ABSTRACT

INSTITUTIONAL, ORGANIZATIONAL AND MANAGERIAL FACTORS IN ECONOMIC DEVELOPMENT -- A CONSIDERATION OF THE COTTON INDUSTRY IN NORTHEAST BRAZIL

This dissertation examines several factors underlying economic stagnation that should be taken into account when trying to induce modernization or economic development. Northeast Brazil is among the largest and poorest regions in the Western Hemisphere. The cotton industry in Northeast Brazil is the largest and most stagnant agricultural and manufacturing activity and is the primary source of income for about 5,130,000 people, one-quarter of the region's population. The dissertation analyses and describes cotton farmers, assemblers, textile millers and small retailers and, as such, examines the major types of firms which constitute the economic system of Northeast Brazil.

The issues considered include the (1) way in which the market mechanism fosters development or retards the diffusion of higher levels of technology; and (2) impact on the industry of a large investment program geared to modernizing textile mills.

These issues are examined by looking at the cotton industry from three different perspectives.

A. The institutional factors describe the Northeast Brazil cotton industry taken as a whole and the norms which guide the interactions of the various groups of firms studied. These factors include: (1) Roles and activities of cotton farmers, assemblers, millers and retailers, (2) Occupational structure, (3) Nature of ownership, (4) The legal system, roads and electricity, (5) Literacy and education, and (6) Programs oriented to modernization.

B. The Organizational factors focus upon how economic activities are organized within individual firms in the industry. These factors include: (1) Production technologies, (2) Raw material procurement, (3) Marketing and distribution procedures, (4) Managerial techniques, (5) Financial incentives and rewards, and (6) Costs, uses and source of credit.

C. The managerial factors describe some of the attitudinal variables characteristic of the various owners and managers of the firms. These factors include: (1) Attitude toward risk-taking, (2) Attitude toward cooperation, (3) Competition, (4) Mass communications media, (5) Social influences on price determination, (6) Time orientation, and (7) Attitude toward compensating employees.

The institutional, organizational, and managerial factors present the dimensions of the barriers which serve to retard economic growth.

The findings of the research indicate that, in spite of the $100 million committed to investment in textile mills between 1963 and mid-1967, there have been few perceptible developmental effects among cotton farmers, assemblers and retailers. The barriers to economic development include an inadequate flow of market information and low rates of diffusion of innovations associated with a poorly functioning market mechanism. The infrastructure of the industry is characterized by a lack of educational facilities, electrification, and roads, an inadequate legal system, and low rates of literacy among retailers, farmers and assemblers. The retail outlets, farms and assembly firms have low levels of productivity based on crude technology and are constrained in upgrading technology due to an inadequate supply of credit and the infrastructure. The incentive mechanisms are not oriented to increasing levels of output. The managers of these firms have not been prone to accept risks, nor to cooperate in projects of common benefit and do not organize activities with a view to the future.

Only the large textile mills feature a formal organization. Until the recent investments, these mills possessed inefficient and obsolete technology and largely ignored marketing and distribution activities. The millers tried to be self-sufficient, independent and somewhat insulated from the economy. It appears that this sector of the industry could have modernized with a more modest

investment program. Clearly, stimulating investment and industrialization need not lead to economic development.

If economic development programs are to have an effect through the market mechanism, then the success of the development program hinges on the efficacy with which this mechanism operates. In devising a strategy for development, the institutional, organizational and managerial factors are important in describing the inherent constraints and barriers.

INSTITUTIONAL, ORGANIZATIONAL AND MANAGERIAL FACTORS IN ECONOMIC DEVELOPMENT -- A CONSIDERATION OF THE COTTON INDUSTRY IN NORTHEAST BRAZIL

by

Stanley Mark Doctoroff

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CHAPTER I

INTRODUCTION

This dissertation focuses upon some of the factors related to the process of economic development. Many countries are trying to increase the levels of productivity of their economies as a means of improving the standard of living of their population. In order for the process of economic development to result in continually rising levels of per capita production, the operation of the economy and its participants must change. Societal institutions which support low levels of productivity must be replaced with institutions which promote technological progress. Firms must expand in number and/or size and must become more efficient in producing goods and services for society. Individuals must reorient their economic behavior in line with emergent societal institutions and firms. Although, such changes are not easily achieved, the price of not achieving them is a continuation of low levels of productivity and economic stagnation.

A Stagnant Region and a Representative Industry

The Northeast region of Brazil is an example of an economy which has stagnated. Currently it has one of the lowest per capita incomes in the Western Hemisphere.

During the eighteenth and nineteenth centuries the economy was very productive and was the dominant economic region in Brazil. However, by the twentieth century, the South-Center region of Brazil rapidly developed and assumed a position of economic dominance. In 1960 the South-Center had 35% of the population of Brazil and accounted for 50% of the income whereas the Northeast had 25% of the population but only 11% of the income.[1] From 1920-50 the number of industrial workers and industrial output in the Northeast declined steadily relative to the state of Sao Paulo.[2]

	% of Industrial Employees		% of Industrial Output	
	1920	1950	1920	1950
Northeast	27%	17%	16.3%	9.6%
Sao Paulo	29%	39%	39.6%	45.3%

This dissertation will not consider why the Northeast has lagged behind the economy of the state of Sao Paulo and the South-Center. To consider economic stagnation for a region as large and populous as the Northeast would be unrealistic. However, an analysis of the factors and conditions relating to economic stagnation in an industry representative of the regional economy is a more sensible undertaking.

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[1]Review article of Industrialization and Economic Development of Brazil (Homewood: R. D. Irwin, 1965). W. Baer in Economic Development and Cultural Change (Chicago: University of Chicago Press, 1967), p. 172.

[2]A. Bogatay, "An Overview of the Northeast and Its Development," (E. Lansing: Latin American Market Planning Center, Mimeo, April, 1968), p. 13.

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The industry examined in this dissertation is the cotton industry--which is representative in a number of ways. Thus, in 1962, 31% of the industrial labor force of the Northeast were employed in cotton textile mills. During 1959-61, cotton accounted for almost 22% of the total agricultural production in the Northeast. This was 83% more than the second largest agricultural crop, sugar.[3] Thus, cotton predominates in both the agricultural and industrial sectors. It is also representative in the sense of low productivity and very slow growth in output. Of the twenty-one major cotton growing countries of the world, the productivity per hectare in the Northeast is the lowest, only 33% of the world average.[4] Between 1941 and 1957 cotton production steadily declined and finally, by 1961-62 it registered a 5% increase over 1941-42.[5] Relative to the value added by all manufacturers in the Northeast, the value added by textile mills and fabric manufacturers decreased from 36.4% to 24.78% between 1919 and 1949.[6]

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[3]Banco Do Nordeste Do Brasil S/A and Superintendencia Do Desenvolvemento Do Nordeste, Mercado E Commercializacao Do Algodao Do Nordeste (Fortaleza: Ceara, 1964), Table 16, p. 47.

[4]Ibid., Table 27, p. 71.

[5]Ibid., Table 3, p. 15.

[6]G. Wythe, "Brazil, Trends in Industrial Development," in Economic Growth: Brazil, India and Japan (S. Kuznets, W. E. Moore and J. J. Spengler), p. 1.

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The cotton industry is further representative in that it is characterized by a complex system of transactions including sharecroppers, landowners, small and large rural buyers, textile millers and numerous different types of retailers. By studying several aspects of cotton one can view many types of economic participants who are associated with a major, though stagnant, industry in the economy of the Northeast.

Recently, to reduce the gap in the standard of living in the Northeast relative to the Center-South, the Brazilian federal government instituted an investment incentive program. From 1963 through mid-1967, the cotton textile milling firms have been induced to invest about $100 million.

There is a large potential area for improvement of the cotton industry in Northeast Brazil. The yield of cotton grown per acre is 1100% larger in Israel than in the Northeast. The postwar Japanese economy focused initial developmental efforts on developing its textile industry.[7] The high degree of efficiency in textile milling is demonstrated in the world textile market and resulted in the textile industry contributing heavily to the growth of exports and the subsequent growth of the economy. Thus, improvements in growing cotton and manufacturing textiles are being carried out in other countries

[7]Banco Do Nordeste, op. cit., p. 71. Fortune, September 1, 1968, p. 98.

indicating the vitality of the cotton industry in some developing economies.

Thus, a comprehensive study of cotton provides an opportunity to view in a specific situation the effect of a massive infusion of capital and in general, the responsiveness of a stagnant component of a stagnant economy to major developmental efforts.

Institutional, Organizational and Managerial Factors

In viewing stagnation and attempts to achieve development in the cotton industry, the dissertation considers three sets of factors. Each set constitutes, in effect, a different perspective for viewing the cotton industry.

These three perspectives for viewing the cotton industry employ as their unit of analysis the industry, the firm, and the manager. The significance of the three perspectives is underscored by Veliz.[8]

> There exists in the region (Latin America) a resilient traditional structure of institutions, hierarchial arrangements and attitudes which condition every aspect of political (and economic) behavior, and has survived centuries of colonial government. More recently, it not only has successfully resisted the impact of technological innovation and industrialization but appears to have been strengthened by it.

Institutional factors involve the cotton industry as a whole, including cotton farmers, assemblers, millers

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[8] C. Veliz (ed.), Obstacles to Change in Latin America (New York: Oxford University Press, 1965), p. 1.

and retailers. The interrelationships existing between the subgroups and the environmental constraints upon each subgroup influence the mode of economic behavior of the subgroups.

Organizational factors involve the firms which constitute the subgroups, specifically, the internal environment within which owner/managers of firms operate.

Managerial factors involve the owner/managers of the firms in the cotton industry. Their firms are described. The propensity for change and the barriers to change are considered.

Institutional Factors

Six factors provide the subframework for viewing the cotton industry and the norms of behavior of its subgroups.

1. Roles and Activities of Subgroups
2. Occupational Structure
3. Nature of Ownership
4. The Legal System, Roads and Electricity
5. Literacy and Education
6. Programs Oriented to Modernization

1. Roles and Activities of Subgroups

The functions performed by the cotton farmers, assemblers, millers, and retailers will be described. To what extent are the roles of the firms specialized? Do the activities performed by the firms in the subgroups

reflect an unequal distribution of bargaining power? Rationale: Specialization of tasks is indicative of the nature of economic development.[9] The distribution of bargaining power indicates which subgroups can influence the definition of the activities to be performed by firms in the other subgroups.

2. Occupational Structure

The occupational structure of the industry refers to the jobs which people perform in the cotton industry. How many firms are there in each subgroup? How many people derive their livelihood from the activities of the various subgroups? Rationale: The number of firms comprising each subgroup indicates the relative bargaining power of the firms in the subgroups. The number of owners, managers, employees and their dependents illustrates the distribution of occupational status within the industry.[10]

[9]Neil J. Smelser, Social Change in the Industrial Revolution (Chicago: University of Chicago Press, 1959), p. 50. Smelser's theory of "structural differentiation" is used to explain how increasing task specialization in the cotton milling industry resulted in the rapid development of this industry, which in turn was very important in initiating economic development during Britain's Industrial Revolution. S. N. Eisenstadt, "Breakdowns of Modernization," Economic Development and Cultural Change (Chicago: University of Chicago Press, Vol. XII, No. 4, July, 1964), p. 4. W. E. Moore, The Impact of Industry (Englewood Cliffs: Prentice Hall, 1965), p. 317.

[10]Moore, ibid., p. 317.

3. Nature of Ownership

The form of ownership of farms, assembly firms, mills and retail outlets will be presented. Is the ownership and management of firms centralized or diffused? What legal form of ownership describes the firms in the subgroups? Rationale: The relationship between management and ownership indicates the locus of decision making and the source of innovations in a firm. The legal form of ownership of firms provides an insight into the historical development and the pattern of leadership in the industry.[11]

4. The Legal System, Roads and Electricity

The legal system, roads and electricity are major social services which may be available to firms in an urban or rural community. To what extent are these services available to cotton farmers, assemblers, retailers and millers? How do such services appear to influence the operations of these firms? Rationale: These social services can facilitate or retard the use of improved technology or business practices, hence influencing the potential for economic development in the industry.[12]

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[11] N. J. Smelser, op cit., p. 90. I. L. Horowitz, Party Charisma (St. Louis, Social Science Institute: Washington University, 1965), p. 91. E. Shils, "Charisma, Order and Status," American Sociological Review (April, 1965), p. 200.

[12] K. Nair, Blossoms in the Dust (New York: Frederick A. Praeger, 1961), p. 24.

5. Literacy and Education

The literacy rates and school attendance of farmers, assemblers, millers and retailers reflect the education system in the Northeast. What is the level of education and literacy of managers of the firms in the industry? Do more literate and educated managers perform differently than less educated or literate managers? Rationale: Education and literacy may affect change by increasing an individual's awareness for the opportunities for change and development.[13]

6. Programs Oriented to Modernization

Government sponsored programs oriented to economic development of the cotton industry will be described. What is the nature of the programs geared toward change? Rationale: These programs represent an attempt to improve the productivity and standard of living of owners, managers and employees of firms in the industry.[14]

Organizational Factors

Six organizational factors provide the subframework for viewing the operation of the firms in each group in the cotton industry.

[13] Ibid., p. 153.

[14] B. F. Johnston and S. T. Nielsen, "Agricultural and Structural Transformation in a Developing Economy," Economic Development and Cultural Change (Chicago: University of Chicago Press, Vol. XIV, No. 3, April, 1966), p. 289.

1. Production Technologies
2. Raw Material Procurement
3. Marketing and Distribution Procedures
4. Managerial Techniques
5. Financial Incentives and Rewards
6. Costs, Uses and Source of Credit

1. Production Technologies

Production technology refers to the equipment and procedures used by firms in the industry. What technologies are used by firms in the various subgroups? Do firms within a subgroup employ different technologies? Rationale: The productivity of the employees of the firms in the cotton industry is strongly influenced by the production technologies in the firm. The homogeneity or heterogeneity of production technologies of firms within a subgroup may affect the extent to which firms are competitive and likewise, their desire to use better equipment or procedures.[15]

2. Raw Material Procurement

The availability and method of procurement of raw materials[16] used by the firms will be examined. What types

[15] Myron Weiner (ed.), Modernization: The Dynamics of Growth (New York: Basic Books Inc., 1966), p. 263. A. Cohen, "The Technology/Elite Approach to the Development Process," Economic Development and Cultural Change (Chicago: University of Chicago Press, Vol. XIV, No. 3, April, 1966), p. 323.

[16] Raw materials include those items used by a firm in its production process. For a farm raw materials include seeds, fertilizers, etc., whereas for the cotton retailer they include textiles, packing material, etc. Frequently the raw materials used embody production technologies as is exemplified by farmers using hybrid seeds, balanced chemical

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of raw materials do the firms buy? What procedures are followed when the firms purchase raw materials? Rationale: The raw materials which a firm uses are a codeterminant (along with production technologies) of its output and cost of production. In order to attain economic development, new raw materials and/or better procurement procedures are required.[17]

3. Marketing and Distribution Procedures

The marketing and distribution procedures refer to the system of transactions between farmers, assemblers, millers and retailers. What is the volume of sales of firms in the subgroups? How and to whom are sales made? How important are marketing and distribution activities in the firms in the cotton industry? Rationale: The volume of sales by the firms indicates the different degrees of their economic power and how this is manifested in the interactions between the firms.[18] The sales procedures involve the transfer of information concerning consumer preferences, hence the responsiveness of the industry to the preferences of the market place.[19]

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fertilizers, fumigants, etc.

[17]Weiner, op. cit., p. 263. Johnston and Neilsen, op. cit., p. 289.

[18]Imports of cotton cloth could fulfill consumers' demands. However, if the cotton industry is to share in economic development, it must be capable of responding to the wishes of the consumers.

[19]Weiner, op. cit., p. 263.

4. Managerial Techniques

The managerial techniques employed in guiding the activities of firms vary between subgroups and firms within subgroups. What managerial techniques do the firms employ? How actively do firms try to manage their resources to yield the greatest output? Rationale: The way in which a firm's activities are guided reflect the institutional constraints impinging on the managers and also determine how a firm innovates, grows, strives for efficiency or contributes to economic stagnation.[20]

5. Financial Incentives and Rewards

Financial incentives and rewards refer to the earnings of employees, and owner/managers and their desire to increase their standard of living. How much do farmers, assemblers, millers and retailers earn from their activities in the cotton industry? Are there pressures which stress improving their incomes? Rationale: The incomes in the subgroups reflects the allocation of incomes within the industry and also differences in the bargaining power of firms in the subgroups. The income of a firm may also influence its willingness to accept changes which may increase its income in the future.[21]

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[20]Moore, op. cit., p. 314. A. Inkeles, "The Modernization of Man," Conspectus (New Dehli: Indian International Center, Vol. 1, No. 43), p. 143. Johnston and Nielsen, op. cit., p. 289.

[21]Weiner, op. cit., p. 263.

6. Costs, Uses and Source of Credit

Credit relates to the financial resources available to a firm, other than its income and savings. How much and at what cost is credit available? How do firms obtain credit? Rationale: In order to achieve change, credit is often required in order to purchase additional equipment or raw materials or provide a cash reserve in case an innovation fails. The cost and availability of credit thus directly affect the potential for change and the method of extending credit may relate to interactions between firms in the industry.[22]

Managerial Factors

Seven factors provide the subframework for viewing relevant attitudes and values of the cotton farmers, assemblers, millers and retailers.

1. Attitude Toward Risk-Taking
2. Attitude Toward Cooperation
3. Competition
4. Mass Communication Media
5. Social Influences in Price Determination
6. Time Orientation
7. Attitude Toward Compensating Employees

1. Attitude Toward Risk-Taking

Risk-taking refers to a manager's willingness to

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[22]Johnston and Neilsen, op. cit., p. 289.

to undertake activities which may result in adverse consequences. What are the managers' attitudes toward risk-taking? Rationale: The potential for change and the adoption of innovations in a subgroup relates to the owner/managers' perception of risks associated with change. Tradition may magnify perceived risks and minimize the anticipated rewards associated with change.[23]

2. Attitude Toward Cooperation

The attitude of the managers of firms toward co-operation and the extent of cooperation will be examined. To what extent do managers of firms appear willing to co-operate? What are the results of existing forms of cooperation? Rationale: Cooperation among firms within a subgroup tends to increase the quantity of resources needed to achieve change and increase the cooperating firm's bargaining power.[24]

3. Competition

Competition exists between firms in a subgroup and between firms in different subgroups. What types of competition exist and how strong is competition in the cotton industry? What are the manager's perceptions of competition

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[23] E. DeVries, Man in Rapid Social Change (London: SCM Press Ltd., 1961), p. 32. Nair, op. cit., pp. 48-49.

[24] Nair, op. cit., p. 76. S. M. Lipset and A. Solari (eds.), Elites in Latin America (New York: Oxford University Press, 1967), p. 13.

and how does it affect their behavior? Rationale: The operation of the market mechanism and the firms' bargaining power are determined by competition. Consideration of the advantages associated with change are influenced by a firm's competitive situation.[25]

4. Mass Communications Media

The exposure of managers to radio, newspapers, technical journals and television and the impact of such exposure on their behavior will be examined. How much exposure to mass communications do the managers of the firms receive? Is there a relationship between mass communications and the performance of managers and their firms? Rationale: Economic development requires that managers search for and accept change. The mass communications media may be a determinant of innovativeness and higher levels of productivity.[26]

5. Social Influences in Price Determination

The social factors to be examined include (a) cheating on quality or quantity of a commodity sold and (b) the traditional ties binding sellers and buyers. How prevalent are the social factors in the transactions between firms? What is the economic effect of these

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[25]Weiner, op. cit., p. 384. Lipset and Solari, ibid., p. 13.

[26]D. Lerner, The Passing of Traditional Society (New York: The Free Press, 1958). D. Lerner and W. Schramm (eds.), Communications and Change in the Developing

social factors? Rationale: Non-economic factors may play a significant role in the operation of the market mechanism, and in attempts to attain economic development.[27]

6. Time Orientation

Time orientation refers to the manager's reliance on the past, present and future as his reference point in formulating policies of the firm. What is the time orientation of the cotton farmers, assemblers, millers, and retailers? How does the manager's time orientation affect the policies of his firm? Rationale: The managers' time orientation is a central aspect of the traditionalism or modernity of their attitudes. The time orientation also indicates the managers' willingness to employ loans or increases in income for investment or consumption purposes, hence determining the potential for sustained economic development.[28]

7. Attitude Toward Compensating Employees

The views of a manager of a firm toward compensating employees will determine the employees' participation in the fruits of development. What is the basis that managers

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Countries (Honolulu: East-West Center Press, 1967). Weiner, op. cit., p. 99.

[27]E. R. Dean, "Social Determinants of Price in Several African Markets," Economic Development and Cultural Change (Chicago: University of Chicago Press, Vol. XI, No. 3, Part 1, April, 1963), p. 256.

[28]A. Inkeles, op. cit., p. 142.

use to determine how much they will pay employees?

Rationale: If economic development is to take place in a non-centrally directed economy and the government desires that the benefits of economic development be shared by all members of the society, then the managers must pay workers more as the firms become more efficient, otherwise the government must utilize public policy to distribute income.[29]

Conclusion

Data pertaining to the cotton industry and its subgroups are the foundation of the analysis of the factors outlined and the impact of the investment incentive mechanism. The next chapter is a presentation of the sources of these data.

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[29] Ibid., p. 144. Lipset and Solari, op. cit., p. 13. Wide discrepancies in the distribution of income within a society often result in the importation of luxury goods, foreign travel and the investment of funds outside the economy. These forms of spending and saving represent leakages for the economic system which tend to reduce the rate at which the economy develops.

CHAPTER II

METHODOLOGY

The descriptions and analyses in this dissertation are based on both primary and secondary sources of data.

Primary Data Sources

The primary sources of data include interview questionnaires which were completed for 165 randomly selected cotton farmers located in three randomly selected cotton producing counties. Forty-six cotton assemblers were surveyed out of a total population of 129 assemblers located in these 3 counties and 2 other counties. Eighty-two randomly selected retailers located in Recife who serve the mass, low income market (thirty-two of whom sold primarily cloth, the rest selling some cloth among other non-food commodities) were also surveyed. These questionnaires[1] sought a description of the business, the economic aspects of the firms' operations, the buying and selling procedures, the impact of communications media and the attitudes of the

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[1] A more specific statement of the methodology of sampling and questionnaire design may be found in: A Methodology for Examining Economic Processes, Chapters 3-5 and Appendices (MSU, East Lansing: Latin American Market Planning Center, Mimeo, 1966, Recife, Brazil). Due to their length, the questionnaires are not included in the dissertation.

owner/manager toward modernization, change and cooperation.

In addition to these questionnaires, nine cotton textile mills located in and near Recife were studied. The managers of various departments in each firm were interviewed. These interviews dealt with the interviewees' perceptions of the strength of the firm's competition, its relationships with supplier firms, the nature of marketing and distribution activities and production and internal socio-economic characteristics of the firm.

During the period of pretesting the questionnaires, several hundred interviews were conducted with the cotton farm owners, assemblers and retailers. These interviews provide much qualitative data concerning the operation and business practices of these firms.

Secondary Data Sources

The secondary data sources supplement the data generated by the questionnaires and interviews. Studies of the cotton industry sponsored by the Brazilian government and the United Nations describe the historical development of the cotton industry and provide aggregate statistical summaries of cotton production, use, world prices of cotton, acreage of cotton planted and some aspects of textile milling in the Northeast.

The publications of the federal and state development agencies outline the legal provisions of the investment

incentive mechanism and a complete record of the investment projects which have been approved. This data will be heavily relied upon in the analysis of the results of the investment incentive mechanism in the cotton industry.

Secondary data sources will be used in examining the financial and corporate structure of the textile mills. Records from Dunn and Bradstreet, private banks and tax authorities were obtained after guaranteeing that the identity of the mills would be kept ananymous.

The Latin American Market Planning Center[2]

The primary data were generated while the author participated in research conducted by the Latin American Market Planning Center during 1967 in Recife, Brazil. The center was staffed by Brazilian technicians working for developmental agencies, Brazilian university students and an interdisciplinary group including members from Michigan State University's departments of marketing, management, agricultural economics, electrical engineering and communications.

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[2]The Latin American Market Planning Center continued the work of the Latin American Food Study which carried out research in Puerto Rico. Both centers were funded by the United States Agency for International Development and the Ford Foundation and were established to study the role of the market system in selected Latin American countries. During the initial phase in Puerto Rico, research instruments and techniques were developed and were the bases for the research in the Northeast of Brazil.

The object of the research conducted by the Center staff was to describe the existing market system which brought (a) rurally produced agricultural products to the urban centers and (b) industrially produced commodities to the rural areas. After compiling such a description, the Center staff undertook to diagnose the barriers to a smooth and efficient operation of the market system.[3] They then suggested reforms intended to cope with or overcome these barriers, hence providing the basis for increasing the standard of living in the Northeast. The standard of living of the urban residents would increase if the costs associated with bringing food products into urban markets could be reduced.[4] The standard of living of the rural residents would increase if their access to consumer goods and farm inputs were increased and prices fell.[5]

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[3]A smooth and efficient market system should not only be capable of moving goods to and from the rural areas at a low cost, but should also transfer market information concerning (a) new, lower cost production techniques and (b) consumer demands concerning quality and quantity of various commodities at specific prices.

[4]In most underdeveloped economies, the poorest eighty per cent of the population spend about two-thirds of their income on food. Thus, if the cost of food were reduced by 6% in a year, the effect on the poorest members of society would be the same as an increase of their income by about 4%. The effect of reducing food prices is thus immediately felt by those whose standard of living is the lowest.

[5]The importance of more and cheaper farm inputs such as seeds, fertilizer and irrigation equipment is obvious in increasing farm productivity. Of equally great importance are consumer goods which act as concrete evidence of the benefits which result from the higher incomes associated with more farm produce. Thus consumer goods act as incentives which reinforce the farmers' desire to use more farm inputs.

The Center's research program included surveys in the rural areas surrounding Recife (a four state area) as well as in Recife itself. In the rural areas interviews and questionnaires were administered to about eight hundred peasant farmers who produced four of the major agricultural crops. In Recife, the market and distribution system for these commodities (and a few others) were studied through preliminary interviews and questionnaires given to various types of wholesalers and retailers. Another phase of the urban-centered research involved interviewing the owners and managers of most of the manufacturing firms which used raw materials produced in the rural areas or sold commoditites in both rural and urban areas.

The present dissertation draws on all aspects of the Center's research program. Questionnaires and interviews with cotton farmers, assemblers and retailers and interviews with textile mill owners and managers provide most of the data included in the description and analysis of the three sets of factors.

Data

Chapter I presents the Institutional, Organizational and Managerial factors, some specific questions concerning each factor and the rationale underlying these questions. These factors are the dissertation's framework for its description and analysis of the cotton industry and the impact of the investment incentive program.

The following sections specify the sources of information which will be used to answer these questions.

Institutional Factors

1. Roles and Activities of Subgroups

The Bank of the Northeast Study[6] and descriptive statistics[7] based on the farmer, assembler and retailer questionnaires will be used to describe the activities of all subgroups in the cotton industry and the degree to which activities are specialized. The survey data and supplemental interviews will be used to describe the operations of firms in the various subgroups, the value of their sales, and size of firm, hence reflecting the distribution of bargaining power within the industry.

2. Occupational Structure

The number of cotton farms in the Northeast will be determined from statistics on cotton production reported in government publications and the average amount of cotton produced by the farms surveyed. Estimation of the number of assembly and retail firms will be based upon (a) the average volume of cotton handled by each assembler and

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[6]Banco Do Nordeste Do Brasil S/A, op. cit.

[7]Descriptive statistics indicate the frequency that the respective samples fall within categories defined by a question in the questionnaires. Thus, X% fall in one category and Y% in another and so on where X and Y were computed from all the responses to the specific questions.

retailer included in the surveys, and (b) estimates of aggregated sales by assemblers and retailers. Government studies of textile mills furnish data regarding the number of mills and employees. Estimation of the number of dependents will be based upon survey data for farmers, assemblers, mill workers and retailers.

3. Nature of Ownership

The legal form of ownership of farms, assembly firms, mills and retail outlets will be determined from interviews with mill owners and the responses to the questionnaires. The relationship between the owners and managers of firms will be based upon questionnaire responses regarding the owner's geographic mobility. The Bank of the Northeast Study describes the historical development of textile milling. Dunn and Bradstreet reports will be relied upon for a description of the source of the corporate structure of the textile mills.

4. The Legal System, Roads and Electricity

Estimation of the availability of these services to the firms in the subgroups will be based upon questionnaire responses. Correlations[8] of these responses with the modernity and mobility of owners of firms and the size of the firms will indicate the influence of these services on the operations of firms.

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[8]All reported correlations are statistically significant at the 5% level.

A modernity index was constructed which included the responses of the farmers and assemblers with regard to questions involving (a) their feeling toward potential benefits which could be derived from following the advice of experts, (b) their recognition of the lack of "know-how" preventing their output from increasing, and (c) their looking to the future and not only living for today.

5. Literacy and Education

Interviewees were asked how much schooling they had and were then given a short literacy test. Where data are available, these responses will then be correlated with the performance of firms in the subgroup. A description of the education of mill owners will be based upon interview data concerning their schooling.

6. Programs Oriented to Modernization

The respondents to the questionnaires were asked about their knowledge of, or participation in, programs oriented to change. The nature of the programs as described in various government publications, questionnaires and interview responses, will be presented.

Organizational Factors

1. Production Technologies

Exploratory interviews with farmers, assemblers,

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millers and retailers furnish data regarding the types of machinery in use and recently acquired. Questionnaires then asked the extent to which various types of equipment were used and the most recent acquisitions by the respondents. These data will indicate the type and range of technologies in use in a subgroup.

2. Raw Material Procurement

The questionnaires asked what types of raw materials were used by firms. The responses will be correlated with aspects of the performance of the firm. The initial exploratory interviews furnish data regarding the firms' procedure for procuring raw materials.

3. Marketing and Distribution Procedures

The managers of firms surveyed were asked for the volume of the firms' sales, to whom they sold and why, how prices are determined and how the product is transported to the buyer. The importance of marketing and distribution activities in the farms, retail outlets and assembly firms will be indicated by the correlations of these activities with aspects of the performance of the firm. Interviews with owners and managers of textile mills are the source of data for describing the importance of the mills' marketing and distribution activities and their relation to the mills' productivity.

The measure of textile mills' productivity is based

upon the net value of their production (derived from subtracting from the firm's revenue, the cost of raw materials used) and the number of workers and value of investment employed by each firm relative to the others.

4. Managerial Techniques

The questionnaires asked the managers of firms about the type of records kept, the number of employees in the firm, and the organization of activities in the firm. Interview and questionnaire responses will provide data concerning the managerial styles employed and the extent to which managers are oriented toward maximizing the efficiency and productivity of their firms.

5. Financial Incentives and Rewards

The profit margins or income earned by the owner/manager of a firm will be determined on the basis of the costs and revenues of the firm. Also, the exploratory interviews furnish data regarding specific pressures working toward or against change.

6. Costs, Uses and Sources of Credit

Questionnaire responses furnish data regarding the use of credit by the firms in the various subgroups and the sources from which credit is obtained. The interest rates associated with loans and the procedure for obtaining loans will also be drawn from responses to the questionnaires and interview data.

Managerial Factors

1. Attitude Toward Risk-Taking

Questionnaire responses by the managers of the farms, assembly firms and retail outlets will indicate which risks associated with the operation of their firms were the greatest and how these risks influenced the way in which the managers guided the activities of the firm. Another source of risk-taking data is a game of chance that the owner/managers of farms, assembly firms and retail outlets were invited to play. The game of chance involves a house with three rooms, each containing four boxes. One room has three boxes with $5 in each and one empty, another room has two boxes with $20 and two empty and the last room has one box with $50 and three empty boxes. In order to play the game, one had to pay $.50. Interviews with textile mill owners will be the source of data concerning their outlook toward risk-taking.

2. Attitude Toward Cooperation

Interview responses furnish data regarding the forms of cooperation which exist among the managers of the firms. Questionnaire responses furnish data regarding the extent of the various forms of cooperation and the extent to which other forms of cooperation were thought desirable by farmers, assemblers and retailers.

3. Competition

Exploratory interviews furnish data regarding the nature of competition between firms in the same or different subgroups. Questionnaire responses furnish data regarding the managers' perception of competition and the effect of competition on their behavior.

4. Mass Communications Media

Questionnaire responses furnish data regarding the frequency of use and/or ownership of radio, newspapers, magazines and viewing television and/or movies. These data will be correlated with (a) the extent of the firm's innovativeness, (b) some attitudes of the managers, and (c) aspects of the firm's performance. Innovativeness is measured by asking the farmer, assembler, miller or retailer how many of the innovations introduced in the subgroup has he accepted.

5. Social Influences in Price Determination

Interviews with farmers, assemblers, millers and retailers furnish data regarding some of the social factors which affect the price received by a firm. The questionnaires furnish data regarding the extent to which these social factors were a conscious aspect of the manager's performance.

6. Time Orientation

Estimation of the time orientation of the farmers, assemblers and retailers will be based upon the response to questions concerning (a) their choice of accepting a sum of money now or a much larger amount one year hence, and (b) their attitude toward planning for the future versus living for the present. The interviews with the owners of the textile mills furnish data regarding their dependence on procedures established by predecessors.

7. Attitude Toward Compensating Employees

Interview data concerning (a) current wage policies and (b) the familial relationship between the ownership of the firm and the employees are the sources of attitude toward compensation of employees for their work in the firm.

The Investment Incentive Program

At the time of collection of data for this study, a massive investment program was taking place in textile mills. The legal provisions and mechanics of this program[9] will be described, likewise the participation of the textile mills. The descriptions will be based upon annual

[9] A. O. Hirschman, "Industrial Development in the Brazilian Northeast and the Tax Credit Mechanism of Articles 34/18," (Preliminary draft, July 1967), S. H. Robock, Brazil's Developing Northeast: A Study of Regional Planning and Foreign Aid (Washington, D. C.: The Brookings Institute, 1963).

reports issued by the economic development authority of the Northeast. These reports[10] indicate the value of the specific investment projects approved in each state. Data concerning the other commonly owned firms (the textile firm may be part of a group of firms owned by one person) will shed light upon the source of the majority of the funds being invested. The interviews conducted and reports by independent consultants will indicate the anticipated effects and changes which result from some of the proposed and approved investment projects. Thus, the impact of investment on the extent of economic development will be examined. The impact of the institutional, organizational and managerial factors on the proposed benefits of the investment program will be discussed.

Summary

The prime data sources upon which the description and analysis in chapters III through VI are based include descriptive statistics generated from responses to questionnaires given to randomly selected groups of farmers, assemblers and small textile retailers. These surveys are also the basis of correlations with direct and indirect indices of income, and innovativeness or modernity. Additional descriptions are based on (a) interviews conducted

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[10] Superintendencia Do Desenvolvimento Do Nordeste De Industrializacao, Divisao De Pesquisa e Programacao Industrial, Analise Dos Projectos Dos Articles 34 e 18, 1963-67 (Recife, Brazil).

with the managers in the textile mills and (b) exploratory field interviews with the cotton farmers, assemblers and retailers. Historical and supportive evidence is drawn primarily from a study completed by Brazil's Central Bank and Economic Development Authority in the Northeast. Legal documents and published records of approved projects are all utilized in examining the effect of investment incentives on firms in the cotton industry. The following chapters discuss and interpret the results of the data. The responses to the questionnaires are not presented due to their length. The instructions for the computation of the correlations of variables and indices are included in A Methodology for Examining Economic Processes. The computer print-out indicated whether or not the correlations are significant at the .05 level, and as such, the results of the data and not the data itself are presented.

CHAPTER III

THE NORTHEAST BRAZIL COTTON INDUSTRY: INSTITUTIONAL FACTORS

The subject-matter of this chapter are six factors involving the Northeast Brazil cotton industry taken as a whole. They are called, therefore, institutional factors. These include (1) roles and activities of subgroups, (2) occupational structure, (3) nature of ownership, (4) the legal system, roads and electricity, (5) literacy and education, and (6) programs oriented to modernization. A knowledge of these factors, it is believed, is essential not only for a general understanding of the behavior of the cotton farmers, assemblers, textile millers, and retailers, but more to the point of this dissertation, for an understanding of the underdeveloped state of the industry.

1. Roles and Activities of Subgroups

In Northeast Brazil cotton is grown by the sharecropper and farm owner who sells it to an assembler who then sells it to a ginner who separates the cotton fibre from the seed. The ginners usually extract oil from the

cotton seed and sell the oil to edible oil manufacturers.[1] The residue of the seed is generally sold for cattle feed. The fibre is sold to agents who sell to exporters or textile manufacturers located in the Center-South and Northeast regions of Brazil. The cotton cloth is then sold to wholesalers and/or various types of retailers. Due to the large number of various types of firms in the cotton industry, only farmers, assemblers, millers and retailers were singled out for detailed examination and description in this dissertation.

The cotton farm owners and sharecroppers are generally small operators whose primary cash crop (from which two-thirds of their income is derived) is cotton. These farmers also plant corn and beans and some have a few cows, horses, pigs, goats and chickens. The secondary crops and animals are usually meant for family consumption and, in part, result from the fairly large average farm size of 259 acres.[2] Of the farm owners interviewed, those who had diversified their operations and were raising various kinds of animals, especially cattle, for sale in local markets were also the farmers who had adopted more of the innovations relating to growing cotton.

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[1]The edible oil manufacturers process the oil into salad oil, margarine, a cooking fat, or soap. Recife has two large edible oil manufacturers and four smaller soap manufacturers.

[2]The largest farm included in the sample has about 4,700 acres. About 76% of the farms had less than 250 acres. This land is generally semi-arid. Most farms and especially the larger farms have tenants.

Because the cotton production of individual farmers is so small, the function of delivering their cotton to the ginners is performed by assemblers. Each assembler buys cotton from approximately thirty-four farm owners. Sixty-eight percent of the assemblers are also engaged in farming. These assemblers' farms are about 150% larger than the average farm owner. Some assemblers are brokers who work for a specific gin and work with the ginner's capital. About fifteen such assemblers or brokers sell cotton to each ginner at assembly centers located near the gins.

There are 421 gins, in 187 municipalities located in all nine states in the Northeast.[3] Each ginner processes the raw cotton produced by 500 farm owners and sells the fibre for future delivery to textile mills and exporters. On the average, the ginner stores the cotton for 4-5 months until his customer wants it. Among the rural-based firms, the cotton ginner is the largest and most influential.

In Recife, there are nine cotton textile mills, the largest concentration of mills in one area in the Northeast. These firms buy the fibre for manufacture into blankets, sheets, sacks (for sugar and coffee), hammocks and varying grades of textile. One firm also uses its cloth to manufacture clothes.

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[3]Banco Do Nordeste, op. cit., p. 72.

There are many different varieties of retail establishments including specialty yard good retailers, department stores and small retailers who handle cloth, plastic goods, shoes and some cosmetics. These small operations are the most common type (hence the reason for their inclusion in the dissertation) and are found throughout the Northeast in both rural and urban centers. They have a fixed location or travel to several one-day fairs.

From this brief description it may be seen that there are numerous farmers and retailers, fewer assemblers, still fewer ginners and less than 65 textile mills in the Northeast. Because some firms are much larger than others, the interactions involve additional agents, as is the case with regard to the textile mills which sell to thousands of retailers and buy from numerous gins. However, it may also be seen that the larger, more wealthy farmers have begun diversifying their activities by raising more animals or acting as assemblers. These, and other innovative activities, indicate an already existing body of farmers who could possibly be used to a greater extent as agents of change.

2. Occupational Structure

This section estimates the number of people whose livelihood primarily depends upon the cotton industry.

Since there were about 750,000 tons of raw cotton[4] produced in the Northeast and the average farm owner sells 3.1 tons, this would indicate the existence of 241,936 farm owners and an additional 1,790,326 dependents.[5] However, about 50% of the farm owners lease land to tenants. Since the farmers leasing land have the larger farms, one could conservatively estimate that on average, they each have two tenants. This would add another 250,000 leasees and 1,850,000 dependents. The total number of cotton farmers and leasees and their dependents would be about 4,140,000 people.

This estimate is corroborated by considering the percentage of the total number of rural residents in the Northeast who are dependent on the cotton industry. Cotton accounts for 22% of the value of agriculturally produced commodities. The average income of the cotton farmer is substantially lower than farmers producing other major crops which were studied. The estimate indicating that 25% of rural residents are involved with the cotton industry thus seems reasonable.

Each assembler serves 35 farm owners, indicating there are 7,143 assemblers and 30,715 employees and an additional 373,521 dependents for a total of 411,279 people.[6] The number of employees working in Recife's nine

[4]Raw cotton contains both the fibre and the seeds. The seeds account for about 70% of the weight of the raw cotton.

[5]Each farm owner interviewed had an average of 7.4 dependents.

[6]The assemblers include:

textile mills in 1966 was about 9,350 workers and throughout the Northeast totaled 30,000 workers and about 180,000 dependents for a total of 210,000 people.[7] The number of small cotton retailers is about 50,000 who have about 320,000 dependents.[8]

Thus, the groups in the cotton industry are comprised of:

a. 490,000 cotton farmers and leasees and 3,650,000 dependents
b. 7,143 cotton assemblers and 59,289 dependents
c. 30,715 employees of assemblers and 314,232 dependents
d. 55 cotton textile millers and 330 dependents
e. 30,000 cotton textile mill workers and 180,000 dependents
f. 50,000 cotton retailers and 320,000 dependents

This total of 5,131,854 people indicates the extent to which the cotton industry partakes in the economy of the

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vertically coordinated	- large	10.9%
non-vertically coordinated	- large	0.8
registered	- small	30.2
non-registered	- small	34.1
very small in villages		14.7
itinerant		9.3

[7]As is discussed in a later chapter, this large number of employees is being quickly reduced as investment in new machinery occurs.

[8]The average small retailer sells about $550 of cloth (valued at wholesale prices) per year and the value of cloth sold by the millers' representatives and the wholesalers to these retailers is about $27,500,000. Each retailer has on average 6.8 dependents.

Northeast, with its twenty-four million inhabitants.

These data also indicate the magnitude of the problem of improving the plight of the farmers, assemblers and retailers. The standard of living of over 20% of the population in the Northeast has for many years depended upon their productivity as members of groups which constitute the cotton industry.

3. Nature of Ownership

The ownership of a firm by its managers means that the managers will directly benefit from the best administration of the firms' activities. The owners' economic status depends upon the historical development of the industry or competitors who are the source of productive innovations. Thus, the following description concerns the historical development of the industry and source of innovations in addition to the existing forms of ownership of the firms in the industry.

How did the cotton industry attain its current predominant status? Much of the emphasis on cotton production stems from the assured market for cotton fibre by exporters and Brazilian textile mills. In the 1850's and 1860's, trade expanded and commercial and industrial firms were organized. British banks established branches in Brazil and railroads and telegraphs were built.[9] As a result of the British

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[9]Kuznets, Moore and Spengler (eds.), op. cit., p. 37.

influence[10] and the high import duties, British trading firms established textile mills by providing machinery and managers.[11] By 1866 there were nine such mills of which six were located in the Northeast, and by 1875, of the twenty-nine textile mills, thirteen were located in the Northeast. Currently, the large textile mills are owned by individuals who have other corporate holdings (see Table 3:1). Since the majority of the owners of these large textile mills are members of the very small economic elite, there are often intermarriages and family connections between them. For instance, three of the five larger mills are owned by a brother and two sisters. The sisters have since handed over the management of the mills to their husbands, each of whom also inherited extensive corporate holdings. An important part of many of these corporate holdings are sugar plantations.[12] Thus, the joint ownership of textile mills and sugar plantations places in the hands of a few people the control of the two major agricultural crops produced in the Northeast.

The assembler firms are much smaller; 98% of them are operated by their owners. The predominant form of

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[10] In British industrial development, the cotton textile industry played the major role, especially during the period 1780-1840. By the 1860's textile milling was highly developed and beginning to lose its dominant position.

[11] Kuznets, Moore and Spengler (eds.), op. cit., pp. 38-9.

[12] Currently land reforms and the small profitability of sugar plantations have led many members of the economic elite to dispose of these plantations. Some of the corporate groups not currently having a sugar plantation probably owned one in the past.

Table 3:1.--Summary of Corporate Holdings of Owners of Textile Mills Located in Recife

Group	Value of Sales of the Mills in 1966	No. of Employees in the Mill	Total No. of Firms Associated with Cotton	No. of Firms Associated with Sugar	No. of Other Corporations	Total No. of Firms in the Group
	$000's					
A	6,819	1,627	4	-	6	10
B	2,857	713	2	1	8	11
C	1,482	500	1	2	7	10
D	13,637	2,034	4	-	4	8
E	2,227	705	1	1	3	5
F	5,636	2,000	6	3	10	19
G	1,455	620	1	2	5	8
H	2,727	420	1	1	2	4
I	247	115	1	-	-	1

ownership resembles a simple proprietorship (78%) followed by family partnership (11%) and the corporate form (11%). Only 17% of the firms have a branch. Nineteen percent of the assemblers do not even use a building to conduct their business. The location of the others is usually on a main street of a town (42%) or a farm (24%). Half of the assemblers indicated that they did not feel their business was worth more than $500.

The cotton farmers interviewed are mainly owners although 6% of the sample were tenants who shared their produce with the landowner. As has been noted, the farms are fairly large and most of the larger farmers formally rent some of this land to people who also grow cotton. The rental is usually in the form of one-half to two-thirds of the produce for which additional services are also provided to the leasee. These services include seeds in 80%, insecticides in 60%, and a plow in 40% of the arrangements. Thus the production techniques used by the cotton sharecroppers will generally be no better than those of the landowner. Since the sharecroppers must share the yield with the landowner, they would not receive the full benefits of innovating.

Like the farmers and the assemblers, the retailers all own their businesses, which are very small and centered completely around the owner. Hence, we find very small individually owned and operated firms involved in growing the cotton and selling it to the consumer. The assemblers

are somewhat larger but far smaller than the textile millers in terms of their command of economic resources and degree of economic independence. The standard of living of farmers, assemblers and retailers is directly related to the extent of innovativeness because in all cases, except for sharecroppers, the economic results of innovation would directly accrue to the owner of the firm.

The form of ownership and management of the firms in the industry does not differ except for sharecroppers. Are there any sources of innovations among the different groups of firms which tend to reduce the historically-based bargaining power of the textile mill owners?

Table 3:2.--Source of Most Recently Adopted Innovations

	Neighbor	Relative	Technician or Expert	Local Businessman	Other
Farmer	43%	22%	10%	6%	19%
Assembler	35%	16%	15%	--	34%

From Table 3:2 it seems that most of the farm owners and assemblers look to their neighbors or relatives as a source of innovations. Their reliance on professional change agents or manufacturing firms is of much less importance. Since most innovations are generated from within the agricultural community and not from external sources, innovations have been relatively minor and this may have

contributed to the relatively low yield of cotton grown per acre in the Northeast.

The more innovative and larger assemblers are generally geographically mobile. Although sixty-two percent of all assemblers were born in the municipality where their businesses are located, the larger and more innovative assemblers generally come from other municipalities. Thus, the assemblers who have left their place of birth to become assemblers in another municipality have more readily adopted innovations and their businesses have become larger than the indigenous assemblers.

In the cotton industry, the textile mills are the only firms featuring a division of ownership and management. Although decision making and broad policy decisions rest with the owners, these owners often divide their attention on the numerous corporations which they own. The other firms are smaller and generally owned and managed by the same people. Due to a lack of external change agents, the innovations adopted have been generated within the subgroup and have not been associated with increased bargaining power by the farmers, assemblers or retailers relative to the textile mills.

4. The Legal System, Roads and Electricity

Being the first large scale firms, the textile mills were the first to use electricity and, when necessary,

rely on the legal system to uphold contracts in which they have entered.

Only 7% of the farm owners and a much smaller percentage of the leasees have electricity. Of the various grades of rural roads and animal trails, those farmers having a graded or paved road also exhibit a more modern set of values. Thirty percent of the assemblers had electricity which is probably related to the electrification of the villages in which some of them live. In general, assemblers have better roads than farmers and the larger, more mobile assemblers have located themselves near better roads than those serving the smaller assemblers. The fact that many small assemblers have not relocated where the roads are better, indicates that they follow a more traditional pattern of operation. As the system of roads is continually extended additional larger assemblers will develop and replace many of the small ones. Thus, the expansion of services available to rural communities provides the opportunity for some assembly firms to grow and hence, an increased potential for the diffusion of innovations among farmers.

If debts owed to the assemblers by farmers are unpaid only 5% of the assemblers indicated a willingness to go to court. The rest would wait for another year or try to persuade the debtor to make some effort of repayment. The reasons for the unwillingness to go to court to enforce contracts, loans, etc., are the lack of a functioning

legal system as well as the extensive network of personal relationships and sympathy for the plight of the farm owner who cannot meet his debts.

The small retailers, many of whom move from fair to fair, have primitive "retail outlets" and make minimal use of electricity even though it is available. The non-use of electricity is indicative of the simple nature of their operations. Also, by selling for cash and being so much smaller than their suppliers, they have little cause to rely upon the existing legal framework.

Only the large textile mills extensively rely upon community-oriented services such as roads, electricity or the legal system. The smaller farmers and assemblers do not have such services available; and the small retailers who do have access to them cannot use them in their primitive retailing function.

As electricity and roads become increasingly available throughout the rural areas, the number of small assemblers would appear to diminish as they are replaced by more modern and larger assemblers. The effect of a reduction in the number of assemblers may aid in increasing the efficiency of assembly operations. Also, the lack of these services to farmers places a major restriction on the technologies which they can employ. The inadequacy of roads makes it difficult to physically move agricultural produce; and the underdeveloped legal system hampers long

run planning of marketing activities by the farmers, assemblers and retailers.

5. Literacy and Education

The school attendance and literacy rates of cotton farmers, assemblers, millers and retailers vary substantially. Within the subgroups, the school attendance and literacy rates also vary and are related to the performance of the owner/managers.

School attendance by urban and rural residents is free through the sixth grade. Many of the rural "schools" have a barely literate "teacher" whose prime function is the care of the children, for which the teacher may receive a salary of as little as $2.00 per month.[13] Fifty-six percent of the farmers attended school and only 7% attended beyond the fourth grade. When interviewed, 29% of the farm owners demonstrated the ability to read and comprehend a simple ten-word message. The cotton assemblers were slightly more educated; 79% attended school, 11% going beyond the fourth grade. The retailers, on the average, have 5 to 8 years of schooling although only 29% attended 5 or more years. The textile mill owners and managers were all literate and had not only completed high school but many had college degrees, especially in

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[13]The chairman of a rural school board disclosed during an interview a complaint which their teacher had lodged. Not only was her salary of $2.00 per month inadequate, but she had not been paid for six months.

law and engineering.[14] It is clear that there are very wide discrepancies between the availability and quality of educational facilities for the textile mill cwners and managers vs. the farmers, assemblers and retailers.

Although the educational system in the rural areas is deficient, it should be noted that the more literate farmers are more innovative, obtain a higher price for the cotton they sell, and as a result have the largest value of farm sales and income. These farmers also possess a more modern set of values.

However, when questioned about ways in which they could increase productivity, the farmers most frequently responded that they did not know. The need for knowledge is also indicated by the fact that 67% of the retailers indicated that they would like some information as to how to modernize and 61% expressed a desire to improve their business.

The general level of education and literacy corresponds with the sophistication of the tasks performed by the firms. Those farm owners and assemblers who are more literate are also more modern and innovative. However, literacy levels do not appear to be correlated with the desire to improve. Thus the widespread provision of education can upgrade the techniques and tasks performed

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[14]One mill owner attended the Massachusetts Institute of Technology in addition to a Brazilian university. Many of the families comprising the economic elite send their children to American universities to learn about sugar and cotton technologies.

by firms in the industry. The mechanism by which this is accomplished is the increasing innovativeness and modernity of the attitudes of the owner/managers.

In order to reduce the rate of illiteracy a government sponsored literacy crusade is now trying to teach reading fundamentals to one million people a year. This very large program is running into some problems, especially in the rural areas where people work in the day and the lack of electrification reduces the opportunity to teach reading skills at night. Clearly, increasing the extent of literacy is a positive program, the economic benefit of which would be greatly enhanced if technical assistance were also provided, especially to those who indicate a desire to learn about ways to improve their productivity. Technical assistance and literacy upgrading might aid the farmers, assemblers and retailers in ways analogous to the way textile mill owners have been aided by foreign technicians providing advice as to how they should modernize.

6. Programs Oriented to Modernization

The most significant attempt to induce modernization of the cotton industry and the economy of the Northeast has been through the investment incentive mechanism. The program permits current manufacturing firms, or individuals wishing to establish such a firm, to submit an investment proposal to the federal government's economic

development agency for the Northeast.[15] This agency considers the merits of the proposal and grants incentives. The incentives range from import duty exemption on equipment that cannot be bought in Brazil to permission for the firm to obtain a portion (usually 25%, 50% or 75%) of the required investment funds from firms having "34/18" deposits. The "34/18" deposits refer to articles 34 and 18 which allow all corporate taxpayers in Brazil to deposit up to 50% of their payable taxes in an account at the Central Bank. These funds may then be used for investment projects for the Northeast which have been approved by the development authority. As is evident, these are very positive encouragements oriented to inducing increased rates of investment in manufacturing firms operating or being established in the Northeast. Additional support was extended to textile milling firms when international experts familiar with the most current technologies in milling were employed by the government to act as consultants to the textile mill owners and the development authority.

The situation which the farmers, assemblers and retailers face is not nearly so encouraging. Eighty-nine percent of the farm owners recognize that they lack "know-how";

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[15] In 1960 the federal government of Brazil created an agency called SUDENE or Superintendent for the Development of the Northeast. This agency receives a portion of general tax revenues and also works closely with the Alliance for Progress and the International Development Bank.

however, the less the literacy and the less modern the views, the smaller the recognition of the lack. Only 10% of these farmers have ever attended an agricultural extension meeting (these 10% are more literate and more innovative). However, seventy-two percent feel that government technicians or extension agents are needed and eighty percent express a belief that goernment programs will aid the farmer in solving his problems. These data indicate that even though there has been little exposure to pressures to modernize, the farmers recognize their deficiencies and appear to be receptive to government agents stressing directions in which they can change farming techniques, procedures, etc.

Among the retailers interviewed, seventy percent feel that government technicians could help improve their conditions but 63% see government programs being designed only for a small group of businessmen. Thus, though the majority would like help, they are skeptical about their chances of receiving it.

Ninety percent of the cotton assemblers desire to learn new methods in order to improve their business practices and 81% feel that a lack of "know-how" on their part contributes to restricting their growth in output and productivity. Seventy-eight percent of the assemblers feel that storing raw cotton increases their profitability since prices of cotton rise throughout the year from the low after-harvest prices. However, 94% indicate that there are no government warehouses in which to

store cotton; and they say it is this lack of facilities and credit which prevents them from performing the storage function. This means that the gins are forced to do some storage. Generally the ginners try to sell the processed cotton shortly after harvest. In the rural areas there is a glut of activity in the cotton industry following harvest and a long period of no activity. This uneven handling of cotton requires an investment sufficient to handle the glut but which then leaves the investment idle for a part of the year. In view of this situation, 87% of the assemblers feel that they would be better off if government technicians extended technical assistance to them. As with the farmers, 75% indicated that government could be counted upon to help them in solving their problems. This optimistic feeling is not based upon current governmental programs aimed at the farmer or assembler but is probably a residue of the Goulart[16] policies which favored substantial agricultural reform and assistance.

It is evident that the pressures to modernize which emanate from the government are geared mainly to the textile mills; the farmers, assemblers and retailers are rather neglected. The textile mills are the most developed and largest firms and are the only group in the cotton industry which is substantially modernizing.

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[16]The Goulart government was replaced by a military-backed government in 1964.

Conclusion: Institutional Barriers to Change

The foregoing sections describe some of the environmental constraints, bases of norms of behavior and the interaction of groups comprising the cotton industry of Northeast Brazil. It is clear that while the largest group in this industry is the farmers and the smallest the mill owners, the bargaining power is greatest for the mill owners and least for the farmers. This situation seems likely to continue into the distant future, since the pressure to modernize and the response to this pressure is the greatest among the mill owners and least among the farmers.

This situation results partly from the historical development of textile mills and the emergence of large corporate groups concentrated in the hands of the owners of these mills. Another major factor is in the economic interaction of firms in various groups in the industry. The large number of independent small farmers, assemblers and retailers results in atomistic competition between firms within each group. Atomistic competition features a large number of firms, each of which is so small that it has little bargaining power and its economic destiny results from the performance of its competitors. The result is poor flow of market information between the groups of firms, very little innovation and slow rates of diffusion of such innovations as do occur.

The poor functioning of this market mechanism, resulting from the existing institutional base, is further reinforced by the lack of educational facilities, electrification, roads and legal system among the retailers, farmers and assemblers. The required community-oriented investments are inadequate in the rural areas. Low literacy levels resulting from the existing educational system are more prevalent among the poorer, more traditional farmers and assemblers.

Given the large number of people who work in, and depend upon, the cotton industry, increasing the quantity and quality of electrification, roads and the school system would certainly seem to be beneficial. The fact that the farm owners and assemblers who had better roads and were more literate were also more modern suggests that such steps would have a significant modernization effect. This would result in increasing the economic power of the weaker firms, thereby strengthening the market mechanism.

CHAPTER IV

THE NORTHEAST BRAZIL COTTON INDUSTRY: ORGANIZATIONAL FACTORS

The subject-matter of this chapter are six factors involving the individual firms in the Northeast Brazil cotton industry. They are called, therefore, organizational factors. These include (1) production technologies, (2) raw material procurement, (3) marketing and distribution procedures, (4) managerial techniques, (5) financial incentives and rewards, and (6) costs, uses and source of credit. Thus, the chapter examines some of the variables affecting the different levels of productivity of the firms.

1. Production Technologies

The textile retailers in the sample represent perhaps the simplest type of firm. Their basic equipment consists of a table and/or booth. However, 55% of the sample do not have a table and 45% do not have a booth. The retailers without either simply lay their goods on the ground. However, since the retailers interviewed travelled from fair to fair or were located in a permanent fair, the simplicity of their equipment is understandable.

The prime variable which affects their level of sales, hence productivity, was thought by 83% of the respondents to be their location.

Similarly, the farmers were not well equipped. Although they generally farm in semi-arid regions and there are many reservoirs[1] located in such regions, 91% have no form of irrigation. Furthermore only 28% have a machine sprayer (for insecticides), 50% have a scale for weighing the cotton, 4% a tractor and 1% a hand planter machine.[2] Yet 74% of the farmers did indicate that they would plant more cotton, beans, etc. if they could rent a tractor. This response indicates a willingness to use a tractor on a rental basis and demonstrates the extent to which productivity is restricted due to the lack of less labor intensive capital equipment.

The assemblers are essentially agents who collect cotton for sale to ginners. Their most recent innovation involves the control of insects. The major factor which they thought limited their expansion was not equipment availability, but rather a combination of inadequacy of price and marketing information and lack of working capital.

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[1]Since the late 1800's, the principal government efforts in the rural areas focused on drought control. These efforts resulted in careful management of the water resources and the construction of many small reservoirs. The prime use of such reservoirs appears to be for watering livestock.

[2]This lack of capital equipment is matched by a lack of consumer durables--e.g., only 7% own refrigerators and 6%

From the historical description of the industry, it is clear that the major use of machines and the largest investment would be in textile mills. However, until the recent increase in investment in these mills, the equipment used was very old and inefficient.[3] Looms used were frequently purchased before and during World War I. Recently, however, with the investment incentive program, some firms are rapidly modernizing. But others have not yet begun. The result is a great range in production techniques employed. Thus, one of the textile mill owners interviewed had recently acquired one of the most sophisticated computers[4] to run his mill and billing operations; whereas another mill uses hand operated looms which became obsolete in England in the 1780's. This great gap in the production technologies employed is a function of the inefficiencies in milling operations and the poorly functioning market mechanism. A smoothly functioning market would make older technologies uneconomical, hence forcing the adoption of newer technologies.

Only among the textile mills, then, is there any sophisticated technology. The use of investment incentives

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a high luminescent kerosene lantern. On the other hand, 68% of the interviewees own sewing machines--a prestige item.

[3]Research conducted by SUDENE's Office of Applied Economic Research indicates that in 1960, 81% of the looms in use in textile mills in the Northeast were produced between 1890 and 1930.

[4]An I.B.M. System: 360 was ordered and was the first of this generation of computers to be delivered to the Northeast of Brazil.

has resulted in a very wide disparity in production techniques. While this investment incentive mechanism aids the mill owner who wants to modernize, it does not appear to aid the farmer, assembler or retailer who also wants to. Because the farmers, assemblers and retailers have such meager capital resources, direct loans would be effective only if supplemented by an increased flow of technical information.

2. Raw Material Procurement

The firms in the various groups being studied buy specific raw materials to which they add the goods or services that they produce. To a large extent, the nature of what these firms produce and the production technologies that they employ depend upon what and how much raw material is procured.

The average textile mill in Recife buys more raw materials than other firms in the industry. For the mills in Recife the value of cotton fibre bought in the Northeast was $5,150,000 (21.4% of revenue) in 1966 (other inputs, e.g., electricity, chemicals, and dies, cost $2,750,000 or 12% of revenue). In purchasing cotton the mills make a practice of buying from many different areas in the Northeast so that they are able to mix various qualities and length of fibre, hence avoiding a non-uniform and lower quality product.[5] Also, by buying cotton from various

[5] If a concentration of short fibre cotton is used, the thread produced is weaker and special adjustments may have to be made in the spinning equipment.

sources, the mill is able to reduce its dependence on a ginner for cotton and maintain a strong bargaining position in determining the price of cotton. The textile mills clean and comb the cotton. They do not encourage the ginner to clean the cotton fibre thoroughly before selling nor do they try to encourage the growth of better grades of cotton. Because the Northeast grows more cotton than its mills use, the mill is able to buy cotton fibre when it is needed, hence forcing the ginner to store cotton fibre. This also reinforces the mills' bargaining position. With regard to the other raw materials used, the long-term operation of the mill with the same production techniques permits the establishment of regular contractual agreements between these suppliers and the mill.

Whereas the textile mills appear to suffer from no uncertainty regarding their suppliers of raw materials, this is not true of the farmer, assembler and retailer regarding theirs. Only 37% of the retailers do not believe that they are dependent upon their suppliers. These suppliers (3-5 per retailer) in most cases are relatively small wholesalers or manufacturers' representatives who are not much more affluent than the retailer.[6] The

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[6]The potentiality for conflict between the small retailers and the textile miller stemming from a poor bargaining position and low income of the retailer is reduced by the wholesalers and manufacturers representatives. Because the retailer deals with a small agent or wholesaler, he does not think of the miller as wielding much power in the transaction. Thirty-nine percent of the retailers buy from wholesalers, and 32% from manufacturers representatives and only 29% directly from the manufacturer.

retailers do not feel that there is an insufficient supply of cloth; but one-third indicate that their main reason for not being able to expand is a result of an irregular supply of cloth. Furthermore, 90% of the retailers indicated that the amount of cloth purchased is determined by their ability to pay. The relationship which exists between the supplier and retailer is quite stable as is indicated by the fact that 72% of the retailers buy the same quality of cloth each time and 64% buy from the same suppliers. It seems clear that the purchasing pattern and bargaining power of the large number of retailers provide a predictable, stable market for the textile mill. This large number of retailers is also important in reducing the potential responsiveness of the textile mill to consumer demands since only 46% of the retailers feel that they know what their customers want and 40% pass such information back to their supplier. Presumably, such information is similarly filtered and screened by the wholesalers and manufacturers' representatives before it is transmitted to the sales department of the textile mill. Thus, the textile mill receives very little consumer information through the distribution network.

The farmer employs very crude and basic production techniques. Use of inputs is very sparse; only 8% use manure, 6% chemical fertilizer, 4% tractors. However, 65% use insecticides. The use of such inputs is closely related to the farmers' perceptions of their availability in any

one store in the municipality. This is substantiated by the fact that 12% knew where chemical fertilizer was obtainable, 16% knew where a tractor could be rented and 88% knew where to buy insecticides. Thus, inputs which directly affect the farmers' productivity are not used because of their perceived unavailability. The perceived unavailability and low rates of usage of farm inputs also influence the farmers' knowledge about the inputs. This is clearly illustrated since only 29% of the cotton farmers claimed to know what chemical fertilizers were and 44% indicated that they were probably hard to use. However, 87% of these farmers thought that the use of chemical fertilizers would probably be profitable.

Many inputs are not readily available because of the supplier's perception of a lack of an adequate market.[7] The conditions circumscribing low levels of productivity apparently can be overcome if such inputs are made available, as in the case of the recent use of insecticides. Those farmers who know about the availability of such inputs are more literate and educated, have more modern attitudes and also are more innovative. This might indicate that the massive literacy campaign also could include information on such inputs and their benefits. Coordinated with information dissemination efforts might be efforts to increase the availability of inputs. Currently, farmers

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[7]A separate study of 44 such suppliers of farm inputs supports this contention.

spend much time travelling long distances to the weekly fairs.[8]

The assemblers buy the relatively small amount of cotton produced by the individual farmer. Fifty-four percent restrict their purchases to the municipality in which they live, 26% buy in other municipalites and 20% also make purchases in other states. On the average they buy from about thirty-five farmers. Nineteen percent also buy cotton from other smaller assemblers. The larger assemblers buy cotton from a larger number of farmers, not merely from larger farmers. Generally, assemblers feel that the farmers do not cheat on the quality of cotton; but 57% indicate that on occasion the farmer will try to cheat on the weight by including stones in the cotton. Their purchases of cotton average about 15 tons, of which 2% is bought before the harvest, 3% after the harvest and 95% during the harvest. This indicates that the farmers desire and need to have the money right after harvest even if the prices are lower. About 11.5% of the cotton is bought on the farm, and the rest is purchased at the location of the assemblers' business.

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[8]The purchase of farm inputs and consumer goods by the farmers is made at the weekly fair, usually located at the municipal center. Although 21% of the farmers must travel more than 55.8 miles to the fair, the average farmer travels 20.8 miles. In getting to the fair, 9% walk, 50% ride animals, and 11% go on someone else's truck (such as the local assembler). This indicates at least a full day or perhaps two days are devoted to weekly shopping.

It is thus clear that major determinants in setting the price of cotton for the farmer are the bargaining position of the textile mill and the large number of farmers selling their crop immediately following harvest. The low prices of cotton received by the farmer and his low yields (partly a function of the lack of available inputs) result in the farmers' very low level of income. The intermediaries who deal with the small retailers serve to reduce the flow of market information to the textile mill. The raw material procurement practices of farmers, assemblers, millers and retailers reflect little assistance extended by suppliers and result in low linkages[9] which emanate from the cotton textile mills. Since the mills make a practice of buying from various ginners, the ginners cannot gain economies of larger scale production. Similarly, cotton assemblers service the small scale needs of the ginner. The small retailers are treated as marginal outlets by the mill or wholesaler. These outlets reach the sparse market serving very low income earners who want the cheap cloth.

3. Marketing and Distribution Procedures

The interrelationships between the various types of firms in the cotton industry have been analyzed from

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[9]Linkages refer to the positive developmental effects of modernization in milling on the farmers and assemblers (called backward linkages) and retailers (called forward linkages).

the persepective of the purchase of raw materials. This is only one aspect of the nature of the interrelationship. Marketing and distribution procedures are complementary aspects.

The textile mills in Recife sold about $24 million in textiles in 1966.[10] Of these sales, 12% were in Recife, 14% in the rest of the state, 25% in the rest of the Northeast, and 49% in the developed South-Center region of Brazil. The commodities sold include cloth, sacks, hammocks, blankets and sheets. The mills perform very few marketing activities. Most of the textile mills have a separate selling organization which is part of the larger corporate groups described in Chart 3:1. One of the firms interviewed maintains a chain of hundreds of small textile specialty stores as outlets for its production as well as for other non-competing cotton textiles. However, of the textile mills studied, the more productive firms expend more money on advertising and try to stimulate consumer demands.

The small retailers generally sell the cloth to people with average and below average earnings in the urban centers and to farmers at the weekly fairs. Eighty-six percent report that customers bargain with them and 83% feel that customers want the same quality cloth every

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[10]Since the use of cotton fibre by mills in Recife is about 30% of the total use by all textile mills in the Northeast, sales of textiles by the mills would approximate $80 million at wholesale prices.

time they make a purchase. This reinforces the retailers. The average weekly sales of these retailers is a meager $36.24. Only 46% of the retailers believe that the value of their sales would increase if they reduced their mark-up and prices. Furthermore, 84% would sell cloth at a lower price than their competitor only if they were able to buy cloth at a lower price. It is thus evident that there is little price competition among these retailers; the modern retailing notion of trying to have a high volume of sales associated with low margins is generally absent. The reason such modern retailing procedures cannot be adopted by these small retailers is obvious when one considers the very small earnings which can be derived from weekly sales of $36.24. In addition, sales fluctuate due to week-to-week irregularity of demand for cotton textiles associated with the customers' low incomes.[11]

The amount of raw cotton sold by farm owners in the Northeast is about 740,000 metric tons, about 40% of all of Brazil's cotton production. The 740,000 tons of cotton yield 104,000 tons of fibre, of which 71,000 tons are used in the Northeast, 13,000 tons are shipped to other parts of Brazil and 20,000 tons are exported. The use of cotton fibre in the Northeast does not coincide with the location of production as Table 4:2 indicates.

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[11]This does not affect the regularity of sales of the textile mill since the variability of sales among the large number of retailers tends to be offsetting.

Table 4:1.--Cotton Production by State[12] (Tons)

Maranhao	Piaui	Ceara	Rio Grand do Norte	Paraiba
Metric Tons				
62,591	29,241	206,574	104,965	158,432
Percent				
8.4	4.0	27.4	13.9	21.0

Pernambuco	Alagoas	Sergipe	Bahia	Northeast	Brazil
Metric Tons					
94,369	29,569	19,358	48,339	743,438	1,919,605
Percent					
12.5	3.9	2.6	6.3	100.0	

Thus, transporting the cotton from the farm to the assembler to the ginner involves much effort. From the ginner the fibre is sent for sale to the domestic or international market. Also, the cottonseed oil is sent to urban centers for processing and the residue seed is sold to cattle farmers for use as animal feed. Some of the seeds are returned to the assembler for distribution to the farmer.

In the numerous transactions between the farmers and assemblers, the farmers indicate that 81% sell to only one assembler and 13% to two assemblers. Furthermore, 82% indicate that they had negotiated with no more than four assemblers. Seventy percent of the farmers sell all of

[12]Banco Do Nordeste Do Brasil A/A, op. cit., p. 54.

Table 4:2.--Use of Cotton in the Northeast by State.[13]

Maranhao	Ceara	Rio Grand do Norte	Paraiba
(Tons)			
4,000	8,000	1,000	6,000
Percent			
5.6	11.3	1.4	8.5

Pernambura	Alagoas	Sergipe	Bahia	Northeast
(Tons)				
26,000	10,000	10,000	6,000	71,000
Percent				
36.5	14.1	14.1	8.5	100.0

their produce at one time and an additional 19% on two occasions. All sales take place between September and December because the farmers' storage capacity is limited to about a half ton. Thus, at harvest time the market is glutted and prices paid to farmers are 6-10% lower than prices after the harvest. Twenty-two percent sell on credit, 29% occasionally sell on credit and 49% sell cotton for cash. Another reason for sale during the harvest is that 42% of farm owners owe money (to the assembler) and 31% need the money to buy food and medicine for their family. Clearly the farmers are in a poor bargaining position when marketing their produce.

[13] Ibid., p. 62.

The farm owners indicated that the most important factor restricting their output was their lack of confidence in the prices they would receive for the cotton. The perceived price uncertainty is very important if innovations aimed at increasing farm productivity are to be diffused. It is interesting to note that the more innovative farmers sold their produce at a later date, hence receiving higher prices and that the more literate and educated farmers sold to a greater number of assemblers. This behavior indicates a marketing strategy based upon waiting for higher prices and then negotiating with numerous assemblers in order to see who will offer the highest price. These data also indicate that one result of education is more market-oriented behavior by farmers. More broadly, they indicate that a smoothly functioning market system requires effective educational facilities.

Like the farmers, the assemblers have a very limited storage capacity; thus, they try to get the raw cotton to the ginner as soon as possible so that they can buy more cotton. Their terms of sale with the ginner varies with proximity to the harvest. During the peak of the harvest most sales are for cash or shorter term credit. This is necessitated by the farmer who is generally paid cash for his crop. After purchase, the larger assemblers try to grade the cotton that they bought and they set their prices accordingly. This results in their receiving from the ginner a higher average price than the

other assemblers. Four months after the harvest, these large, more modern and market-oriented assemblers have less cotton being stored indicating that they are finished with cotton and are involved in another activity. Such behavior points towards setting a marketing policy which is oriented to more productive use of time and indicates a more rapid turnover of sales than their smaller counterparts. Thus, as in the ranks of the farm owners, there are some assemblers who are more attuned to the market mechanism.

The glut of raw cotton which appears on the market after the harvest is possible only because the ginner is willing to buy the cotton for cash and store it until the industrial firms need the fibre or oil. However, these ginners have the financial resources and are faced with virtually no risk since "Each ginner has a known market, comprised of persons they know and supported by a tradition of transactions."[14] The annual glut results in lower prices for the farmers and also creates a need for people and equipment to handle the 740,000 tons of raw cotton. Since there are few other activities in these areas, these resources lie idle or underemployed throughout the rest of the year. However, there are some farmers and assemblers who appear cognizant of market pressures and conditions and try to maximize their earnings. The mills do not

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[14] Ibid., p. 54.

generally involve themselves in marketing activities; but some of those who are modernizing at a more rapid rate are beginning to keep consumer desires in mind in their product design; also they are trying to stimulate consumer interest in their products. The small retailers have a very small volume of sales and do not engage in active price competition with one another, for to do so might jeopardize their low level of income.

4. Managerial Techniques

The previous three sections considered the technological aspects of manufacturing and the activities which the firms performed in marketing their products and in procurring raw materials. Consideration is now given to the ways in which the firms in the various groups are managed.

As might be expected, the most well developed and formal use of managerial techniques is found in the textile mills. However, the techniques differ from those typically used, e.g., in large American corporations. Since the ownership of the textile mills lies in the hands of families or individuals who also own various other corporations, the responsibility for setting general policies and decisions for all the corporations is centralized. Thus, consideration is not always given to the mills' special needs. Generally, the staffing of executive positions, based upon inheritance, leads to very autocratic executive

behavior and a very sharp delineation between the executives of the firm and the employees.

Another major influence shaping the nature of the textile mills' management is the organization of the sugar plantations, which in many cases formed the base of the existing corporate groups. The sugar plantation and some textile mills feature serf-like workers bound to the plantation, if not legally, then by the lack of alternate opportunities. The employment and housing which the plantation worker receives provide some form of security. The managers of the plantation inherit their position and have absolute power to direct and guide the activities of the plantation and the workers. The ratio of workers to management is very high (perhaps 500 or 1000 to 1), the type of technology used is very labor intensive and there is a lack of new technologies. Thus, labor is very unproductive and poorly paid (perhaps 1% of what the executives receive). Another feature is the high degree of self-sufficiency[15] of the sugar plantation or the textile mill. Economic interaction with other firms is limited to crucial activities which the plantation or mill cannot perform. The desire for self-sufficiency is important in explaining the low linkage effects which emanate from the mill and explains why the mills have not tried to diversify into

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[15]The high degree of self-sufficiency was also associated with the isolation from advancing technology which took place in various textile milling countries.

growing cotton[16] and have limited their marketing and distribution activities.[17]

However, the condition of the textile mill and its management is beginning to change. The new investment being undertaken is forcing the executive to behave more like his counterpart in developed countries. The newly adopted technology is complex and requires highly skilled specialists to join the managerial group of the mill since existing family members are usually not technically competent. Thus, the increased awareness of technological developments in textile milling throughout the world and the necessity to employ competent managers is striking at the very base of the plantation type of organization and the managerial techniques which previously existed. Another major change in the operation of the mills lies in

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[16]Another very important reason why such mills have concentrated only on milling the cotton is that growing cotton takes place in the interior areas of Brazil, far from the magnificent ocean and the cities which have grown along the fringe of the Northeast. The sugar plantations are all located very near the large cities and the more enjoyable life near the ocean.

[17]The marketing function has usually been de-emphasized because retailing requires other people to use their own initiative in selling the product. If the mill were to try to sell its product, non-family managers would have to be relied upon, for supervision of retailing by the executives would be impossible. Thus wholesalers are used. The sugar plantations and the textile mills were both typically production-oriented while using traditional production techniques. The major exception to the lack of marketing emphasis was from a textile mill owner who fathered numerous children who were then employed as retail outlet operators in this mill's several hundred retail stores throughout Brazil.

the increased efforts to control marketing and distribution activities. This was necessitated after the sales slump in 1964-65 and the increased competition resulting from the expansion of milling capacity due to recent investments.[18]

The retailing firms are very small. In 93% of the firms the owner is the only employee. Thus the problem of the management of others does not arise. Furthermore, since the retailers have such a small investment and are much less powerful than their suppliers, decision making centers around accepting the price that is offered and replacing what has been sold. Over half the retailers are so small that they pay no taxes; however, 18% admitted to paying weekly bribes to remain in business or to obtain a better location. Despite a desire to modernize and improve their business, 67% of the retailers felt that their resources were insignificant and that there was no available assistance.

Like the retailers, the farmers' relatively simple operation features simple managerial practices. However, in their interaction with assemblers some farmers try to plan their selling strategy. Forty-two percent of the farmers indicated that business management is more important than luck. These farmers also held more modern

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[18]The new investments are reducing the needs for large numbers of poorly trained workers. In one mill which was recently renovated the number of employees decreased from 2,600 to 700 in two years. The remaning 700 will require higher levels of skill. The investment by the firm in upgrading their skill increases the value of such workers, hence the esteem in which they are held by the executives and managers.

values, were more literate and responsive to the market mechanism.

The cotton assemblers are active for a brief period during and after the harvest. More than half try to sell the cotton as quickly as they buy it, but only 55% try to grade the cotton and sell the better cotton for more money. This behavior contributes to the farmers' lack of sensitivity to market pressures and results in little inducement for farmers to produce a better grade or quality of cotton.[19] The low level of managerial techniques is indicated by the fact that only 44% of the assemblers keep records of purchases and sales and only 33% keep expense records. Although 65% of the assemblers thought that knowing how to do business was more important than luck, 69% felt that there was not much that they could do to improve their business. However, the assemblers whose attitudes were most modern, had the greatest volume of sales which also resulted in their receiving higher prices for the graded cotton and in a greater productivity of their employees. These same firms indicated that their greatest barrier to continued expansion was the price instability built into markets featuring a seasonal glut.

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[19]The assemblers claim to provide to farm owners information concerning: general business management (12%), better seeds and quality (28%), prices (36%), general agriculture (19%), new and better specific technology (3%) and cooperation (3%). The seeds are obtained from the ginner and the price information refers to the assemblers offer to the farmer.

It appears that aiding these assemblers to expand would facilitate the development of a stronger market mechanism. Such aid would have to be coordinated with activities oriented to increasing the productivity of the farm owners such that the improved market mechanism could handle an increased flow of agricultural commodities.

The managerial techniques closely reflect the characteristics and ownership of the firms in various groups in the industry. The larger firms are more closely managed than smaller firms, but in general the nature of the managerial techniques is at a very low level.[20]

5. Financial Incentives and Rewards

In the Northeast, the operation of the textile mills (and sugar plantations) has historically formed the economic base of the corporate groups of which they are a part. The factories and their obsolete equipment have very few alternate uses and as such, production appears to be directed by historical momentum. The owners receive, and expect an adequate level of profit (10-15% of sales), but due to the small amount of time spent in the mill by the executives and the lack of highly motivated, skilled managers, the activities of the mill are not guided by the desire to "optimize profits." The credo generally has been to continue in the stable manner which traditionally

[20] A. N. Agarwala, op. cit.

existed and not to be an innovator. Protectionist tariff policies have not permitted the development of significant competition.

There was a rapid decline in sales of textiles in 1964-65. The quality of the textiles produced in the Northeast was lower and the prices were higher than that of their competitors in the Center-South of Brazil.[21] The crisis appears to have jolted the mill owners out of their sense of contentment for since then, they have taken advantage of existing investment incentives in order to modernize their production techniques and revise and change product lines. Some mills have even stressed marketing and distribution techniques in order to regain some of their lost market.

The retailers, although maintaining a profit margin of 20% of the value of sales, do not earn much because their volume of sales is so low. However, when asked if they would accept a job with someone else for a salary which exceeds their current income by about 30%, only 45% would do so. Of those declining, 67% indicate a dislike for working for someone else. The retailers' desire to increase their income is influenced, not only by their aversion to work for someone else, but also by an 80% response

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[21]This was also a period of political turmoil, with the revolution in 1965, and a rate of inflation which exceeded 100% per year. The sales of the textile mills declined by about 35%.

indicating that it is perferable to live near one's family and earn less than move away and earn more. Thus, the limited job mobility, geographical rigidity and the extremely easy entrance[22] of others wishing to be retailers (whenever it appears as though an acceptable living can be earned) insures the continued low level of income. Furtheremore, community pressures are not oriented to high levels of achievement; 59% of the retailers indicate that their neighbors would not like to see them earn more money. These small, poor retailers, operating on a low volume and high margin basis, do not think that they could ever sell more cloth at lower margins because they believe that as soon as they would increase their sales, the suppliers would increase the cost of textiles. Thus, the effect of reducing prices would result in increased costs which would result in a loss of income. Thus, there are several factors which reduce the ability of the retailer to change his operations in terms of volume of sales or reduction of margins.

The farmers also receive little incentive to change. The price of Brazilian cotton on the world market has steadily declined (see Table 4.3).[23] In 1951-2 the price received for Brazilian cotton was the highest (other countries were paid 95.80 to 107.02¢/kilo) whereas in 1961-2

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[22]Due to the temporary location of the retailers travelling from fair to fair, the low capital requirements, and lack of required skill, it is easy for anyone so wishing to become a textile retailer.

[23]Cotton, Trimester bulletin of the ICAC, April, 1963.

Table 4:3.--Prices of Brazilian Cotton on the World Market

	Year					
	1951-2	1952-3	1953-4	1954-5	1955-6	1956-7
Price/Kilo: ¢	122.9	111.26	75.63	82.24	71.71	66.44

	Year				
	1957-8	1958-9	1959-60	1960-1	1961-2
Price/Kilo: ¢	63.18	55.30	65.21	61.28	60.68

it was the lowest (other countries were paid 63.82 to 95.41¢). This indicates a rapid decline in the quality and demand for Brazilian cotton. It is natural that those in the industry whose bargaining power is the weakest bear the brunt of the collapse in prices. Thus, the cotton farm owner in the Northeast has the lowest yield of cotton per acre--only 30% of the world average--and also receives the lowest prices. In 1966, the average farm owner's income from the sale of cotton was only $432[24] and 50% received less than $229.[25] The total average farm income

[24]Part of this money goes to the leasee who sells his cotton to the landowner and then receives one-half of the proceeds. Cotton provides the bulk of the farmers' cash income, which, in light of the large number of dependents, is shockingly low.

[25]Banco Do Nordeste Do Brasil S/A, op. cit., p. 91. In a study of farmers compensation in 1962 it was found that average gross aggregate value of production came from:

from all sources was $665. Eighty-seven percent of the farmers felt that it was preferable to live near the family and earn less than move away and earn more. However, due to low-population densities, only 34% felt that their neighbors would not like to see them progress. Only 27% of the farmers think that there are more profitable crops than cotton. However, the lack of capital (resulting from the vicious circle of low levels of productivity) prevented switching to the more profitable crops. This supports the contention that the weak market mechanism and the low levels of productivity are associated with almost nonexistent incentives for change.

The assemblers generally receive a margin of 5-10% (ranges are 2-15%) of their sales. This range, in part, includes the rewards received by some assemblers for grading the cotton. This margin also must cover transportation charges associated with delivering the cotton to the ginner.[26]

Cotton*	76.71%
Corn(beans)	7.76
Hay or grass	12.94
Grassland	2.59
	100.00%

*Cotton includes the sale of the fibre and the seed residue used as animal feed.

Disbursements included:

Factor inputs	2.87%
Labor (his own and some hired)	55.43
Interest	10.75
Depreciation	2.07
Net profit	28.88
	100.00%

Banco Do Nordeste Do Brasil S/A, op. cit., p. 103.

[26]The profit received by the ginners is a substantial 5-10% of the value of sales. This high return

The larger assemblers indicate that price instability for cotton has a major effect on limiting their expansion, whereas the smaller assemblers do not feel so strongly about such instabilities. Their perceived job mobility is less limited than the farmers or retailers but still 68% feel it is preferable to live near their family and earn less than move away and earn more.

The incentives which operate in firms in the cotton industry bear a close resemblance to the effectiveness of the market mechanism. It was not until a crisis occurred in the sales of textile mills that there was a response to financial incentives. Due to the textile mills' overriding importance and their long standing traditional operations, it appears as if they provided for stagnation and the ineffective operation of the market mechanism among the retailers, farm owners and assemblers. If the existing low levels of income resulting from low productivity are to be raised, such incentives must be reestablished by change agents who work not only at improving production techniques but also at creating a realignment in the market so as to make it a more effective regulator of economic behavior.

6. Costs, Uses and Source of Credit

As has already been briefly indicated, credit

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accounts for the operation of the gin for no more than 6 months per year.

relationships are very important in the cotton industry. Clearly, in any economic endeavor where most of a firm's income comes during a short period of time, unless the owners of the firm are able to budget their income throughout the year, credit will have to be relied upon. Firms that can readily obtain credit have an economic advantage. Because they can borrow money relatively easily, they are able to extend credit to other groups of firms in the industry.

Since the textile mills are located in cities and are firms of long-standing repute, credit is readily available. The mill owners can get credit from both governmental and private banks and generally receive the lowest interest rates. In some cases, the corporate group of which the mill is a member also includes banks or finance companies. Thus, virtually all of the larger textile mills[27] have easy access to credit, although some have greater access than others.[28] Much of the credit used by farmers, assemblers and ginners originates with the firms buying the cotton fibre and these larger firms are able to use the extension of credit to further strengthen their bargaining position.

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[27]One of the textile mills located in Recife is a newer venture, is much smaller and is the only firm which the owner has. This firm does not fit the previous description.

[28]Banco Do Nordeste Do Brasil A/A, op. cit., p. 232. Purchases of cotton by textile mills, exporting firms, and government purchasing agents are aided by the extension of credit.

Small retailers who are also located near banks and other financial institutions are not so fortunate in obtaining enough credit and at a reasonable interest rate. Seventy-nine percent of the retailers wishing to improve their business feel that a lack of financing is the major drawback. Similarly, 38% of all the retailers feel that the high cost of credit[29] restricts expansion. Low margins and lower costs of textile to consumers is possible only if there were fewer, but larger retail outlets. Thus, lack of credit is another condition retarding changes leading to an effective functioning market mechanism.

In the rural areas banks are much rarer and credit is based on a variety of informal arrangements. In some cases it is the basis for the interrelationships which exist between firms. The importance of credit is substantial since 81% of the farm owners indicated that if they could borrow money they would use more of their idle land and increase planting of various crops. Sixty-nine percent of the farmers formally borrowed money last year.[30] Generally, loans (ranging between $40 and $180) were obtained during March and April and repaid after the harvest.

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[29] In mid 1967 the cost of credit from reputable finance companies had fallen to 4 1/2% to 5 1/2% per month which is more than double the prime interest rate. Even this expensive form of credit is not readily available to the small retailer who has no collateral or fixed business address.

[30] Of those borrowing money, 67% borrowed just once, 17% twice and 14% more than twice.

The source of these loans were the government banks (58%) and credit cooperatives (42%). Sixteen percent of the farm owners had never borrowed money through formal channels. The most common reason given by those not formally borrowing money in 1967 was fear of the procedure involved in getting the loan. The farmers not borrowing money were also the least literate, hence indicating the source of their fears and further indicating the importance of literacy and education to the behavior of some of the farm owners.

The fact that 96% of the assemblers loan money to farmers may indicate that the most extensive network of loans originates with the assemblers. On the average, the assemblers extended about $450 of credit. The majority of the loans (76%) were made in January through March and were repaid after the cotton harvest. Thus, it appears that the farmers first go to the assemblers for money and when this source is exhausted, the more literate and educated go to the banks and credit cooperatives. The cost of the loans obtained from the assemblers is very high (see Table 4:4).

Table 4:4.--Interest Rates on Loans Extended by Assemblers

% Interest	10%	20%	30%	40%	50%
% of Loans Extended	2%	6%	41%	24%	27%

The average interest rate for the seven months in which the loan was outstanding was about 35%. The three most important criteria for extending credit to the farmer were his trustworthiness, his record of production, and lengthy acquaintance. Thus, it appears that the assemblers are the first source of loans and that they use the extension of credit as a basis of continued relationships with the farmer. This interpretation is supported by the fact that larger assemblers believe the extension of credit to be important in stimulating sales whereas the smaller assemblers assign less importance to this.

In order to remain in business 98% of the assemblers indicate borrowing money. Their source of funds and the interest charges are: government banks (2.1% per month), private banks (2.2% per month), friends (4.6% per month), relatives (4.8% per month). Thus they charge the farmers the same rate they themselves are charged when they rely upon informal sources. To the extent that they rely upon the banks, they act as transfer agents extending loans to farmers in exchange for a substantial "commission." It is not only interesting to note that the larger assemblers extend more loans and that they pay a lower interest rate on the money that they borrow but also that these same assemblers believe strongly in reducing their margins so as to stimulate sales to ginners. Thus, they appear to use the extension of credit to farmers to "tie" farm owners'

sales to them and they rapidly sell the cotton to ginners. Their marketing policy of reducing their margins to increase turnover of cotton is, in a sense, made up by the "commission" which they enjoy for extending loans to farmers.

The ginners pay the assemblers cash for the cotton delivered. They can do so because they make contracts with textile mills and exporters for future delivery of cotton fibre in 4-5 months. The textile mills and exporters pay cash (perhaps using available credit sources) so as to avoid the uncertain price effects of inflation throughout the year. When the assembler gets cash for the delivery of cotton, he pays the farmer who then repays his debts to the assembler and the banks. Thus, the credit-cash chain links the farmer to the assembler to the ginner to the exporter or textile mill. This sequence of interactions based upon the sparsity of credit (except to the textile mill or exporter) tends to reduce the extent to which the interplay of these parties results in a competitive market mechanism.

Conclusion: Organizational Barriers to Change

The organization of economic activities in the firms in the industry indicates how the various factors and conditions create a cumulative effect featuring an unequal distribution of economic power concentrated in the textile mills, as well as a lack of a smoothly functioning market mechanism.

The only firms which are formally organized are the large textile mills. These mills possessed inefficient and obsolete production technology and largely ignored their marketing and distribution activities until the crisis of 1963-65. The response to the crisis and the investment incentives are changing the way in which these mills are managed. However, certain deep rooted traditions are not being undermined, and as a result, the impact of the investments in these mills is not having a substantial effect on the organization of the farmers, assemblers and retailers. The small scale operations of the farmers, assemblers and retailers are constrained by their low levels of productivity based upon crude and often non-existent investment; and also by the lack of long-term low interest credit that could assist them to break out of the increasingly more vicious circle of poverty. The existing incentives and reward mechanisms are symptomatic of the lack of a smoothly functioning market mechanism. The traditional interactions between firms which buy and sell to one another do not seem to reflect rational profit maximizing behavior as is evidenced by the restrictions placed upon their behavior. If one were to try to rectify the situation by stimulating the farm owners' and assemblers' need for achievement, the major deficiencies in investment, credit and bargaining power would still act as constraints on what they can do. These constraints also appear to be

fundamental to the low linkages emanating from the textile mills and do not appear to have been reduced by the new investments in the mills.

CHAPTER V

THE NORTHEAST BRAZIL COTTON INDUSTRY: MANAGERIAL FACTORS

In previous chapters the environment in which firms operate and the constraints and parameters which influence the organization of economic activities in the firms were described and analyzed. Some of the attitudinal variables characteristic of the various owners and managers will now be presented. As such, some of the barriers previously discussed will be examined from another perspective. The subject-matter of the present chapter, then, are the following seven managerial factors: (1) attitude toward risk-taking, (2) attitude toward cooperation, (3) competition, (4) mass communications media, (5) social influences in price determination, (6) time orientation, and (7) attitude toward compensating employees.

1. Attitude Toward Risk-Taking

If firms are to attempt modernization and the adoption of innovations, then they must be prepared to accept the risks associated with replacing existing procedures and practices with new ones. If the risks associated with the adoption of innovations are perceived by the owner/

managers to be greater than the perceived benefits, then the innovations will not be adopted.

The modernization of the textile mills was begun only after the rapid decline of sales of the textile mills during 1963-65. The prospects for increasing the sales of the mills did not appear to the owners to be bright, and this resulted in a reduction of their perceived risks associated with modernization. Furthermore, the cost of modernization of the mills would be partially underwritten by the investment incentives and the benefits to be associated with modernization were projected to the mill owners by technically competent experts. This resulted in the submission of proposals for investment projects by the textile mill owners and the subsequent modernization of the mills. Thus, the old attitudes of minimal risk-taking which were based upon (a) an emphasis on self-sufficiency in manufacturing, and (b) a rejection of technological innovations were replaced when it became clear that these attitudes would not solve the slump in sales.

The perception of the risks associated with substantial alteration in the operations of the small retailers is much greater. Seventy percent of these retailers feel that they cannot improve their life and half also believe in leaving things alone and seeing how they turn out. The very meager income and the perceived inability to profitably increase their volume of sales result in a feeling of

futility. Change is not only thought impossible, but also is not feasible due to the limited income and availability of credit to the retailer.

As might be expected, a similar situation exists for most farm owners. Eighty-seven percent feel that they alone cannot do much to improve their own situation. If faced with the availability of new farm inputs 70% indicated that it is better to wait and see what happens when such innovations are used by other farmers. Clearly this reflects their inability to bear the failure that might be associated with innovating. When the farm owners were questioned specifically about their reaction if 50% of their crop were lost as a result of using some new process or technique the responses were:

64% indicated that their family would bear the brunt of the failure.
15% indicated a willingness to try again.
7% would sell some of their meager possessions and cattle and face the crisis.
6% would never try again.
5% would try to borrow money.

These responses indicate a primary fact of life to the subsistence farmer . . . productivity and family welfare are directly related. When presented with the opportunity of hypothetically playing a game of chance whose payoffs heavily favored the player only 53% were willing to play. Of the 53% choosing to pay $.50 in order to play, 25% would take the first room, 12% the second and 63% the last room. Thus, those willing to play are also willing

to undertake substantial risks in order to receive a chance at a high payoff. Those farm owners willing to undertake the slight risk associated with playing were more literate, more innovative and also borrowed the most money. They did not perceive as high a risk associated with borrowing as did the other farmers. In spite of the need to repay these loans, these farmers stored more cotton so as to reap the higher prices paid when the glut in the cotton market subsided.[1]

More assemblers are willing to bear a risk as is indicated by the fact that 74% are willing to play the game. This is probably due to their slightly higher standard of living. The major risks which they encounter involve storing the cotton in hope of getting a higher price later which more than compensates for their purchase of a reduced volume of cotton. Although 59% feel there is little risk in storing cotton, storage is not a common practice due to their financial limitations which arise because the assemblers must pay cash to the farmers.

Generally, the firms throughout the industry do not appear willing to bear substantial risks. In order for there to be important changes oriented to increasing

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[1]The farmers willing to play the game and accept the option of the highest possible gain differ substantially from McClelland's conclusion that the acceptance of a low chance of a large payoff is associated with low "n achievement." See D. McClelland, The Achieving Society (Princeton: D. VanNostrand, 1961), p. 214

the productivity of the firms, the perceived risks probably must be significantly reduced through financial assistance, guaranteed prices and concrete demonstration of the value of innovation.

2. Attitude Toward Cooperation

Since the owners of the textile mills in and near large urban centers form a part of the small economic elite in that city, there is a high degree of informal cooperation because of intermarriage and social interaction. When matters concerning their industry arise (such as their decline in sales) the mill owners may cooperate in order to obtain special relief or legislation, etc.[2] By being members of the city's economic elite they generally do not permit their corporations to perform in a manner which would be offensive to another member of the elite. This high degree of cooperation thus allows the mill owners to protect their collective interest and results in a reduction in the extent to which they compete with one another.[3]

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[2] Diario Official (Recife, Brazil), November 19, 1966. On November 18, 1966, decree law number 46 was signed by President Castelo Branco. This law granted exemptions on income and consumption taxes for textile mills to purchase equipment abroad.

[3] This does not imply that mills in different cities in the Northeast will not compete with one another. However, the apparent low degree of competition supported the mills' insulation from the economy.

However, due to the creation of many new industries in the Northeast resulting from the flow of investment capital and managers from the Center-South of Brazil, the position of the old elite is being threatened. The more professional and ambitious managers of the new firms and new managers of the textile mills do not accept the lack of vigorous competition. Thus, the extent of informal co-operation is declining and a stronger market mechanism is evolving.

The extent of cooperation among the farm owners, assemblers and retailers varies with the amount of inter-action with their competitors. The desire to cooperate on specific projects depends upon the perceived benefits of the project. Only 6% of the retailers belong to a commercial retailers association. The rest indicated that such associations do no good and cost too much. Only 60% of the retailers believe in a partnership with non-family members and two-thirds feel that friends can be trusted as much as relatives. This indicates a willingness by some to cooperate, even with non-family members.

The attitude towards cooperation is much stronger among farmers: 94% would be willing to cooperate to build a road, 88% would work some days in order to irrigate, and 80% indicated a willingness to work for electrification. Thus, cooperation to increase the availability of services producing a community benefit could be harnassed in order

to reduce the cost of labor associated with such investments. A very useful result of such cooperation, should it become a reality, might be the tendency for increased use of the service. It is important to note that the desire to cooperate in such ventures is highest among the farm owners who are more innovative and more modern. Seventy percent of the farm owners feel that neighbors can be trusted as well as relatives and 78% also feel that their neighbors would be interested in joining a cooperative to sell their produce and buy seeds. This indicates that such cooperatives may help reduce the extent of atomistic competition and could help create a market mechanism which could accommodate the increased productivity accruing from the previously discussed community investment. Thus, cooperation could act as an agent facilitating the reorganization of production oriented to increasing the standard of living at the farm level.

Although 63% of the assemblers belong to an association (86% of these belong to a processing cooperative and 8% to a rural cooperative), they are less prone to cooperation than the retailers or farm owners. Only 51% feel that neighbors or friends could be trusted as well as relatives and 60% feel that it is acceptable to form a partnership with those who are not relatives.

Many of the traditions governing the interaction between textile mills in the cotton industry originated

with their informal cooperation. This informal cooperation discouraged active competition and fostered plantation-like organization. Reduction in this informal cooperation is increasing the extent of operation of the market mechanism among millers. However, increased cooperation among farm owners could substantially strengthen the market mechanism through increasing the productivity of these farmers and increasing their bargaining power in selling their produce. The assemblers and retailers are not strongly predisposed to cooperate nor, indeed, would such cooperation necessarily strengthen their position.

3. Competition

While competition among firms in a group and between groups is the foundation of the operation of the market mechanism, the extent of such competition is directly influenced by existing cooperation, and indirectly by the manner in which firms are organized and their institutional constraints. The attitudes of the owners and managers reflect the extent of competition.

Among the mill owners, active competition was avoided. This is especially evident when one looks at the products produced by the textile mills studied. Of the nine firms, one produces blankets, one produces sheets, two produce sacks, one produces hammocks, one produces textile which are then made into clothes, 2 produce a lower quality of cloth and one produces a high quality of cloth. These firms

appear to have clearly differentiated markets. Since the Northeast produces more cotton than it uses, the mills need not compete in buying cotton. However, modernization and the new managers are intensifying competition in the market place as well as in product design.

Since the farmers have such little bargaining power during the market glut following the harvest and are generally tied to certain assemblers by virtue of loans, the concept of competition is virtually absent. Even among the assemblers the extent of competition is quite weak. Only 19% feel that large assemblers present a threat to their operation and 26% feel that there is too much competition. The larger assemblers do not feel that there is much price competition among assemblers. This is illustrated by only 39% agreement with the statement that, to the ginner, price is more important than quality. Thus, after the cotton harvest, a fairly uniform price emerges in the transactions between the ginners and assemblers. The ginners are more influencial in determining the price received by the assembler. This price influences how much the farmers will receive for cotton sold to the assemblers.

The small retailers accept the price of cloth dictated by the wholesalers or manufacturers' representative and sell the merchandise at about the same price as their competitors.[4] About half of the retailers do not like

[4]This closely resembles the economists' model of perfect competition.

their competitors to reduce price and 75% do not sell at prices below their competitors since price reduction directly results in reduction of their income. Currently some large supermarkets[5] are beginning to sell textiles at lower prices than the small retailers. However, only 37% of the retailers fear competition from such supermarkets. This indicates widespread lack of recognition of the effect which supermarkets have had on reducing the retail margins for food.[6] This failure to recognize a new source of competition will eventually be costly, at which time the small retailers may be beyond the point where changes can help them adapt.

It appears that competition among farm owners is virtually non-existent and that the bargaining power of such farmers is very weak. This could perhaps be rectified by programs involving their cooperation. The assemblers are in a somewhat better competitive position but are really dominated by the ginner who must defer to the textile mills and exporters. The retailers are involved in substantial competition insofar as they accept the

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[5]Active competition has recently developed between an existing supermarket chain and a more innovative chain just entering the Recife market. The innovating chain has begun selling textiles in its outlets and the other supermarket chain is in the same corporate group as one of the largest textile mills which also manufactures clothes.

[6]R. W. Nason, Urban Market Processes in Recife, Brazil, Ph.D. dissertation, Department of Marketing, Michigan State University, 1968.

market price for textiles and have little power to alter their costs. However, this competition affects the extent to which they can modernize. It appears that competition in the world market for cotton influences the price that the exporters and textile millers pay the ginner. The price received by the ginner influences the prices received by the assemblers and farm owners.

4. Mass Communications Media

Modernity, innovativeness, literacy and higher levels of productivity are positively correlated with the owner/managers' exposure to journals, magazines, newspapers, radio and television.

As might be expected, the textile mill owners are exposed to all media and are also increasingly seeking out technical journals that indicate the nature of changes in textile milling technologies throughout the world. Furthermore, these people frequently travel widely in Brazil, Europe and North America.[7] Previously this saturation of exposure to the mass media did not influence the policies and decisions set for the textile mills due to the pervasive plantation form of organization.[8] The crisis

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[7] In order to remain as self-sufficient and independent as possible, one of the owners even started a travel agency to serve himself, friends and the general public.

[8] The sugar plantation owners also travelled widely and frequently were educated in the United States or Europe. Such exposure similarly had only very limited effect on relaxing the stringent plantation organization and substituting a corporate form of organization featured in the cane farms in Hawaii.

associated with the decline in sales resulted in some of the owners of the textile mills reappraising their attitudes as to how the mills should be operated. The new attitudes represent a movement away from the plantation-like form of organization and a more modern corporate form of organization which is more responsive to the Brazilian and world situations.

The small retailers also by virtue of their urban location are potentially exposed to all the media. However, the high degree of competition and their lack of a strong bargaining position plus the inadequacy of perceived alternate employment opportunities tend to restrict their job mobility as well as their freedom in operating the firm.

In the rural areas there is much less exposure to the media. Three-quarters of the farm owners have never seen television, and only 27% went to a movie in the past year. While 53% of the farm owners have a working radio, only 28% listen to a radio for more than one hour per day. Low level usage of printed matter is illustrated by the fact that only 10% usually get a newspaper or magazine and only 15% have ever read, or have had read to them, an agricultural paper or magazine (even though 82% indicate that a member of the family can read). Our study supports Lerner's conclusion[9] in that the more innovative farm owners

[9] D. Lerner, The Passing of Traditional Society (New York: The Free Press, 1958).

had a higher degree of media exposure. As might be expected, literacy and media exposure are directly related. Innovativeness and listening to the radio also bear a close relationship. Thus, increased investment in educational facilities should result in increased media exposure which, in turn, should increase the amount of innovativeness. A desired program of change could use the radio (the media with the greatest coverage) to reinforce the widespread literacy campaign in a forum-study group manner.[10]

The exposure to the mass media of the assemblers is much greater than the farmers. This is borne out by the facts that 86% have a functioning radio and 52% have recently read a magazine or newspaper. Only 33% of the assemblers indicated that they had never seen television; 5% even have television in their home. The larger assemblers had a higher degree of exposure to the mass media and use the media to receive more market information and market information of a higher quality.[11] The nature of the operations of firms receiving more and better market information and characterized by greater exposure to mass communications

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[10] E. M. Rogers, "Communication Channels in the Diffusion of Technology. Combining Mass Media and Interpersonal Channels" (Mimeo, Michigan State University, 1968). This paper indicates where such programs were successfully employed.

[11] The larger assemblers indicated listening to the radio more. They also have access to private radio communications or telegraph to the urban centers where the price of cotton fibre and cottonseed oil are established.

media differs substantially from that of the other firms. These firms with greater exposure extend more credit in order to have the opportunity to buy the produce of more farm owners, have greater storage capacity, are more aware of the quality differences when buying and selling, have a greater productivity for their employees and have located their business near a better road.

The influence of the mass media on the managers of farms, assembly firms, textile mills and retail outlets is not direct. In past decades, the mamagers of the textile mills did not modernize production techniques even though there was a high degree of exposure to the mass communications media. Similarly, the retailers exposure to the mass communications media has not resulted in modernization of their firms. However, the operations of firms whose managers have high and low degrees of exposure to the mass communications media differ substantially in degree of modernity and innovativeness. This might indicate that consistently low degrees of exposure to the mass communications media limit the modernity and innovativeness of the managers of a firm. However, a high degree of exposure to the mass communications media is not sufficient to result in modernity and innovativeness. Other institutional, organizational and/or managerial factors are also important factors.

5. Social Influences in Price Determination

In view of the high degree of informal cooperation and the limited concept of competition between the textile mill owners and managers, all wholesale prices of textiles were similar to their competitors located throughout Brazil. Thus, by either conscious design or price leadership the cost of cloth to small retailers was uniform. Now that textile mills are becoming more competitive and more concerned with their marketing and distribution activities, price competition is beginning to increase. Some larger and more modern retailers are in turn reducing the retail margins on cloth, hence attracting more customers.

Some of the small retailers (12%) would sell at lower prices in order to attract and keep regular customers, but about 70% indicate instead that they would extend "better" services including better quality merchandise, conversation and friendliness. Less than half of the retailers indicated that they think their textile suppliers make a good living.[12] Thus, they do not perceive themselves to be in a position to bargain for a better price on the merchandise which they buy since they cannot match the bargaining power of the large suppliers and would not feel right trying to reduce the meager livelihood of smaller suppliers.

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[12]The suppliers who are thought to earn a good living are too powerful for effective bargaining by the retailer.

There are strong social influences on the determination of the price that the assembler pays the farm owner and that the farm owner subsequently pays the sharecropper and leasee. The importance of credit extended by the assembler is substantial. Also, since 11% of the farm owners go to the fair in the assemblers' truck, they are generally expected to sell to this assembler or lose their privilege of such transportation. Thus, the smaller farmer who must sell his cotton to a particular assembler has little to say about the price he will receive for the cotton. However, the larger and more innovative farm owners who have a greater exposure to market information get higher prices for cotton sold. Thus, possession of such information[13] and freedom from ties to a specific assembler are important factors in determing the price the farm owner receives for cotton.

The average price paid to the farmer in 1966 was 13.6¢ per kilo but this varied from 12.3¢ to 14.8¢ per kilo. Although the rate of inflation in 1966-67 was about 38%, the assemblers thought that the price paid to the farmers in 1967 would increase only 15%, hence indicating the prospect for a further reduction in the standard of living of the farmers.

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[13]Most farm owners receive market information from the weekly fair or from the assemblers with whom they are in contact. Clearly the latter source is heavily biased, favoring the assembler.

The assemblers have a bargaining advantage, and since 37% of the assemblers indicated that other assemblers cheat on the weight of the cotton delivered by the farmer, such bargaining advantage is further extended. Similarly, 37% of the assemblers indicated that other assemblers had invited them to join in price collusion, the result of which further strengthens the assemblers' bargaining position. However, in selling the cotton to the ginners, the assemblers are subject to similar, though much weaker, factors. The price that the assembler receives is subject to bargaining by the ginners.

The social factors operative in the determination of prices effectively support the strength or weakness of the bargaining position of the farm owners, assemblers, textile millers or retailers. The textile miller has a strong bargaining position with regard to both his suppliers of raw materials and his customers whereas the assemblers and ginners are strong in dealing with their suppliers but are weaker in selling. The farmers and retailers have very little bargaining power with anyone which results in, and is also caused by, their low level of productivity and income. The extent of bargaining power indicates the relative impact that the firm has in setting the prices it receives for its produce or pays for raw materials.

6. Time Orientation

The owners of the textile mills were primarily concerned with maintaining a high standard of living for themselves and their family. This "dynastic" view toward the management of the textile mills reinforces the lack of active competition. The maintenance of this dynastic view[14] permits procrastination and is conducive towards maintaining tradition-honored procedures. However, when the earnings of these mills rapidly declined during the severe recession of 1963-65, it became essential to consider earning profits in the short run as well as rectify the diseconomies and lack of competitiveness of these mills. Thus, by changing the time orientation of these owners from a reliance on the past to a concern for the future, meaningful planning of investment programs and the updating of technology became possible.

The small retailers seem mainly present-oriented. When presented with the option of accepting today a sum of money equivalent to what they earn from textile sales in 1 1/2 weeks, or waiting a year and receiving three times the amount, 90% would choose acceptance of the money immediately. This seems to indicate that if they were offered a new and better way of conducting their business

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[14]This dynastic view is rooted in the past by virtue of the owner/managers inheriting their position and their view of the future as a continuation of the past.

they would accept it only if their profit would immediately increase. Any program which would result in a much higher income at a later date would not be readily accepted due to the subsistence income currently being generated. This interpretation is supported by the fact that 69% of the respondents express the belief in living for today because they do not know what the future holds.

The cotton farmers, although not at a higher standard of living than the retailers, seem somewhat more oriented to the future. When presented with the option previously described, 45% would wait a year rather than receive one-third the amount today. Furthermore, 55% agree with the statement that it is better to live for today because tomorrow will work itself out. The somewhat greater future-orientation of the farmers could be due to the nature of farming: the farmer plants his crop, works, and then must wait many months in order to harvest the crop.

The cotton assemblers have an even greater orientation to the future than the farm owners. Only 42% of the respondents believe that it is better to live for today because the future takes care of itself and 52% would rather wait a year and receive three times as much as they could receive today. Thus, among assemblers is an awareness of deferring rewards and managing daily affairs of the firm with the expectation of receiving more income at a later date.

The change in the time orientation of the mill owners is associated with increased competition and more careful management and decision making in the textile mills. Eventually this may lead to an attempt on their part to aid their suppliers and customers. However, the time orientation of the retailers does not favor the small retailers' being receptive to any changes which could lead to higher productivity unless immediate rewards are involved. Furthermore, if such immediate rewards were available, more small retailers would probably emerge, hence preventing any long lasting effect. Thus, there is a low probability that small retailers will modernize their operations. But it does appear that a fairly large portion of the farm owners and assemblers might be receptive to innovations which would increase their productivity and standard of living. Thus, pressures exerted by the textile mills and any proposed governmental program might result in substantial progress in the rural areas.

7. Attitude Toward Compensating Employees

If progress is to be achieved in raising standards of living, not only must workers be made more productive, but their employers must be disposed to pay them a higher wage. Currently, wages need not reflect the productivity of a worker because high rates of unemployement in the Northeast result in most jobs having a surplus of applicants.

The major single employer group in the industrial sector in the Northeast is the textile mills. The nine mills interviewed employed about 9,350 people in 1966.[15] The majority of these workers have almost no skills and, on an average, earn only 10% more than the government-determined minimum wage of $30 per month.[16] One medium-sized firm indicated that 26% of its workers were not at work on the day the interview was conducted due to sickness or injuries which were sustained while working. The high percentage is indicative of the existing working conditions. The workers have no union to aid in improving their working conditions or raising wages. As a result of modernization, many of these workers will no longer be needed. Due to high labor turnover rates, restricted rehiring by the mills will reduce the number of employees by perhaps 50% or more.[17]

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[15]These firms employed 115, 420, 500, 713, 1,627, 705, 2,000, 620 and 2,650 people. One of the firms also had other people working at home doing handiwork. The number of people employed at home is not included.

[16]Almost all of the workers receive the minimum wage with the supervisors earning more. It is the supervisors' higher wage which is primarily responsible for the higher average wage.

[17]One of the larger mills is modernizing and expects to reduce its labor requirments by 75% over a 2-3 year period. This huge reduction in the number of jobs available in the industry will be partially offset by higher wage rates offered to more skilled workers. In general the aggregate wage bill as a percentage of the sales revenue of the textile mills will sharply decline, hence making these firms more competitive in terms of their costs of producing textiles.

Ninety-three percent of the retail outlets are staffed only by the owners. Farm owners do not hire employees, but 79% lease some of their land. The most common arrangement features a 50-50 share between the leasee and leasor. The leasor also provides seeds, and farm equipment. The leasee will not adopt any new farming procedures or technology unless the leasor does so first. If the leasor can mechanize he may not want to lease so much land. Thus, new technology may result in fewer leasees, some of whom may be retained as farm employees and the rest migrating to urban areas.

The cotton assemblers, being larger and having their business concentrated in a short period of time, hire employees. On the average, the assembler firms employ 2.8 family members and an additional 9.8 persons of whom 4.3 are full time. Their average weekly wage bill is only $83.80. If the assemblers were larger and productivity of the workers rose sharply, wages would still lag far behind due to the large labor surplus in the rural areas.

Modernization results in fewer but higher-paid textile mill employees. Among farm owners and assemblers the standard of living will rise with productivity whereas the employees (or leasees) will not proportionately benefit. However, as the income and expenditures of the farm owners and assemblers rise, they will create employment especially among service related firms in the rural areas. This will reduce the amount of unemployment and underemployment.

Conclusion: Managerial Barriers to Change

Generally, all of the firms in the cotton industry have not been prone to accept risks, hence reducing the potential for changes occurring in the industry. However, since the reduction in sales of the textile mills, the owners of some of the mills have reevaluated their position and have decided to proceed with plans for modernization. There is also a small group of larger and more innovative farmers who are willing to accept more risks than the other farmers and they could make significant contributions to the modernization of cotton farming.

Another important factor which has reinforced the lack of change associated with low levels of risk-taking is the social influences on price determination. These social influences reduce the degree to which the forces of the market mechanism are felt by the managers of firms, hence reducing their desire to institute changes which permit the firm to adapt to changing conditions.

The farmers and retailers do not favorably view competition among themselves. This reflects their lack of bargaining power. However, the desire to cooperate in specific ways is strongest among the farmers and is declining among the mill owners. The decline in cooperation among the mill owners appears to be conducive to change and is associated with increased competition. The history of the textile mills indicates that initially, cooperation

contributes to development, but that competition becomes necessary for continued development. It is unfortunate that there are no programs to mobilize the farmers' apparent willingness to cooperate. The assemblers and retailers indicate little such willingness. The results are low levels of productivity among the retailers and price instability among the assemblers. Low levels of productivity and price instability decrease the amount of resources which could be devoted toward accomplishing change.

The farmers and assemblers have only a minimum of exposure to the mass media of communications. Those who are exposed to outside ideas and information are more modern, innovative and productive. However, the owners and managers of textile mills have, for several decades, had widespread exposure to the mass communications media. During this period, there was little, if any, modernization of the textile mills. Similarly, the small retailers have a high degree of exposure to the mass communications media and they do not appear to be modernizing. Thus, the relation between modernization and exposure to the mass communications media appears to indicate that high levels of exposure are a necessary, though not sufficient condition for modernization.

The time orientation of the textile mill owners is geared toward the immediate future, whereas the retailers are closely tied to the present. Some of the farmers and

assemblers appear to be oriented to the future. If programs oriented to the widespread diffusion of innovations are not planned and implemented, change will be, at best, slow.

The distribution of the fruits of increasing productivity directly benefit the mill owners, farm owners and assemblers but do not appear to affect directly and proportionately the employees. This indicates that if economic development is to be achieved in a decentralized, free-market economy one could probably expect the initial increments in standards of living to be greatest among the owners of firms. Those who respond to pressures to modernize benefit, the others do not.

It is also evident that although the textile millers are modernizing, they do not appear to be creating pressures for farmers, assemblers or retailers to modernize nor do they seem to be creating widespread changes in the predominately traditional attitudes which exist.

CHAPTER VI

MODERNIZING THE NORTHEAST BRAZIL COTTON INDUSTRY: THE INVESTMENT INCENTIVE PROGRAM

This chapter describes and evaluates the investment incentive program in the Northeast Brazil cotton industry. In general, its conclusion is that the program needs much supplementary effort if the industry as a whole is to attain modernity.

The Investment Incentive Program

Corporations wishing to make investments in order to modernize an existing firm or create a new firm are in a position to make use of very generous governmental incentives. These incentives reflect strong national desires to increase the rate of investment in manufacturing firms in the Northeast. The incentives include exemption from import taxes on essential machinery which is not produced in Brazil, long term loans from the central bank for an amount up to 50% of the value of the investment project and use of 34/18[1] funds for as much as 75% of the remainder

[1]The funds provided under articles 34 and 18 of the first and second master plans of the agency responsible for generating economic development in the Northeast region of Brazil (SUDENE) allow corporations and individuals to deposit up to 50% of payable income and excess profits tax in

of the value of the investment project. These incentives allow a corporation in a priority industry to acquire the best available machinery without having to pay import duties as well as getting financing for the investment project on loan from the central bank (50%), 34/18 funds (37.5%) and a very modest personal investment (12.5%). Additional concessions involve the terms of repayment of the loans and 34/18 funds. Such repayment does not commence for five years. The incentive package may be further expanded by state, municipal and city governments providing free land, and numerous tax exemptions on a temporary basis.

The criteria which determine a proposed industrial investment project's priority include industries that:[2]

1. are basic to the economy of the Northeast,

2. increase their efficiency through modernization or expansion,

3. substitute imports from abroad and outside the region or produce goods which can be exported abroad or outside the region,

4. use agricultural and mineral raw materials produced in the Northeast,

5. increase the size of the labor force.

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the regional development bank in the Northeast. These funds must then be invested in an approved project within three years or else they revert to general government revenues.

[2]SUDENE, Incentives to Industry and Agriculture in Northeast Brazil (Translations Center, Division of Documentation: Recife, Brazil), pp. 24-7.

The textile mills satisfy these criteria. Textile mills form the cornerstone of industry in the Northeast, desperately need to be modernized, utilize raw materials produced in the Northeast, and are the major employer in the industrial sector. In 1966, the president of Brazil signed a special decree exempting the textile industry from some taxes so that they will undertake the investments required if they are to modernize.

The 34/18 program is also ideally suited to the textile mills which are often a part of a larger corporate group. All of the firms in the group are in a position to deposit half of their payable taxes which are used to finance the modernization of the textile mill. Thus, to the extent that the 34/18 deposits of sister-corporations are used, there is no out-of-pocket cost of the modernization since these funds would otherwise be paid to the government as taxes.[3]

The incentives aimed at increasing the rate of investment are well suited to the situation of the owners of cotton mills. The need for investment to achieve modernization in cotton textile production was evident to the owners due to the decline in sales since 1960 which reached crisis proportions in 1963-65. Cotton mill owners responded by proposing investment projects to the development agency

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[3]There is an economic cost associated with using 34/18 deposits of sister corporations since these deposits could be invested in a different firm. The firm in which a 34/18 depositant invests is expected to pay dividends to these investors but not for 5 years.

Table 6:1.--Investment in Textile Mills

Year	No. of Projects	Investment	Percent of Total	% of 34/18 Funds Approved for Investment	Average Size of Investment
1963	23	$19,709,706	19.94%	12.28%	$ 856,942
1964	23	6,837,252	6.92	13.27	292,913
1965	25	8,377,879	8.48	34.78	335,115
1966	37	30,263,382	30.62	25.45	817,929
1967*	19	33,635,633	34.04	66.76	1,770,294
Total	127	$98,823,852	100.00%		

*January to August, 1967.

which administers the investment incentives.

Table 6:1 indicates the number and value of investment projects approved each year from 1963 to mid 1967. The proportion of the approved investment projects which would utilize 34/18 deposits is also indicated. This table clearly indicates the responsiveness of the textile milling firms to incentives from the government.

In the 4 1/2 years under consideration the sixty-one textile mills in the Northeast had 127 investment projects approved involving about $98.8 million.[4] The value of the investment projects approved was quite high in 1963; however, the extent to which 34/18 funds were authorized by the regional development authority was very limited. The large value of investment projects submitted and approved in 1963 reflects the optimism which the mill owners must have had about the newly instituted incentive programs. When these expectations were not fulfilled due to the limited approval of the use of 34/18 funds, the value of

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[4]The value of all investment projects was stated in terms of Brazilian currency. However, due to the very rapid rate of inflation between 1963-67 the use of the dollar equivalent of the projects provides a better idea as to the scope of the program. The conversion of cruzeiros to dollars is based on the rate of exchange which applied during the year in which the investment project was approved.

During this period, the value of the investment projects approved for all industrial development was about $650 million. This indicates that although owners of textile mills actively responded to the incentive programs, the effect of the investments would reduce the relative importance of textile milling in the industrial sector due to more rapid investment and growth in other industries.

investment projects submitted and approved declined in 1964 and 1965. As the approval for use of 34/18 funds increased, more and larger projects were submitted and approved. In the first 7 months of 1967 the value of investment projects approved reached record proportions. These projects were, on average, quite large and were heavily supported by 34/18 funds. The trend indicates that there would be continued interest in larger scale efforts at modernizing and constructing new plants which would produce better quality textiles at a lower price as long as the 34/18 funds could be used to underwrite the majority of the investment.

There is at least one reason why the approval of 34/18 funds during 1963-65 was quite limited. The development planners were concerned that efforts at modernization would result in a decrease in the number of people employed in the modernized textile mills. That is, the investments to be approved would be used to purchase equipment[5] that would require less labor in the process of manufacturing cotton textiles. However, by 1965 the economic planners saw that slowing down or discouraging new investment in textile mills would not slow down the rate of textile industry unemployment since the inefficient textile mills were being forced into bankruptcy. The choice, they realized, was not

[5]The planners knew that much of the new machinery to be bought would be acquired in the South-Center region of Brazil. Thus, the investment projects would provide a market for the developing mechanical equipment industry in the South-Center region.

between high and medium levels of employment in the cotton industry but between a medium level and the decay of the industry.

So, to help create efficient textile mills and thus guarantee a medium level of employment, the planners rapidly increased their approval of the use of 34/18 funds. After investing about $100 million the textile mills will probably employ 15,000 - 20,000 people as compared with the 30,000 people employed before the large scale investment program took place. With the scarcity of investment capital in the Northeast, the approval of this large investment could only be economically justified on the basis that the benefits of modernization would spread to ginners, assemblers, farmers, retailers, etc. A central question of the present study is whether and how much this spread has been occuring.

Strengths and Weaknesses in the Investment Incentive Mechanism

The investment incentive program which stimulated modernization of textile mills has several positive features. It rescued the textile mills from a condition of backwardness, inefficiency, and high costs of producing cotton textiles of inferior quality. The modernization of production techniques strengthened the industry, thus assuring continued employment of people in factories and a market for the cotton produced in the Northeast. Furthermore, the

management of the mills is changing from that of an "urban plantation" to a more professionally organized, competitive corporate form which is increasingly more responsive to the desires of consumers. The increase in the rate of investment in textile milling has also helped create optimism about the future of the industrial Northeast; there is growing feeling that self-sustaining and cumulative increases in the standard of living will result.[6] Also, by increasing the sales of the new and growing equipment manufacturing industry located in the South-Center region of Brazil, the investments stimulate the long run development of the whole economy.

The investment incentive mechanism also encourages businessmen already participating in the economy to find sources of investment capital and use it. Investment funds are thus being placed in the hands of men of sound reputation and demonstrated ability to handle large sums of money. Some of the capital being mobilized by the investment incentive mechanism might otherwise end up as deposits in foreign banks. Since this investment is desired by the economic development planners and since governmental agencies are already facing shortages of technically qualified people, it is to Brazil's advantage to decentralize investment

[6] A. O. Hirschman, op. cit. This report on the effect of the investment incentive mechanism in the Northeast indicates that more than doubling the industrial capacity during the 1960's will provide the engine which propels economic development for all aspects of the economic system.

decision making as much as possible--i.e, to localize decisions regarding where in the economic system investments should be made, the amount and timing of the investments, the raising of needed capital, the acquisition of proper equipment and the coordination of this with required construction. Although the investment decision making process is decentralized, the planners still participate in the process since they must approve the proposed investment. The participation by the economic development agency permits coordination and encouragement of priority investments.

The investment incentive mechanism, as it applies to stimulating investment in textile mills, also has some serious weaknesses. A direct effect of increasing the rate of investment in textile mills is the elimination of over 10,000 jobs. The process of industrialization is usually thought of in terms of increasing the number of people employed in industry. When a major investment has the opposite effect, it is very serious unless indirect employment effects more than compensate. Investment in cotton milling may provide a stimulus to the growing industrial equipment industry in the South-Center, but that region is already rapidly developing and quite modern. From the description of chapters three through five, it would seem that the investment program is having little, if any, modernizing influence on cotton farmers, assemblers or small retailers. Thus, within the very large cotton industry, the impact of

the $100 million invested has had a negative employment effect and within the Northeast there has not been a noticeable contribution to modernization.

A case can be built, of course, that without the incentives which encouraged much of the investment, textile mills may have ceased to operate in the Northeast. The result of the shutdown of mills would displace more industrial employees and remove from the cotton farmers and assemblers their major market. However, this argument presupposes that no investment and modernization would have taken place without the incentives. This supposition would not appear to have held up since many of the textile mill owners had easy access to credit, and funds generated by other corporate holdings.

Another drawback inherent in the incentive mechanism is associated with the fact that the government provides a subsidy in the form of a tax remittance to firms which modernize or expand operations. This subsidy, it turns out, is largest for corporations that have the highest rate of earnings. Thus, the wealthier firms that are currently operating at a profit and probably have a large cash reserve, receive the largest subsidy to modernize and expand further. This results in financially aiding those corporations that have the capital to modernize and withholding financial aid from those that do not have the capital.

With regard to the cotton textile mills, a case can

be built that the problems underlying the inefficiency of textile mills in the Northeast will not really be solved by such investment. Thus, referring to the cotton textile industry, it is the contention of the United Nations Economic Commission of Latin America that:

> . . . the principal reason for the low productivity in Brazil is not the lack of modern equipment (although that is very important, too, in some of the older mills) but the poor organization and administration of the factories.[7]

This same report claims that productivity could be remedied without major new investment if the following conditions could be rectified:

1. the excessive number of people employed by the mills,

2. defective manufacturing conditions (e.g. poor maintenance, bad lighting, inadequate cleaning of rooms and machinery, lack of control of humidity, poor yarn, etc.),

3. lack of specialization, principally in the weaving operations.

Thus despite advantages in the investment incentive mechanism, there are some major shortcomings. The positive aspects associated with substantial investment do not cope with some major causes of the stagnation and low standard of living of most people associated with the cotton industry. Something more, indeed much more, must be done. In the next chapter are suggestions for supplementing the investment incentive program. These suggestions are

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[7] Productividad de la Mano de Obra en la Industria Textile Algodonera de Cinco Paises Latinoamericos (New York: United Nations, 1951), p. 44.

based on the findings presented in chapters three to five regarding institutional, organizational and managerial barriers to modernization, and also on the present discussion of negative features in the investment incentive program.

CHAPTER VII

MODERNIZING THE NORTHEAST BRAZIL COTTON INDUSTRY: SUGGESTIONS FOR SUPPLEMENTING THE INVESTMENT INCENTIVE PROGRAM

In order for modernity to permeate the cotton industry, something more than the investment incentive mechanism is necessary. Currently a minority of the cotton farmers and assemblers can be classified as being fairly innovative, and therefore productive. How can the rest be helped to become this way? The first requirement is a clear picture of the relatively modern farmers and assemblers. What exactly do they do differently that warrants their being regarded as more "innovative" and what are the correlates of this innovativeness? Are the correlates variables over which the government has influence? These are the questions which the present chapter tries to answer. In a nutshell: What can the government do to modernize a majority of the farmers and assemblers, given the limitation on governmental financial and human resources?

The index of innovativeness of the cotton farmers and assemblers is based on practices used. It is, therefore, an occupational behavior index, unlike the "modernity" index, which is based on attitudes (see chapter II, page 25).

The practices of the cotton farmers and assemblers underlying the innovation index are listed in Table 7:1, along with the corresponding use by the farmers and assemblers surveyed.

Table 7:1.--Acceptance of Innovations by Cotton Farmers and Assemblers

A. Farmers use of:	Yes
Manure	8.0%
Chemical fertilizer	.6
Good seeds	52.0
Crop sprays	65.0
Ox plow	34.5
Hand planter machine	1.0
Tractor	4.0
B. Assemblers use of:	**Yes**
Methods for rat control	61.3%
Methods for insect control	78.8
Classification and grading cotton	61.2
Annual records of purchases and sales	44.2
Expense records	32.6
Fire precautions	21.8

The innovation index considers the number of practices employed by the farmers and assemblers. For instance, 70% of the farmers may use two of the innovations, 35% use three, 15% use four, etc. The correlations involving innovativeness are based upon the responses of farmers and assemblers using more or less of the innovations listed.

An index of innovativeness and not modernity is focused upon because the actions and not attitudes of the farmers and assemblers are of more direct concern when attempting to formulate programs based upon the behavior of the more innovative farmers and assemblers.

The following is a summary of characteristics differentiating the more from less innovative farmers and assemblers.

Profiles

1. Innovative Farmers

Exposure to the mass communications media is greater for the more innovative farmers. This exposure is reinforced by attendance at farm extension meetings and access to semi-technical agricultural bulletins.

Willingness to cooperate in the construction of roads, irrigation projects and electrification is greater among the more innovative farmers.

Literacy and education of the more innovative farmers is at a higher level. They also showed greater recognition of their lack of knowledge concerning better ways to farm.

Importance of management is believed by more innovative farmers to be greater than luck in determining higher levels of income. These farmers believe that there are other crops more profitable than cotton and have, in fact, diversified. They also sell cotton to more assemblers,

hence reducing their dependence on any one buyer. In order to get better prices they actively seek market information.

Credit is used more heavily by more innovative farmers and they do not believe that undertaking a loan is risky business.

Roads serving the more innovative farmers are better. These roads facilitate transporting cotton to market.

The larger and wealthier farmers are also more innovative.

2. Innovative Assemblers

Exposure to mass communications media is greater among the more innovative assemblers.

Literacy and education of the more innovative assemblers is also at a higher level.

Importance of management is believedby the more innovative assemblers to be greater than luck in determining higher levels of income. In selling cotton to ginners they try to grade the cotton and seek out more and better price information. This results in their receiving a higher average price for cotton sold to ginners. The productivity per employee is greater for the more innovative assemblers. Also, the more innovative assemblers rapidly shift to other activities after the cotton harvest is over; this is indicated by the smaller volume of cotton they have stored four months after harvest compared to the less innovative assemblers.

Credit extension to farmers is greater by the innovative assemblers in order to create bonds with more farmers. On the money which they borrow in order to extend these loans to farmers, the innovative assemblers pay a lower rate of interest.

Roads serving the innovative assemblers are of a better quality. It may be speculated, since these assemblers are also more geographically mobile, that they consciously relocated their business in an area where there were better roads connecting them with farmers and ginners.

The larger and wealthier assemblers are also more innovative.

3. Innovative Farmers and Assemblers

In several respects the more innovative farmers resemble the more innovative assemblers even though the farm and assembly operations differ substantially. By being more literate and receiving a higher degree of exposure to the mass communications media, these farmers and assemblers are in greater contact with what is happening outside their community. Their level of aspiration, or desire to achieve, perhaps is based on this higher degree of exposure; in any case, they believe that their success is more subject to their management of the business than it is to their luck. By diversifying the activities of the farm or assembly firm, they seem to be making a conscious attempt to reduce their reliance upon cotton. They seem to be trying to formulate

a marketing policy oriented toward earning more than their competitors, i.e., toward competition and success. Before selling their product they attempt to get more and better price information. The increased use of credit is an important aspect of stimulating business since it allows (a) the farmer to delay the timing of his sale until prices are higher, and (b) the assembler to be tied to more farmers. Furthermore, by being located near superior roads, they are in a position to evaluate more options when considering purchases or sales. Associated with the higher degree of innovativeness is the fact that these firms are larger and wealthier.

Supplemental Programs

In developing suggestions for supplementing the investment incentive program, the writer has been guided by his findings regarding correlates of innovativeness. Thus, they are suggestions that deal with (a) increased exposure to mass communications media, (b) increased literacy and education, (c) the importance of management, (d) credit, and (e) roads. These suggestions, it will be noted, attempt to utilize existing programs and, therefore, require neither large governmental expenditure of capital nor assignment of skilled technicians.

1. Literacy and education is being upgraded by a very large literacy campaign in the Northeast. However, this program should be expanded to include the reading

of semi-technical argricultural literature, i.e., literature which deals with new agricultural commodities, methods and procedures. The increased exposure to the mass communications media in the form of semi-technical agricultural literature could be reinforced with radio broadcasts which deal with ways in which farmers could increase their productivity. The radio broadcasts should be primarily oriented to a small group, like a literacy class. The broadcasts should not only indicate ways in which new agricultural commodities, methods and procedures can be upgraded but raise questions which the group discusses after the broadcast. Professor Rogers has examined the effectiveness in the diffusion of innovations of radio forums which include elements of mass media communication and interpersonal, small group communications. The combination of the technical expertise of radio broadcasts and the high degree of identification of the individual with the group results in a greater acceptance of innovations. Thus, by including semi-technical agricultural literature in the literacy campaign and also coordinating this campaign with radio-forum programs the farmers are provided with information which is necessary if they are to raise their level of productivity and standard of living.

2. The importance of management and the managerial techniques associated with using available resources more efficiently can be stressed by government agricultural

extension agents. They should encourage crop and livestock diversification among the cotton farmers and encourage the assemblers to buy other agricultural commodities. The encouragement of assemblers can be achieved through disseminating information about price support programs which already exist. This should also encourage the farmers to diversify and hopefully become increasingly receptive to efforts by agricultural extension agents. Market information about prices of various agricultural products should also be available to the farmers so that they can have some basis for deciding how they should diversify.

3. Roads are being improved with the use of funds from international economic development agencies. However, better secondary roads could be built by harnessing the expressed willingness of farmers to work cooperatively with their neighbors for such facilities. Harnessing this willingness to cooperate not only can reduce the cost of such facilities to the government but also increase the rate at which farmers will use these facilities to boost their productivity and improve their standard of living.

4. Credit and loans permit investment by farmers and assemblers. The increased availability of long-term, low interest loans would encourage assemblers to be more competitive when dealing with farmers, since more credit would reduce the farmers' reliance upon specific assemblers as their source of credit and thus as the party to whom

cotton is sold. The extension of credit to farmers should be used by extension agents to encourage diversification as well as to encourage already more innovative farmers to adopt even more productive procedures and techniques. Encouraging innovative farmers to adopt new innovations is similar to the use of "demonstration projects" except that indigenous farmers who are accepted in the community occupy the role of change agents.

The money for the increased volume of loans to be extended could come from the commercial banks which are required by law to extend a certain percentage of their deposits as agricultural loans. Many commercial banks find it difficult to extend such loans since they have no branches near the agricultural communities and have little experience in extending such loans. However, the state development banks could borrow these funds and put them at the disposal of the agricultural agents who work for the state. Those loans made to farmers which may not be repaid should be considered as a subsidy, similar to those which are encouraging industrialization.

These four suggestions are oriented to increasing the productivity of farmers and assemblers. Hopefully these suggestions would provide the basis for initiating modernization in the rural areas. Such modernization would supplement the efforts in the textile mills, hence creating a widespread base for economic development whose effect should be felt throughout the Northeast of Brazil.

Summary

In order to initiate modernization among the cotton farmers and assemblers something more than the investment incentive mechanism is required. Supplemental programs are needed. Guidelines for the design and implementation of such programs may be obtained from examining a profile of the more innovative farmers and assemblers.

The supplemental programs do not represent an attempt at replacing existing institutions, norms and attitudes with something foreign to the socio-economic system of the Northeast. The philosophy or strategy of these programs is simply to aid the majority of farmers and assemblers to modify their operations in the direction illustrated by their more innovative peers. Furthermore, the innovative farmers and assemblers would hopefully become still more innovative. Thus, these programs represent an attempt at increasing the productivity of firms by making the assembler and farmer (a) more cognizant of economic conditions, (b) knowledgeable as to how they can change and (c) increasingly able to procure inputs and equipment which are required if they are to modernize.

CHAPTER VIII

SUMMARY

Chapter one of the dissertation presents a brief sketch of the nature of stagnation in the economy of the Northeast and how the cotton industry is representative of the stagnant condition. The textile mills which are the industrial subgroup of the cotton industry, like the industrial sector of the economy of the Northeast, is benefiting from a rapid increase in the rate of investment. By examining the cotton farmers, assemblers, millers and retailers the effect of the increase in the rate of investment on the whole industry can be considered.

The groups in the cotton industry are viewed from three perspectives. Institutional factors consider the industry as the unit of analysis and describe the interrelationships existing between subgroups and environmental constraints on each subgroup. Organizational factors consider the firm as the unit of analysis and view the operation of the firms in each subgroup. Managerial factors consider the manager as the unit of analysis and examine the attitudes and values of the cotton farmers, assemblers, millers and retailers. Each of these three sets of factors represent different facets of the cotton industry and are interrelated.

The second chapter deals with the sources of data which are the basis for the examination of the cotton industry. The primary data were generated in research conducted in Recife, Brazil, under the auspices of the Latin American Market Planning Center. Questionnaires and interviews were conducted with cotton farmers, assemblers, millers and retailers. Secondary data sources included government publications and reports of consultants and financial institutions. These data supplement and support the primary data.

The institutional, organizational and managerial factors are individually described and the sources of data are presented. This description briefly indicates how each of the factors was operationalized as well as how the data underlying the discussion in chapters three to six was generated.

The institutional factors examined in chapter three include: roles and activities of subgroups, occupational structure, nature of ownership, the legal system, roads and electricity, literacy and education and programs oriented to modernization. The discussion includes the institutional barriers which retard economic development and contribute to stagnation. The barriers involve the wide disparity in the distribution of bargaining power between the farmers or retailers and the textile millers. The firms in each subgroup are not becoming increasingly specialized and cannot reap the associated economies. The firms with the most bargaining power are the fewest in number. The social

services available to the various subgroups in the industry reflect a lack of such services among those firms with the least bargaining power and more services among those with more bargaining power. Furthermore, the major effort at modernizing focuses around the textile mills which already have available and utilize more social services and possess the most bargaining power. The impact of this modernization is thus geared to less than 4% of the five million owners, managers, employees and dependents who depend upon the cotton industry. Thus, the disparity among the subgroups in bargaining power and modernity seems to be increasing and the operation of the market mechanism is not relieving the situation.

The organizational factors examined in chapter four include: production technologies, raw material procurement, marketing and distribution procedures, managerial techniques, financial incentives and rewards and costs, uses and source of credit. The organizational barriers to economic development indicate how the various factors create a cumulative effect featuring an uneven distribution of economic power concentrated in the textile mills and the lack of a smoothly functioning market mechanism.

The most sophisticated production technologies are used in the textile mills. However, until 1965 the machinery was largely obsolete and inefficient. The investment and productivity in the small scale farms, assembly firms and retail outlets are limited. Furthermore, in buying raw

materials and selling their produce, the bargaining power of these firms tends to reinforce the vicious circle of low levels of productivity, inadequate factor inputs and low prices for produce. The managerial practices employed in these small scale firms do not generally reflect (a) the desire to innovate (b) rational, profit maximizing behavior. Also, these firms face an inadequate supply of long-term low interest credit which could help them break out of the vicious circle of poverty. The existing incentive and reward mechanisms are symptomatic of the lack of a smoothly functioning market mechanism.

The managerial factors examined in chapter five include: attitudes toward risk-taking, attitudes toward cooperation, competition, mass communications media, social influences on price determination, time orientation and attitude toward compensating employees. The managerial barriers to economic development refer to the constraints faced by most managers of farms, assembly firms and retail outlets which influence the operations of their firms.

Generally, most of the managers of firms in the industry have not been prone to accept risks. This, and the orientation to the present, has resulted in a lower potential for change and innovation. The most prominent form of cooperation exists among owners of textile mills. Such cooperation resulted in reduced competition hence reducing the efficacy of the market mechanism. The notion of competition is foreign to most farmers since they are

obliged to sell their cotton to a specific assembler and do so at a time when market prices are depressed. Exposure to the mass communications media appears to be a necessary, though not sufficient, condition to increase the innovativeness and modernity of a manager. In the rural areas such exposure is very sparse. The attitude of the managers toward compensating employees does not indicate that, if the firms expand and prosper, the employees will share in the prosperity. The social influences on price determination also indicate imperfections in the operation of the market mechanism.

The discussion of the investment incentive program in chapter six includes the legal provisions and some of the features which are considered when examining a proposed project. A summary of the investment projects approved indicates that the proportion of incentive funds which can be used in a project is increasing, and that the average size of each investment and the total value of investments is increasing. Associated with the modernization of the textile mills is a substantial reduction in the number of jobs available in the mills.

The strengths and weaknesses of the investment program are then examined. The investment program has resulted in strengthening the competitive position of the textile mills, thereby guaranteeing continued employment in the mills as well as a local market for cotton grown in the Northeast. The investment program has also mobilized much

capital in Brazil and has placed it in the hands of people who have existing large corporate organizations. However, the investment program does not appear to have had a modernizing effect on the farm owners, assemblers or retailers. The program places capital in the hands of those who already have access to numberous sources of capital. It also appears that the mills could have been modernized without the expenditure of so much money.

Chapter seven presents some additional programs which are oriented to initiating modernization among cotton farmers and assemblers. A profile of the more innovative farmers and assemblers provides guidelines for designing and implementing programs which can create the conditions for increasing the innovativeness of farmers and assemblers.

These additional programs include: (a) coordinated literacy and radio forums dealing with new agricultural commodities, methods and procedures, (b) price support and loans administered by agricultural extension agents and the creation of a market information system, (c) formation of cooperatives to aid in the construction of roads, irrigation systems and extension of electrification and (d) encouragement of farm input manufacturers. These programs recognize the limited financial and human resources of the governmental agencies.

Suggestions for Additional Research

1. The consideration of the groups of firms in the

cotton industry in a stagnant economy represents an analysis of the basis of underdevelopment and the nature and sources of resistance to programs geared to modernization. In a developed economy, how does a broadly defined industry that includes rural and urban based firms compare with the description of the textile industry in Northeast Brazil? Comparisons of each set of factors for both cases might indicate additional alternatives which can be considered when attempting to stimulate modernization. Additional consideration of the distribution of economic power and the operation of the market mechanism in the developed and underdeveloped countries might underscore the range of differences. The most important factors associated with the more efficient market mechanism could also be discerned.

2. Underdeveloped countries can be thought of as falling into two broad categories. One category includes "resource-poor" countries such as those in Asia. Those countries have a small potential resource base relative to their population. The other group of underdeveloped countries are "resource rich" and have a large potential resource base relative to their population. Clearly there are differences in the problems which the countries in these categories face. The resource rich countries essentially must try to use available resource more productively. The resource poor countries have limitations on the level to which they can develop. Northeast Brazil is rich in natural resources. In what way would the results differ

if a similar study were conducted in a resource poor country? How, then, should the availability of resources affect the modernization efforts in both types of countries (or economic regions within countries)?

3. Another question focuses on the different ways in which more and less efficient or productive firms in an industrial sub-group operate in an underdeveloped economy. One can repeat this analysis for each sub-group in the industry and compare the managerial practices of the more efficient firms in each group. If there are any common managerial practices of the firms in the various sub-groups, perhaps programs could be designed which would foster the growth of the more productive firms and/or encourage the adoption of the practices which appear to be associated with higher levels of productivity. The result of such programs would lead to economic progress. There is an additional advantage to this approach because the planners are not trying to impose on firms, practices which appear to have had beneficial results in other countries. Instead, practices which were found to be successful in the economic system of the underdeveloped country are being encouraged.

4. The operation of the market mechanism in a centrally-directed socialistic economic system and the distribution of economic power differ from a "free market" economy. In what ways do the managerial, organizational

and institutional factors and conditions contribute to the different manner in which the market mechanism operates in such economies? Also, how do such factors affect the operation of a similar, broadly defined industry in each country, in terms of efficiency, yields, rates of growth, diffusion of higher levels of technology, etc.?

Each of these questions is directly concerned with issues related to economic development and modernization. Similarly, each question can employ, with appropriate modifications, the approach which is used in studying the cotton industry in Northeast Brazil.

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