trained in this program and the private businessmen who participate will carry ideas and skills into other Colombian communities.

Some Observations on Priorities

This report has presented a wide range of recommendations designed to improve the coordination of market processes in the Cauca Valley (Table 8.1). A suggested time schedule for implementing these recommendations was presented in Table 8.2. This schedule assumed that all recommendations could be implemented and that the municipality of Cali would follow through on their program to improve the central section of the city by eradicating the public market facilities in that area, and forcing the existing food wholesaling and retailing complex to relocate outside this area. At the time this final report was being prepared, the public market facilities (the Galeria Central and the Calvarios) had been closed and the buildings were being demolished to make way for wider streets to serve the downtown area. The Municipality of Cali is highly

committed to a comprehensive program of preparations for hosting the Pan American Games in 1971. Thus, it seems highly probable that continued efforts will be made to eliminate the undesirable conditions which exist in the present Central Market area.

Given the constraint of the situation described above, there are still several questions concerning priorities for implementing the PIMUR recommendations. If resources are inadequate to carry out the proposed program, what priorities should be assigned to the various recommendations?

As a technical group PIMUR can suggest some priorities based upon the results of the research and our own perceptions of the changes that might result from the implementation of various recommendations. In principle, we can identify the programs which we believe would make the greatest contribution to the achievement of broad social and economic development goals. In practice, however, it is impractical for us to specify a detailed priority ranking of the marketing reforms which we have recommended. A conventional benefit-cost analysis will not provide a definitive basis for choosing among alternatives. There are multiple goals to be considered and the relative importance of each goal can only be ranked in a subjective manner. Furthermore, the effects of many of the proposed changes can be anticipated only as a range of possible outcomes with substantial elements of interdependency among complementary activities.

Development processes are complex and can only be accurately conceptualized as processes that occur over time in a system involving many interrelated activities. Some progress is being made in developing empirical methodologies for system simulations that hold promise as an aid to development planners faced with the evaluation of alternative courses of action.[3] As yet, these methodological procedures are not capable of providing the information needed for assigning definitive priorities to the PIMUR recommendations. Also, the PIMUR project was not charged with the task of developing new research methodologies. Therefore, we have followed more subjective procedures in considering priorities for different recommendations.

In Chapter 1 of this report we identified three broad development goals: 1) growth in gross product per capita; 2) high levels of employment; and 3) greater equality in economic opportunity. We also specified three criteria that served as general guides to the diagnosis of the existing processes of

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[3]Edward P. Holland, *Dynamic Models for Simulating the Venezuelan Economy* (New York: The Simulatics Corporation, 1966).

John E. Griggs, *Evaluating the Consequences of Marketing Change: An Application of System Theory*, unpublished Ph.D. dissertation, Michigan State University, 1968.

Thomas Webb, *A System Model for Market Development Planning: Northeast Brazil*, unpublished Ph.D. dissertation, Michigan State University, 1969.

market coordination. These criteria were: 1) efficiency in the use of resources; 2) progressiveness in developing and adopting new technologies and new institutions; and 3) equity in the distribution of the benefits of development.

These development goals and related criteria for evaluating and diagnosing market processes have been considered in establishing priorities for implementation of the PIMUR recommendations. In each of the sub-sections of this report we have presented recommendations along with a justification closely related to the diagnostic conclusions. For major programs such as the central wholesale market and the wholesale-retail pilot project, we have not only estimated program costs, but have also indicated the anticipated effects on costs, prices, product quality and added services to consumers. For other programs such as market information, technical research and extension education, we have specified costs, but have indicated the expected benefits only in very general terms. On recommendations concerning changes in regulations, we made no attempt to estimate costs or to quantify benefits.

On the basis of the research information related to general development goals, we are suggesting that the PIMUR recommendations be classified into three priority groupings. Highest priority is given to the urban food distribution program which includes the central wholesale market, the pilot project to modernize food wholesaling and retailing, the meat potential gains in terms of reduced real costs of food and/or improved services to consumers are substantial.

We have estimated that over a period of 10 to 15 years it would be possible to reduce urban food distribution costs in Cali by 20 percent which could cut food costs to consumers by about 5%. This would represent a substantial gain in distribution productivity. But to achieve these higher levels of productivity will require a substantial program of technical assistance in conjunction with public and private investments in food distribution facilities. Although some benefits will be observable within three to five years the major impact of the programs will emerge over a period of 5 to 15 years as a more modern, efficient food system becomes a reality. The estimated cost of the PIMUR urban food program for a five-year period is about $100 million, most of which is capital investment and training costs which will be productive over a much longer period of time. It is interesting to observe that a 5% reduction in food costs within the city of Cali would have been about $66 million for one year, at 1969 food expenditure levels, while in 1979 the savings would be $134 million. (Based upon food expenditure estimates presented in Table 2.7.) Thus, the flow of benefits in the form of reduced food costs are substantially greater than the anticipated costs. Furthermore, there will be important, non-quantifiable benefits in the form of better quality products, more sanitary food handling and convenience of shopping.

An additional argument for priority on the urban reforms is that many of the improvements in marketing in the rural assembly markets, such as grading and packaging, can best be accomplished if changes are first initiated in the urban food system. We believe the redistributive effects on real income changes derived from lower food prices will improve the relative well-being of low income families and that this will serve as a stimulus to economic activity in both rural and urban areas.

The second priority recommendations are aimed primarily at improving productivity in the rural production and assembly market activities for agricultural products and the complementary programs for improving distribution of technical farm inputs. Many of these recommendations do not require large public investments or program expense, since much of the basic investment in facilities and organizational structures has already been made. Hence, the potential reduction of 5%[4] in consumer food prices associated with increased productivity in the production and assembly market phases of the Cali food system should not be attributed entirely to the PIMUR recommendations. Rather, these gains would represent the realization of results due largely to previous and on-going programs when supplemented by additional efforts to achieve better use of resources.

The recommendations for the manufactured consumer goods distribution program is given third priority. This program would make its greatest contribution to regional development, as reduced real prices for food contribute to increased demand for nonfood consumer goods. We have not assigned a priority to the residential construction recommendations, since these must be considered as part of a more general development strategy. We recognize the importance of creating job opportunities to absorb migrants from rural areas and persons displaced by food marketing reform programs.

No attempt has been made to give priority rankings to the recommendations for changing regulations. These should be reviewed by the appropriate agencies and action taken as soon as practical.

Our suggested priority scheme should only be taken as a general guide to policy-makers. There are many considerations which confront those charged with responsibility for public decision which we cannot foresee or take into account. Many different people in each government agency have information and goals which affect their views as to appropriate priorities, and all of these will influence the final decisions.

We would like to repeat our view that the PIMUR recommendations provide some practical suggestions on how to stimulate economic activity through improvements in market coordination with a central focus on the food system

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[4]See page 350, Chapter 7.

serving a major urban center. This is not a regional development plan, but it does deal with an important set of development problems in a relatively comprehensive framework that stresses the interrelatedness of rural and urban-based economic activities.

A Strategy for Fomenting Regional Development

Economic development occurs when technological and institutional changes result in improvements in the productivity of physical and human resources. Public research, planning and program implementation are frequently critical elements in identifying and exploiting opportunities for improving productivity of the economic system and influencing desirable patterns of income distribution.

The capacity for public policy analysis at the national level in Colombia has improved in recent years. The National Department of Planning and related planning activities in some of the ministries are making important contributions to policy decision-making. But little is being done at the regional or state level to plan and coordinate development activities. At least this appears to be true in the Cauca Valley where the PIMUR project has operated. Furthermore, there are marked differences among geographic regions in Colombia. For this reason it is difficult for national agencies to adequately specify regional development problems. It is even more difficult to achieve local coordination of development efforts carried out by a variety of federal, state and local agencies.

We therefore recommend the establishment of an office of regional development focusing primarily on the Department of Valle. This group would seek ways of fomenting regional development through diagnostic research, promotion activities and on-going analyses of development programs. Staff efforts should be directed toward general development fomentation within a systems orientation and without limitations as to economic sectors to be considered or scientific disciplines to be utilized.

The core professional staff of the proposed development agency might consist of only four or five competent individuals. However, the office might expand its staff by sub-contracting with existing public and private agencies for specific research activities. Some specific functions of the proposed development office might be:

1. To relate directly to the National Department of Planning in the preparation of general regional development plans and in modifying these to meet changing conditions. In some instances planning and program development will also need to be coordinated with national ministries and related agencies.

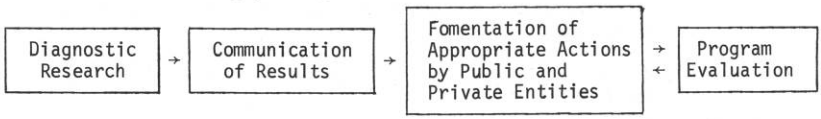
2. To coordinate the activities of regional offices of federal agencies, the offices of municipal and state planning, the Foundation for Industrial Development, trade groups, etc., in order to promote the economic and social development of the region.

3. To serve as an administrative base in order to carry out or contract for a variety of diagnostic, pre-feasibility and feasibility studies related to regional development. Faculty and students from the University of Valle and the Faculty of Agronomy at Palmira might be utilized in these activities. All studies, however, should have a built-in plan for effectively communicating results, fomenting the appropriate actions, reevaluating and adapting action programs on an on-going basis.

4. To assist other public and private entities in the preparation of requests for loans and technical assistance.

The proposed office of regional development could be organized as a department in the CVC under the supervision of the Executive Director. The current statutes for this public entity are sufficiently broad to accommodate this type of regional development activity. However, funding would have to be obtained from public revenues supplemented by income from contract research and development activities. At the regional level there should be close working relationships with DANE and the University of Valle.

It is suggested that this regional development activity give high priority to diagnostic research to identify unexploited economic opportunities and follow-up fomenting actions similar to the strategy followed in the PIMUR project. Plans and programs usually need to be adjusted in order to more fully realize development goals. Unexpected shifts in the social, political and economic environment may imply the need for alteration of existing strategies for change. In short, because human, economic, and technological relationships are not static in any economic system, human activity must be adaptive. Such adaptation may be planned or *ad hoc*. We believe that planned adaptation of development-oriented programs based on continual feedback is a way of obtaining maximum beneficial results from the efforts expended in promoting change. The above-stated view for fomenting development can be summarized in the following paradigm:



Such a pragmatic approach to development planning and programming has been successful in other countries. We believe it can be successful in the Cauca Valley of Colombia. Neither the size or the importance of the task should be underestimated.

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No. 6 - The Cali Urban Food Distribution System

No. 7 - The Cali Consumer: Incomes, Food Purchases, and Shopping Patterns

No. 8 - The Transport System for Agricultural Products in the Cali Area

No. 9 - Market Information and Communication in the Cali Area

No. 10 - Laws and Regulations Affecting Market Coordination in the Cali Area

No. 11 - Grain Production and Marketing in the Cauca Valley

No. 12 - The Cali Milk Production and Distribution System

No. 13 - Slaughtering and Distribution of Beef and Pork in Cali

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APPENDIX A

METHODOLOGY

The objectives of the PIMUR study and the framework of analysis were described in Chapter 1. The research objectives were derived from the terms of reference contained in the basic contractual agreement entered into by Michigan State University, the CVC and the National Department of Planning. The terms of reference also served as a general guide in organizing the research project and planning individual technical studies. This appendix summarizes the general research procedures and the sample survey methodologies used in the PIMUR technical studies.

General Research Procedures

The PIMUR project was activated on September 1, 1968 with the arrival in Cali of the three resident staff members from Michigan State University. After being joined by the Colombian component of the PIMUR supervisory staff, the months of September and October were spent in preparatory activities.

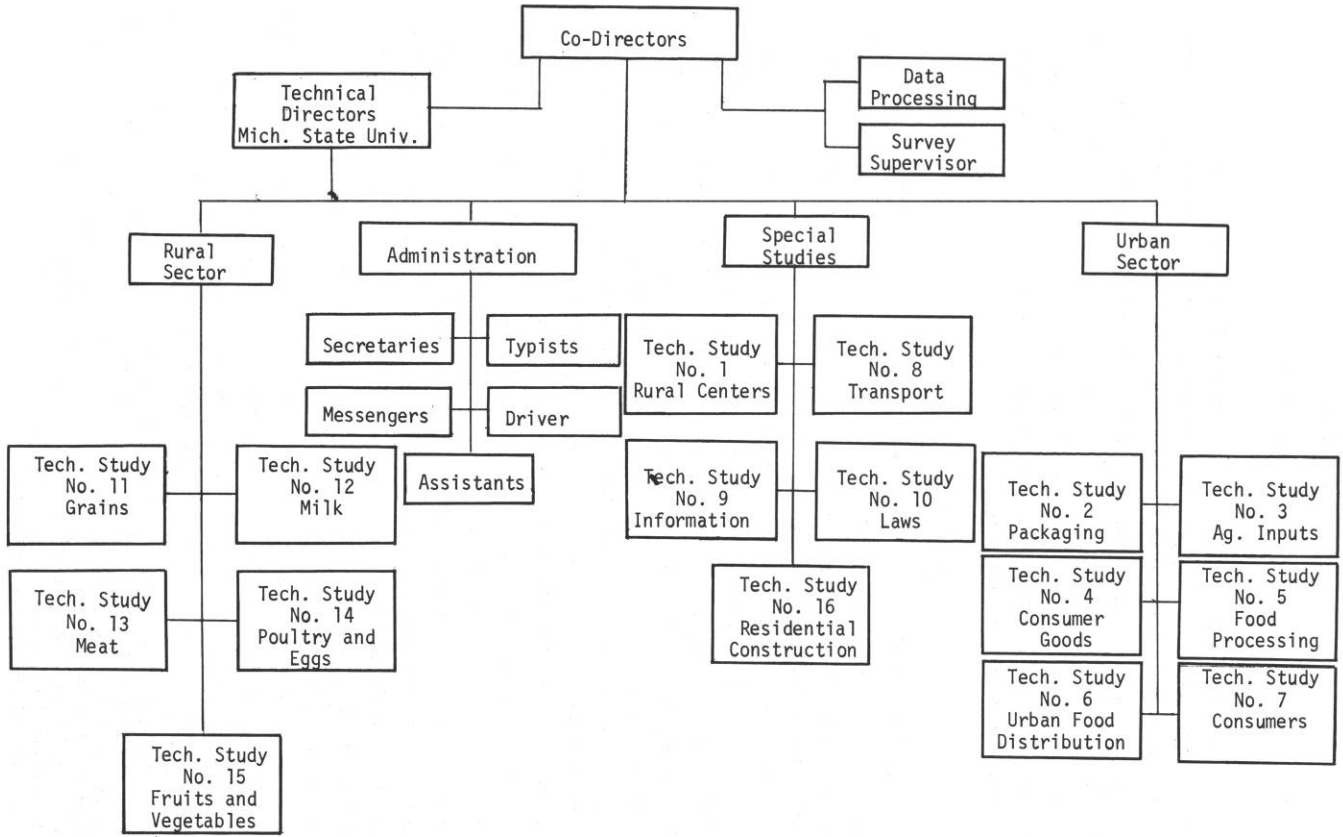
It was first necessary for the supervisory staff to become generally familiar with the regional economy and the marketing system. The major activities during this phase were literature review and direct observation trips in the region. Preliminary interviews and briefing sessions were also held with key individuals in the public and private sectors.

An organizational pattern for the project centered around 16 technical studies which served as supporting documents for the final PIMUR report. Figure A-1 shows the administrative organization of the project.

Detailed research plans were prepared by the PIMUR staff under the technical direction of Michigan State University faculty.[1] For each of the 16 technical studies a research plan was prepared specifying the major research questions or hypotheses to be considered, the general research procedures to be used and the personnel requirements. These documents served as the basis for recruiting and assigning project personnel and as the operational research guide for each technical study.

By November 1, 1968 most of the research positions had been filled. The first two weeks of November were dedicated exclusively to orientation and training of the professional staff. Training activities included general sessions on economic development theory, marketing's role in economic

[1] Dr. Harold M. Riley and Dr. Donald Taylor - Co-Directors of the Latin American Market Planning Center and Professors of Agricultural Economics and Marketing and Transportation Administration, respectively, and Dr. James D. Shaffer, Professor of Agricultural Economics, spent substantial amounts of time in Colombia participating in the planning and execution of the project. Dr. Donald Henley, Department of Marketing, joined the project during the analysis and report writing stage.


Co-Directors
Technical Directors Mich. State Univ.
Data Processing
Survey Supervisor
Rural Sector
Administration
Special Studies
Urban Sector
Secretaries
Typists
Messengers
Driver
Assistants
Tech. Study No. 1 Rural Centers
Tech. Study No. 8 Transport
Tech. Study No. 9 Information
Tech. Study No. 10 Laws
Tech. Study No. 16 Residential Construction
Tech. Study No. 11 Grains
Tech. Study No. 12 Milk
Tech. Study No. 13 Meat
Tech. Study No. 14 Poultry and Eggs
Tech. Study No. 15 Fruits and Vegetables
Tech. Study No. 2 Packaging
Tech. Study No. 3 Ag. Inputs
Tech. Study No. 4 Consumer Goods
Tech. Study No. 5 Food Processing
Tech. Study No. 6 Urban Food Distribution
Tech. Study No. 7 Consumers

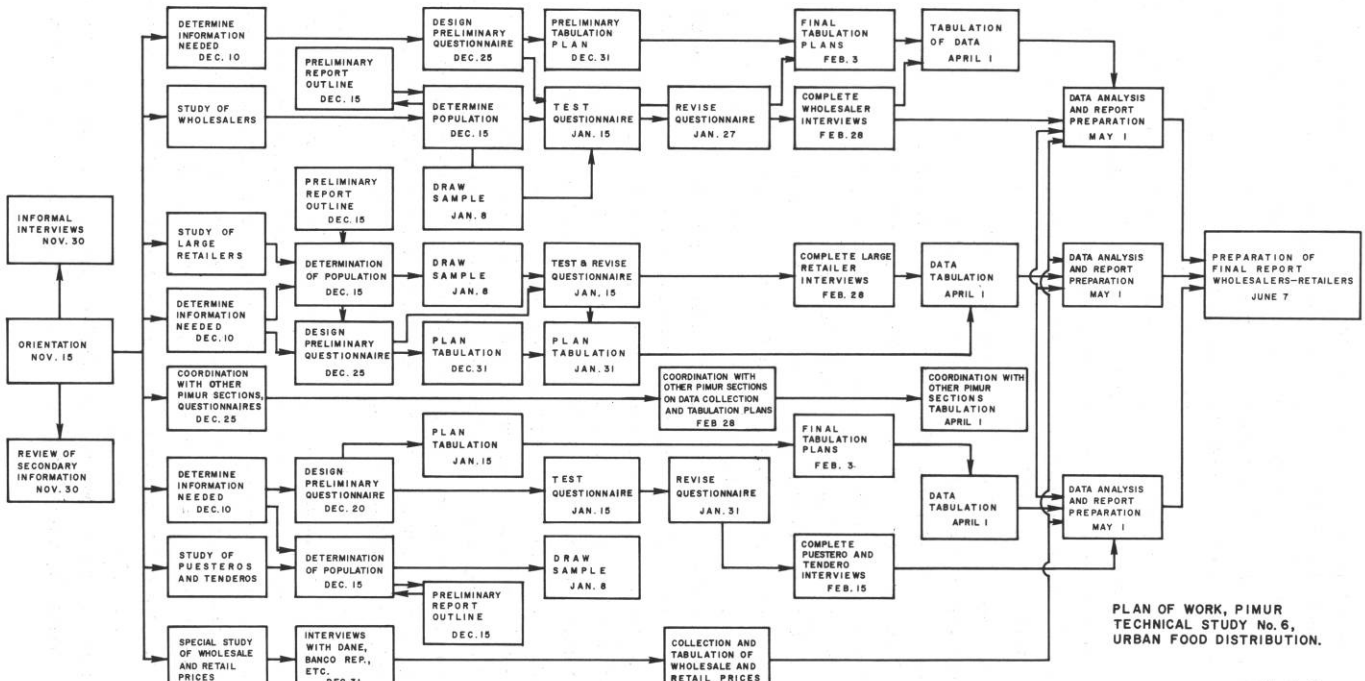
development, the regional economic situation, the objectives and framework of analysis for the PIMUR project, the systems orientation of the PIMUR study, the necessity of continuous internal coordination among technical study leaders and finally, internal administrative procedures. In addition to general sessions, numerous individual sessions were conducted involving technical study leaders and their immediate supervisors. These sessions included discussions on literature and secondary data review, technical study research plans and methodology. Actual research operations were not initiated for any technical study until it was determined that the research personnel assigned to that study possessed a clear understanding of overall project objectives as well as his own specific research assignment.

The first task of each technical study team after a careful literature and secondary data review was to determine the geographic area to be considered in the study. The basic point of reference in all cases was the city of Cali as a production and consumption center. Where data were available, objective criteria were applied but in many cases it was necessary to apply subjective judgments keeping in mind basic project objectives.

As more detailed research plans were formulated, a work schedule was prepared for each technical study using modified Program Evaluation and Review Techniques (PERT). In addition to their obvious value as an organization and control device, these work schedules were most helpful in assuring adequate cooperation and collaboration among the various technical studies at the appropriate time. Figure A-2 is an example of one of the PERT charts.

For all PIMUR technical studies some kind of primary data collection activity was considered necessary. In most cases this meant organized surveys with samples drawn from a specific sampling frame and the use of structured questionnaires. However, in some cases due to small populations, significant variability in certain key characteristics, and/or other special circumstances, purposive sampling and unstructured interviewing techniques were used. Nevertheless, the general sequence of data collection and tabulation activities described below is representative of all PIMUR technical studies.

1. A number of preliminary unstructured interviews were conducted in order to acquaint technical study personnel with the complex of institutions and economic activities to be described and evaluated.
2. Sample questionnaires from other research studies were reviewed, especially those previously used in the Michigan State University marketing studies in Puerto Rico, Brazil and Bolivia.
3. The relevant populations to be sampled were specified and preliminary sampling plans were laid.
4. Specific questionnaires were drafted taking into consideration overall project objectives, specific research questions to be answered in



PLAN OF WORK, PIMUR TECHNICAL STUDY No. 6, URBAN FOOD DISTRIBUTION.

Fig. A-2

each technical study, existing secondary data and primary data needs of other PIMUR technical studies. A total of 25 separate structured questionnaires were prepared and used by the various PIMUR technical study groups.

5. All questionnaires were pre-tested under actual field conditions and revised at least once. In some cases as many as three pre-tests and revisions were necessary.
6. Some 80 selected individuals were given interviewer training. From that general pool interviewers were selected and given specific training by technical study leaders for each of the structured questionnaire surveys. It was necessary to maintain a full time interviewer supervisor in order to coordinate requests for interviewers, control interviewer work schedules, arrange transportation, and later supervise questionnaire coding.
7. Generally, for those surveys involving more than 35 completed questionnaires, the data were coded and transferred to IBM cards for tabulation. Surveys with less than 35 completed questionnaires were hand tabulated. For the large surveys such as consumers, farmers and retailers, the questionnaires were pre-coded.

A total of 4,265 structured and 347 semi-structured interviews were conducted by PIMUR project personnel. (Table A-1.) These data along with existing secondary data provided the basis for the descriptive and diagnostic analysis contained in the 16 PIMUR Technical Reports listed in the Bibliography. These Technical Reports then served as the raw material for the final project report.

Survey Methodology

In this section the procedures used by each PIMUR technical study group in identifying sample populations and in selecting representative samples are described.

Wherever there were large numbers of individuals or firms in the sampling frame, a random sampling method was used. In some cases, a stratified random sample was drawn. For the most part, determination of sample sizes was a judgmental decision made by the individual researcher in consultation with project supervisory personnel. Little reliable data were available on the variability within populations. However, through observation and informal interviews the researchers were generally able to get some indications of population characteristics. For example, it was concluded that there was a high degree of homogeneity among public market stall operators. Therefore a relatively low sampling rate was used. On the other hand, because of the observed variability and the relatively small population size, an effort was made to interview all food wholesalers.

TABLE A-1 NUMBER OF COMPLETED INTERVIEWS BY PIMUR TECHNICAL STUDY GROUPS

Technical Study and Specific Surveys	Structured Interviews	Semi-Structured Interviews
Consumers		
General Survey	629	-
Market Basket	239[a]	-
Income Changes	338	-
Wholesalers and Retailers		
Sample Census	918	-
General Sample	656	-
Fruit and Vegetable Wholesalers	94	-
Meat Wholesalers and Retailers	103	-
Poultry and Eggs		
Producers	84	-
Wholesalers and Retailers	38	-
Milk		
Producers	98	-
Wholesalers and Retailers	34	-
Pasteurizers	-	2
Fruits and Vegetables		
Producers	195	-
Assemblers	97	-
Grains		
Producers	263	-
Assemblers	-	14
Technical Farm Inputs	-	56
Food Processing	-	46
Packaging	-	17
Transport		
Transport Firms	19	-
Truck Owners	80	-
Manufactured Consumer Goods	-	50
Residential Construction	-	25
Laws and Regulations	-	54
Information and Communication	-	50
Rural Trading Centers	295	33
TOTAL	4,265	347

[a]Of the 239 households that cooperated in the Market Basket study, 182 reported their income.

In those technical studies where there were relatively few firms in the sample universe with a great deal of observed variability in terms of volume of production, manufacturing methods, market channels, etc., it was concluded that no reliability could be placed in random sampling methods. In such cases either all firms were interviewed or an effort was made to stratify the population and select representative firms from each stratum.

Several research problems were common to all PIMUR technical study groups. These included: 1) respondent refusal to cooperate and inability to locate individuals or firms in the sample; 2) difficulty in obtaining what the respondent considered as personal or competitively sensitive data; and 3) an inability to obtain accurate information. To cope with the first set of problems, plans were made to oversample and/or random replacement techniques were devised. Respondent sensitivity to certain kinds of data was taken into account in questionnaire preparation and in interviewer training. Beyond that, little could be done to assure that respondents would provide sensitive information. The problem of inaccurate data was perhaps the most difficult of all. Interviewers were trained to notice gross discrepancies but in most cases the respondents themselves could not refer to accurate records so that a certain amount of inaccuracy was inevitable. These data weaknesses were taken into account in data tabulation and analysis. In some cases, it was necessary to use the survey data supplemented with information from other sources as a basis for "synthesizing" economic estimates. That method was used in preparing income-expenditure statements for retailers and wholesalers.

Consumer Study

In order to obtain the necessary data on consumption habits of Cali residents, three separate questionnaires were used. The first was a general questionnaire to obtain basic demographic data, income, education, food purchasing habits, value of weekly food purchases, etc. This questionnaire was used on a general random sample of 650 Cali households. The second questionnaire was a market basket survey designed to obtain information on all food purchases during a one-week period. All households interviewed in the general consumer survey were asked to participate and about one-half (330) agreed to cooperate. The third questionnaire was applied to the market basket sub-sample and was designed to give information on the ownership of selected consumer goods and the effect of possible income changes on consumer buying habits.

The relevant universe for the general consumer survey was considered to be all households in the city of Cali. Two complementary methods were used to obtain a representative sample of the relevant population. First, the computerized public utility accounts for family dwellings were sampled (using Monte Carlo sampling techniques) at a rate of 0.6 per cent. This yielded a

sample of 605 households which was considered quite representative of those areas having public utilities. For those *barrios* lacking public utilities, data from the Municipal Cadastral office were used to determine the number of dwellings in each. An area sampling technique was then used within each *barrio* in order to select specific households to be included in the sample.

A random sample replacement procedure was applied in cases where the sampling unit could not be located or when three visits failed to locate the person in charge of food purchases in the sampled household. A total of 629 useable questionnaires were completed in the general consumer survey; 239 in the market basket survey; and 323 in the effect of income changes survey.

Urban Food Distribution

The primary data collection for Cali retailers and wholesalers was accomplished using one basic questionnaire. Information obtained from respondents included demographic data, buying practices, selling practices, sales volume, margins, credit, delivery, etc. For sampling purposes the total universe of food retailers and wholesalers was divided into several sub-groups.

The population for permanent public market stalls and transitory retailers paying rental for sales space in or near the various public markets was determined by comparing and reconciling rental records of EMSIRVA with a PIMUR census of all such retailers.

The total population for other uncontrolled ambulatory vendors was determined through a simple count on an important market day.

Two separate sampling frames were used for personal service retail stores and wholesalers. First, a complete census was done of food marketing businesses in the area of the Galeria Central. Next, to determine the population of retailers outside the central market area a random sample of 15% of all city blocks was censused and an estimate of the retail store population was derived from that sample.

The population list for self-service stores was based largely on a check of the Cali telephone directory. A census of fruit and vegetable wholesalers was taken on a busy market day.

Table A-2 shows the population and sample sizes by retailer or wholesaler group. Using the census list of public market stall operators a 15% sample was taken in each public market. The sampling rate of 10% was used for ambulatory vendors. The census of retailers and wholesalers in the central market area was used to draw a random sample of 50% of that population. The partial census of food businesses in the rest of the city was used to draw a 6% sample of the estimated population. When those interviews were completed an effort was made to identify all grain and staple specialized wholesalers in the city and to interview those which had not been included in the original sample frame. Because of rejections, incomplete questionnaires, etc., interviews were completed for only 35 of the 46 wholesale firms.

TABLE A-2 POPULATION AND SAMPLE SIZE BY TYPE OF CALI RETAILER AND WHOLESALER, PIMUR, 1969

Type	Population	Number of Interviews Completed	% of Population Interviewed
Public Market Stalls			
Fruit and Vegetable	1,065	166	15.6
Grains	243	32	13.2
Ambulatory Vendors			
Paying Rent	560	23	4.1
Not Paying Rent	797	70	8.8
Personal Service Stores			
Wholesalers	46	35	76.1
Retailers	3,564	297	8.3
Self-Service			
Supermarkets	19	16	84.2
Cooperatives	17	17	100.0
Commissaries	1	1	100.0
Cajas de Compensación	3	3	100.0
Department Stores	14	4	28.6
Fruit and Vegetable Wholesalers	336	93	27.7

An effort was made to interview all self-service retail stores. Using the census of fruit and vegetable wholesalers those handling the major products (*i.e.*, *plátano*, potato, tomato, cabbage, onions, oranges, and pineapple) were identified and a 33% sample was taken.

Meat Distribution Study

In order to obtain data to describe and analyze the distribution of meat in Cali, several types of businesses were interviewed using distinct but similar questionnaire for wholesalers, retailers and institutions. In most cases the relatively small populations of the different groups were identified through direct observation, personal interviews with the business owners in question, EMSIRVA and the manager of the Cali *matadero*.

Table A-3 shows the population, the number of completed questionnaires and the percentage of population interviewed by type of meat wholesaler or retailer.

Poultry and Egg Production-Distribution Study

The populations of interest in this study were poultry and egg producers in the primary Cali supply zone as well as wholesalers and retailers of those products in the city of Cali. Producer populations were determined by updating the list of producers obtained in the 1965 agricultural census for the Department of Valle del Cauca through contacts with producer associations, chick hatcheries, feed concentrate manufacturers and distributors, credit

TABLE A-3 POPULATION OF MEAT RETAILERS AND WHOLESALERS IN CALI AND NUMBER OF PIMUR INTERVIEWS BY TYPE OF BUSINESS

Type of Business	Population	Number of Completed Questionnaires	% of Population Interviewed
Beef Wholesalers Suppliers	40	16	40.0
Pork Wholesalers Suppliers	9	5	55.5
Public Market Beef Retailers	172	19	11.0
Public Market Pork Retailers	68	14	20.6
Institutions	151	21	13.9
Beef Wholesaler-Retailers in *Famas*	44	8	18.2
Pork Wholesaler-Retailers in *Famas*	7	2	28.6
Meat Wholesaler-Retailers around Galeria Central			
Beef	75	10	13.3
Pork	12	2	16.7
Specialized Meat Retailers	12	6	50.0

agencies and the telephone directory. Many of the same sources were used to identify the population of wholesalers and retailers in addition to personal observation and interviews with knowledgeable poultry and egg distributors.

Table A-4 shows the population sizes and number of interviews completed by type of business after random sampling within each sub-group.

TABLE A-4 POPULATION OF POULTRY AND EGG PRODUCERS, RETAILERS AND WHOLESALERS AND INTERVIEWS COMPLETED

Group	Population	Number Interviewed Completed	% of Population Interviewed
Poultry			
Producers	70	27	38.6
Wholesalers	16	5	31.3
Public Market Stalls	35	11	31.4
Eggs			
Producers	287	57	19.9
Wholesalers	22	7	31.8
Public Market Stalls	23	7	30.4
Poultry-Eggs Wholesalers-Retailers	46	14	30.4

Milk Production-Distribution Study

The populations identified for detailed analysis in the milk study were milk producers with 5 or more producing cows in the Cali supply zone, as well as pasteurizers and raw milk distributors in the city of Cali. The producer population list was formulated by reconciling information obtained from the municipal public health office, milk pasteurizing firms, producer associations and CICOLAC, a large milk processing firm. The municipal public health office provided population lists for raw milk distributors. Random samples were drawn from each of the population lists. The population size and the number of interviews completed for each group are presented in Table A-5.

TABLE A-5 POPULATION AND NUMBER OF INTERVIEWS COMPLETED FOR MILK PRODUCERS, DISTRIBUTORS AND PASTEURIZERS

Group	Population	Number of Interviewed Completed	% of Population Interviewed
Producers	590	98	16.6
Raw milk truckers	230	19	8.3
Raw milk retail stores	121	15	12.4
Pasteurizers	2	2	100.0

Fruit and Vegetable Production-Distribution Study

The effort to accurately describe and diagnose the problems of fruit and vegetable producers and marketing firms was complicated by the large number of products being considered, the geographical dispersion of production and the large numbers of farmers and distributors involved. Using a check point study completed by the Promotora de Abastecimientos de Cali in October and November of 1968, the major assembly and/or production areas were identified for the commodities of interest. Study leaders then went to those supply areas and began to identify specific production areas and to prepare producer population lists. Sources of information included ICA extension agents, credit agencies, producer associations, agricultural input suppliers, processing firms and product buyers. The producer population lists so obtained in each production area, though not complete, were considered sufficiently representative to be used for sampling purposes. Assembler population lists were similarly prepared for each production-assembly area. The resulting population estimates appear in Table A-6 along with the number of interviews completed by product.

TABLE A-6 PRODUCER AND ASSEMBLER POPULATION ESTIMATES AND INTERVIEWS COMPLETED FOR MAJOR PRODUCTION ASSEMBLY AREAS SUPPLYING THE CITY OF CALI WITH SELECTED FRUITS AND VEGETABLES

Group	Population	Number of Interviews Completed	% of Population Interviewed
Producers			
Plátano	568	45	7.9
Pineapple	235	30	12.8
Tomato	390	35	9.0
Cabbage	193	28	14.5
Stem Onions	148	23	15.5
Oranges	219	34	15.5
Potatoes	a	a	-
Assemblers			
Plátano	95	21	22.1
Pineapple	6	4	66.6
Tomato	33	13	39.4
Cabbage	35	14	40.0
Stem Onions	13	6	46.2
Oranges	77	18	23.4
Potatoes	69	21	30.4

[a]No PIMUR interviews were taken with producers since data were available from a recent study by ICA. See Chris Andrew, *op. cit.*

Grain Marketing Study

The products included in the grain marketing study were corn, beans, sorghum, soybeans and rice. A single questionnaire was used for producers of the first four products but a separate questionnaire was developed for rice growers. Interview guides were used in making informal interviews with assemblers and processors. It was determined that Cali's major supply area for all grain products, except rice, is the Cauca Valley. Moreover, a high percentage of the production of grains in the Cali supply area comes from large farms. The sampling universe was specified as those farms of three hectares or more which had produced one or more of the five grain products in any one of the three semesters prior to the time of the survey.

Population lists of corn, beans, sorghum and soybean producers were developed using information from seed distributors, credit agencies and grain buyers. In cases where a farmer was found to produce more than one of the grain crops, his name appeared only once on a list with other producers of more than one grain crop. A proportionate random sample was drawn from each of the stratum. The total relevant population of corn, beans, sorghum and soybean producers was 1932. A total of 263 questionnaires were completed from the initial sample of 345 producers .

In the case of rice the same size limitations were applied in order to obtain an approximate population of Cauca Valley producers. The resulting

population listing contained the names of 148 rice producers. A random sample of 50 was taken and 31 questionnaires were completed.

Technical Farm Inputs Distribution Study

Considering that the city of Cali and its major food supply area was the major geographical area of concern in the PIMUR study, an effort was made to determine the origin of technical farm inputs distributed in that area. The farm input supply areas so identified were:

Fertilizers - Cartagena, Medellin, Barrancabermeja, Bogotá, Cali
Pesticides - Bogotá, Cartagena, Cali, Medellin, Barranquilla
Feed Concentrates - Buga, Palmira
Improved Seeds - Palmira, Buga
Agricultural Machinery - Bucaramanga, Medellin, Barranquilla, Cali

Population lists of producers and distributors in those areas were prepared using telephone directories, DANE and ANDI industrial directories and informal interviews with farm input industry representatives. The latter also helped to classify the firms by production volume into small, medium and large firms. Proportionate random samples were drawn from each stratum for each of the relevant populations. Table A-7 shows population size and interviews completed.

TABLE A-7 ESTIMATED POPULATION OF AGRICULTURAL INPUT MANUFACTURERS AND SIZE OF SAMPLE

Input	Number in Population	Size of Sample Number	%
Agricultural Machinery			
Importers	14	6	43
Renters	2	2	100
Manufacturers of repair parts and implements	38	12	36
Improved Seeds			
Processors	4	3	75
Fertilizers			
Manufacturers	3	3	100
Mixers	60	4	7
Pesticides			
Mixers	65	11	61
Feed Concentrates			
Producers	31	4	30
Input Distributors			
Large	5	5	100
Medium and Small	63	14	22

Food Processing Study

This study was focused on processors of grains, fruits and vegetables, milk and meat. Those firms distributing their products in Cali and the Cauca Valley were included in the sampling population. In addition to informal interviews with industry leaders, the DANE, ANDI and other industrial directories as well as the Cauca Valley telephone directory were used in preparing the population lists. Because of the relatively large numbers (218), the obvious heterogeneity in terms of products, as well as firm size and other special characteristics, the processing firms were classified into 19 different groups and the most important firms in each group were interviewed. One or two of the less important firms were then selected at random and interviewed. A total of 46 semi-structured interviews were completed. Since the sample was subjectively chosen no effort was made to quantitatively project survey results to the total population. Nevertheless, the sample was considered sufficiently representative for descriptive and diagnostic purposes.

Packaging Study

This study was focused on those packaging materials used in the assembly and distribution of the following agricultural products and farm inputs: fresh tomatoes, processed tomatoes, oranges, pineapples, corn, rice, eggs, improved seeds, feed concentrates, fertilizers and pesticides. Informal interviews with packaging firms, farmers, food processors and farm input manufacturing firms helped to identify the packaging materials most commonly used for each of the products listed above. Those interviews as well as telephone and industrial directories provided the information needed to prepare a list of firms producing and/or marketing packaging materials in Cali and the Cauca Valley. Because of the small number of firms producing each type of packaging material and due to the variability in size, the sample was subjectively chosen. In some cases a census of the relevant population was possible and in the remainder an effort was made to selected firms which would accurately reflect conditions among firms in the universe. A total of 17 semi-structured interviews were completed:

Type of package	No. of interviews
Hemp bags	2
Wooden boxes	2
Cardboard	3
Plastic	2
Cellophane	3
Paper	2
Glass	1
Metal	2

A large number of informal interviews with packaging material users as well as results from other PIMUR surveys provided additional information on such things as user problems, spoilage rates, etc.

Transport Study

The major types of primary data collection for this study were a check-point study recording information on cargo vehicles arriving and leaving the city of Cali and surveys of transport firms and individual truck owners. The sampling universe of transport firms was considered to be those transporting major agricultural products from principal production zones to Cali. Using the data from the check-point studies conducted by the Promotora de Abastecimientos de Cali in October, 1967 and PIMUR in November 1968, a list of transport firms was prepared for each agricultural product and each point of origin. The three transport firms appearing on each resulting population list with the greatest frequency were selected to be interviewed. Out of an initial sample of 35 firms 19 structured interviews were completed for transport firms. Interviews were also attempted with a random sample of three truck owners affiliated with each transport firm. A total of 80 such questionnaires were completed. Additional data on transportation was collected through the urban and rural surveys of food handlers and producers.

Manufactured Consumer Goods Study

After having identified the products to be included in the research, informal interviews were conducted with Cali wholesalers and distributors in order to identify the major brands of each product being sold in Cali, Palmira, Buga and Tuluá. A total population list of 150 firms was completed. Within each product group, firms were classified as small, medium, and large according to volume of annual sales. A proportionate sample was drawn for each product group and stratum. A total of 50 interviews was completed. Similar population identification and sampling procedures were used for Cali wholesalers and distributors. In order to obtain an understanding of consumer goods distribution channels and problems in rural trading centers, five interviews with retailers of the studied consumer goods were also conducted in each of six selected rural towns.

Residential Construction Study

Given the special objectives of this study, heavy reliance was placed on secondary data and informal interviews. No effort was made to gather detailed information from construction firms and their suppliers. Informal interviews were conducted with home finance agencies, construction trade associations, important construction firms, and producers and distributors of construction

suppliers. The major objective of these informal interviews was to obtain an understanding of the general problems of the construction industry and to verify secondary data.

Laws and Regulation Study

Much of the work of this study consisted of an examination of the municipal, departmental and national legal codes in order to identify the most important laws and decrees pertaining to the buying, selling and handling of the products being studied by other PIMUR research groups. The most important laws were summarized and an effort was made to evaluate their impact on the market coordination process drawing on primary and secondary data of other PIMUR technical studies as well as informal interviews and observations of the PIMUR staff.

Information and Communication Study

Much of the data on availability and use of market information was drawn from surveys conducted by other PIMUR technical study groups. Additional primary data collection included structured interviews with all radio stations, newspapers, and advertising firms in the Cauca Valley. Editors of the agricultural pages of the two major Bogotá dailies were also interviewed. Finally, informal interviews were conducted with representatives of such information disseminating agencies as ICA, IDEMA, SAG, DANE, FENAVES, etc. A total of 50 semi-structured interviews were completed.

Rural Trading Centers Study

Four towns in the Cauca Valley were selected to be studied. The selection criteria were: 1) population - between 1,000 and 20,000; 2) geographic location - varying levels of isolation were sought among the chosen towns; 3) agricultural potential; and 4) level of infrastructure and institutional change. The towns chosen for study were El Cairo, Zarzal, La Tulia and Roldanillo. Four types of interviews were conducted in each town. Information was obtained from business and community leaders on availability of social, and commercial services as well as specific farm inputs and consumer goods This information was obtained not only for the four *municipios* mentioned above but for all other county seat towns in the Department of Valle del Cauca (except Cali and Buenaventura) and for the five northern most *municipios* in the Department of Cauca. The other three types of interviews conducted in the four rural trading centers on major market days were with farmers, food retailers and wholesalers. Because of time and resource limitations, no effort was made to determine population size or to assure random samples. Farmers and food retailers and wholesalers present in the market *plaza* on chosen day (s)

plaza on chosen day (s) were the sampling frame. Interview respondents were casually rather than randomly chosen. While such data could not be used for making quantitative projections it was useful in obtaining insights regarding the degree of market integration between these rural trading centers and the larger urban centers in the Cauca Valley.

Data Processing and Storage

Data from the principal structured surveys were transferred to IBM cards and initial tabulations were carried out on an IBM 1401 installation operated by Empresas Municipales of Cali. Computer programs that had earlier been developed for the Control Data 3600 system at Michigan State University were rewritten for the IBM 1401 system in Cali. However, some of the more complex analyses were conducted at the Michigan State University Computer Center.

Copies of the survey questionnaires, the code books, the IBM 1401 computer programs, and the data tapes have been stored in three locations: 1) Cali-- The CVC and the Empresas Municipales of Cali computer installation; 2) Bogota-- the DANE computer center; 3) East Lansing, Michigan-- The Latin American Market Planning Center at Michigan State University.

APPENDIX B

A LIST OF ACRONYMS

Acronym	Agency or Organization
ABOCOL	Abonos Colombianos (Colombian Fertilizers)
ACOFAL	Asociación Colombiana de Fabricantes de Alimentos (Colombian Association of Feed Concentrate Processors)
ADIMAGRO	Asociación de Importadores de Maquinaria Agrícola (Association for Agricultural Machinery Importers)
ANDI	Asociación Nacional de Industriales (National Association for Industrialists)
ASADEGA	Asociación de Abastecedores de Ganado Mayor (Association of Cattle Buyers)
AVINOVA	Avicultores del Norte del Valle (Poultry Producers of Northern Valle)
AVIVALLE	Avicultores del Valle (Poultry Producers of Valle)
BCH	Banco Central Hipotecario (Central Mortgage Bank)
CAJA AGRARIA	Caja de Credito Agrario, Industrial y Minero (Agricultural, Industrial and Mining Credit Bank)
CEDE	Centro de Estudios sobre Desarrollo Económico (Center for Studies on Economic Development)
CICOLAC	Compañía Colombiana de Alimentos Lacteos (Colombian Company for Dairy Products)
CIDE	Centro de Investigaciones de Desarrollo Económico (Center for Economic Development Studies)
COAGROVALLE	Cooperativa de Agricultores del Norte del Valle (Cooperative for Farmers of Northern Valle)
CVC	Corporación Autónoma Regional del Cauca (Autonomous Regional Corporation for the Cauca)
DANE	Departamento Administrativo Nacional de Estadística (National Department of Statistics)
DNP	Departamento Nacional de Planeación (National Department of Planning)
EMCALI	Empresas Municipales de Cali (Municipal Enterprises of Cali)
EMSIRVA	Empresa de Servicios Varios Municipales de Cali (Company for Municipal Services for Cali)
FEDEGAN	Federación Colombiana de Ganaderos (Colombian Federation of Cattle Producers)
FENALCO	Federación Nacional de Comerciantes (National Federation of Businessmen)
ICA	Instituto Colombiano Agropecuario (Colombian Agricultural Institute)
ICT	Instituto de Crédito Territorial (Institute for Territorial Credit)

IDEMA	Instituto de Mercadeo Agropecuario (Institute for Agricultural Marketing)
IFI	Instituto de Fomento Industrial (Institute for Industrial Development)
IICA	Instituto Interamericano de Ciencias Agrícolas (Inter-American Institute for Agricultural Sciences)
ILMA	Instituto Latinoamericano de Mercadeo Agrícola (Latin American Institute for Agricultural Marketing)
INA	Instituto Nacional de Abastecimientos (now IDEMA) (National Institute for Food Supplies)
INAGRARIO	Almacenes Generales de Depósito de Creditario e IDEMA (Public Warehouse)
INCORA	Instituto Colombiano de la Reforma Agraria (Colombian Institute for Agricultural Reform)
INTRA	Instituto Nacional de Transporte (National Institute for Transportation)
INVICALI	Instituto de Vivienda del Municipio de Cali (Institute of Housing for the Municipio of Cali)
PIMUR	Proyecto Integrado de Mercadeo Urbano-Rural (Integrated Project for Urban-Rural Marketing)
PINA	Programa Integrado de Nutricion Aplicada (Integrated Program for Applied Nutrition)
SAG	Sociedad de Agricultores y Ganaderos (Association of Farmers and Livestock Producers)
SENA	Servicio Nacional de Aprendizaje (National Agency for Apprentice Training)

APPENDIX C

LIST OF DEFINITIONS

Acaparamiento	Speculation in commodities defined as the purchase and retention of basic food products in order to produce an unjustifiably high price.
Banco	Stall for cutting and selling meat at wholesale and/or retail. Usually located in a *fama*, *granero*, or *tienda*. Frequently, the operator of the *banco* rents space from the owner of the *fama*, *granero*, or *tienda*.
Bodega or *deposito*	In general, a warehouse in which to store merchandise. In fruit and vegetable wholesaling, a *bodega* is a private warehouse where space is rented on a daily, weekly, or monthly basis to individual wholesalers.
Famas	Locations where beef and pork carcasses are received direct from the slaughterhouse. Each *fama* has a number of *bancos* where meat is sold at both retail and wholesale. *Fama* operators are sometimes called *filiaderos* when the *fama* serves only as a transfer point for carcasses that move on to other locations for wholesale and/or retail processing.
Graneros	*Graneros* are medium-sized personal service food outlets. They carry a full-line of grains and processed goods, and often rent space to a retailer of meat and fruits and vegetables. The larger *graneros* are located in the vicinity of the Galeria Central while the smaller *graneros* are located near the satellite markets and in residential areas.
Gross margin	In this report, gross margin on particular products is based on selling price, *i.e.*, selling price less purchase price divided by selling price. For overall operations of firms the gross margin is sales less purchases divided by sales.
Matadero	A slaughterhouse for cattle and hogs. In Cali the slaughterhouse is a municipal enterprise.
Mercado Campesino	Separate locations in some public markets where the farmer can sell his produce directly to the consumer.
Plaza or *galeria*	Public markets run by a public corporation of the Municipality. The markets are in fixed locations, with permanent, covered construction and fixed stalls within the market. A variety of food products are sold within the market, principally fruits, vegetables, meats, and grains. The Galeria Central is the public market located in the center of Cali. Satellite *plazas* (or *plaza* markets) are located in various residential areas.
Pignoracion	The procedure whereby warehouse receipts on commodities stored in approved facilities are used as collateral for bank loans.

Puesto	Stall within a public market operated by an individual retailer of meat, fruits, vegetables, or grains.
Revuelto	A representative mixture of the various meat cuts from a beef carcass, ranging from the low valued to the high valued cuts.
Tiendas	Generally small-scale neighborhood retail outlets, located in a garage or street level room of a residence. *Tiendas* carry a limited line of food and nonfood products and are family-run operations.
Vendedor ambulante	Retailer, usually of fruits and vegetables, operating in the area around a public market. Generally sells from a location on the street with no fixed facilities.
Wholesaler-Retailer	An urban food outlet which performs a mixed function in the distribution channel, retailing to the final consumer and wholesaling to operators of small neighborhood stores. The wholesaler-retailer generally carries a fairly complete line of food products.

APPENDIX D

UNITS OF MEASURE

A. Monetary Units

The *peso* is the official monetary unit in Colombia. The official exchange rate at selected time periods during the conduct of this study were as follows:

September, 1968	---	16.5 pesos = 1 U.S. dollar
February, 1969	---	16.9 pesos = 1 U.S. dollar
September, 1969	---	17.6 pesos = 1 U.S. dollar

B. Weights and Measures

1 Libra	=	500 grams or 1.1025 pounds
1 Kilogram	=	1000 grams or 2.205 pounds
1 Arroba	=	25 libras or 12.5 kilograms
1 Tonelada	=	1000 kilograms or 2,205 pounds
1 Liter	=	1.06 U.S. quarts or 0.264 U.S. gallons
1 Botella	=	720 cc. in Cali but varies regionally in Colombia

C. Land Area

1 Hectare	=	2.47 acres or 10,000 square meters
1 Plaza	=	1.58 acres or 6,400 square meters

D. Distance

1 Kilometer	=	0.621 miles
1 Meter	=	3.28 feet