THE DEVELOPMENT SETTING: NORTHEAST BRAZIL
AND
INDUSTRIALIZATION IN THE NORTHEAST

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THE DEVELOPMENT SETTING: NORTHEAST BRAZIL
and
INDUSTRIALIZATION IN THE NORTHEAST

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Market Processes in the Recife Area
of Northeast Brazil

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Foreword

In October 1966 I joined the field research team of Michigan State University in Recife, Brazil. This team was then initiating a large-scale study of market processes in Northeast Brazil. The two primary objectives of the study were:

1) to analyze the role of marketing systems in economic development, and
2) to determine what reforms in market processes could accelerate economic growth.

The study was financed by the U.S. Agency for International Development and executed as a combined effort of the Latin American Market Planning and Latin American Food Study Centers of Michigan State University. The Superintendency for the Development of the Northeast (SUDENE) provided Brazilian counterpart technicians and local support for the research project.

The research team attached considerable importance to the particular characteristics of the developing society in which it was operating. The economic and cultural setting peculiar to Northeast Brazil heavily influenced the design of the research as well as the nature of the recommendations which resulted from the research. Moreover, in order to effectively communicate the results of the study to the Brazilian technicians and decision-makers with an interest in it, the research had to be placed in the context of development policies and programs operative in Northeast Brazil. This set of concerns led to my preparation of the paper "The Development Setting: Northeast Brazil" which eventually became Chapter Two of the final research report.

Investigation of the relationship between agricultural and industrial growth was an integral part of the over-all research effort, and of special significance in the context of Northeast Brazil. Brazilian analysts and planners had for some time been concerned with the problems inherent in the phenomenon of a relatively stagnant agricultural sector on the one hand, and a small but rapidly growing and changing industrial sector on the other. Thus, in the course of the study, Mark Doctoroff of the MSU field research staff undertook an investigation of the industrial activity in Recife and its interaction with the surrounding rural area. His work assisted me in writing what became Chapter Three of the final research report, "Industrialization in the Northeast".

The complete report, entitled Market Processes in the Recife Area of Northeast Brazil, is to be published by the Latin American Studies Center of Michigan State University in 1969. The second and third chapters are herein submitted in partial fulfillment of the requirements for the degree of Master of Science in Agricultural Economics, and as my contribution to the work of Michigan State University in Northeast Brazil. The help of many persons made possible the writing of these chapters. The assistance of Dr. Harold M. Riley and Dr. Charles C. Slater, leaders of the research project and provokers of thought and inspiration, was, however, primus inter multus.

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CHAPTER 2

Operational research on the development processes necessarily is performed in the context of a developing society. The physical, cultural, economic and political milieux critically constrain the design and execution of the research. The over-all research environment also influences decisively the formulation and implementation of the recommendations derived from the research. The purpose of this chapter is to acquaint the reader with the particular development setting of Northeast Brazil within which the SUDENE/MSU research has been conducted.

In summary fashion, the chapter (1) reviews the region's geography and economic history (2) traces the evolution of Brazil's policies and efforts to deal with the development problems of the Northeast, including the creation of SUDENE and its activities and (3) describes the principal government agencies which are involved in the region's marketing processes. From our review of the development setting, a number of important observations emerge regarding the relationship of the SUDENE/MSU marketing research to the current stage of development policy formulation in the Northeast. These observations will be summarized at the outset of this chapter.

Summary of Basic Findings

Review of Northeast development history leads to the following fundamental observations.

First, the SUDENE/MSU marketing research includes consideration of two critical problems of Northeast development: (1) the creation of effective demand for the products of the region's industrial sector, and (2) the equitable distribution of income among the region's inhabitants. The former of these problems was raised originally by the Brazilian economist, Celso Furtado, in his groundbreaking 1958 study of the Northeast economy.[1] Furtado noted that the high levels of real food prices in the region's cities implied that consumers had little to spend on manufactured products, and therefore, that the effective demand for industrialized consumer goods (including processed foods) was severely limited. For industrialization to proceed at a satisfactory rate, he argued that real food prices in urban areas must decline. The equitability of income distribution among the Northeast population became an explicit and primary concern of development policy with the publication of SUDENE's Third Master Plan in 1965. The authors of the Third Plan emphasized that income distribution was an issue of social welfare (and implicitly, therefore, of political stability) and was also related to the growth of markets for the products of regional industry.

The SUDENE/MSU marketing research has led essentially to a re-statement, elaboration and refinement of the effective demand and income distribution problems. So as to be recognizable to those who are familiar with the development history of the Northeast, two of the key questions investigated by the SUDENE/MSU team may be formulated as follows:

(1) How can the simultaneous, mutually reinforcing growth of both agriculture and industry be promoted through improvements in the marketing systems which link these sectors?

(2) How can additions to regional income, brought about by the expansion of output and improvements in productive and marketing efficiency, be distributed favoring the lower income groups of the regional population?

In the chapters which follow, these question are investigated in depth from the viewpoint of marketing system dynamics. The SUDENE/MSU study thus constitutes a fresh conceptualization of several basic problems of Northeast development. It is also a more rigorous analysis of these problems, since it takes into account more systematically, comprehensively and quantitatively the relevant variables and functional relationships between variables.

Although the research jointly performed by SUDENE and MSU has led to several new approaches to dealing with the critical problems of Northeast development, its recommendations also build upon the current policies and programs of SUDENE and other development agencies in the region. As will become evident in subsequent chapters, the marketing viewpoint of analysis allows present development activities to be seen in a new light, and also clarifies the need for modifications in these activities and the addition of some activities to the arsenal of regional development programs. Change and re-direction are needed, but much of what is now being done to stimulate regional development can usefully be continued.

In short, the SUDENE/MSU research can accurately be regarded as a current phase in the evolution of thought regarding the nature of Northeast development problems and ways of dealing effectively with those problems. The results of the research are

not products of pure theory, nor of the attempt to transplant wholly foreign ideas to the setting of the Northeast. The research is constructed squarely on the contributions of Brazilians to the definition and understanding of Northeast development problems. It is closely aligned with the process of development policy formulation in the Northeast under the leadership of SUDENE. The recommendations to which it has led have been formulated giving careful consideration to the institutional and other resources and constraints of development in the Northeast.

Geography: Land and People

The Northeast Region of Brazil is generally regarded now as coincident with the SUDENE area of jurisdiction. As such it is comprised of nine states and a small part of a tenth. The northernmost state, Maranhão, lies just below the equator. Bahia, on the under-side of the Northeast "bulge," extends southward almost to the 20th parallel. Each of the nine states which lie entirely within the Region has an Atlantic coast. (Only a few northern municipalities of Minas Gerais, a land-locked state, are with the SUDENE area of jurisdiction.) The Region is bounded on the west approximately by the 47th meridian.

Although the Northeast accounts for only 10 percent of Brazil's total land surface, it is larger than the combined areas of France, Italy, Spain and Portugal. (Bahia alone is larger than France.) One out of three Brazilians lives in the Northeast. Only Mexico in Latin America has a comparable population.

Four relatively distinct sub-regions are encompassed by the Northeast. Within each sub-region, however, there is significant

variation in topography, climate and land resource base and use.

From the city of Salvador along the coast to the upper edge of the State of Pernambuco lies a narrow humid strip known as the Zona da Mata, or "Forest Zone." Remnants of the dense high stands of tropical trees which originally covered the sub-region can still be found. But most of the forest was felled during the Colonial Period to make way for the cane plantations and to build and run the sugar mills. The re-growth is still used primarily as a source of fuel in the sugar industry.

The Forest Zone is blessed with the region's most abundant and regular rainfall, and also contains most of the better soils. The humid strip is 30 to 40 miles wide, broadest in Pernambuco, where it extends inland from 50 to 60 miles. The southern area in Pernambuco is very hilly, but inter-laced with numerous, relatively flat and shallow valleys. Below Pernambuco, the area is characterized by extensive tablelands, cut irregularly by deep stream beds. The northern part of the Forest Zone in Pernambuco is also relatively flat. Above Pernambuco the Forest Zone becomes discontinuous, and is encountered at intervals immediately adjacent to the rivers and streams along the coast.

Cane and sugar production on large estates has been the principal economic activity in the Forest Zone since the initial colonization of the Northeast. The food produced in the area is grown and consumed chiefly by the plantation and mill workers. In certain parts pineapple and manioc are produced for urban markets. Commercial coconut production has also developed in recent years on the limited stretches of sandy soils just off the beach.

The Borborema Escarpment runs irregularly along the western edge of the Zona da Mata and delineates the beginning of the second major sub-region of the Northeast: the Agreste. The Agreste is a transition zone from the low-lying, humid coastlands to the vast semi-arid, interior plateau. It runs generally north and south, and in width is approximately comparable to the Zona da Mata.

Off-shore weather formations rarely penetrate beyond the Agreste. Continental air masses determine weather westward. Rainfall is adequate to exclude most of the Agreste from the "Drought Polygon," but is less bountiful than that experienced in the coastal sub-region.

The Agreste is generally hilly and peppered with large rock out-croppings. Its soils are of relatively poor quality, but their structure and depth, together with the sub-regional climate, have allowed for substantial diversification of agriculture.

The Agreste is the Northeast's primary internal source of foodstuffs. Beef cattle are raised extensively on large holdings. From Pernambuco and the state of Alagoas just to the south, the sub-region supplies dairy products to the major urban markets. Beans, manioc, corn and rice--the staples of the Northeast diet--are typically produced under sharecropping arrangements or on the "minifundia" characteristic of the Agreste. Fruits and vegetables are likewise produced for the regional market. The sub-region's agricultural output also includes important non-food crops, principally cotton and sisal.

Inland from the Agreste to the western extremities of the Northeast lies the Sertão. The notorious semi-aridity of the sub-region stems from a peculiar combination of climate and geology. Rainfall averages annually a total of about 27 inches. However, 90 percent of the precipitation is typically concentrated within the first five months of the year, leaving a dry season extending from June through December. An extremely thin soil cover over crystalline rocks which lack sedimentary beds results in scant water retention and high rates of evaporation. The torrential nature of the rainfall, together with the soil structure, account for widespread erosion and deep leaching.

Only two perennial rivers cross the Sertão; the others appear briefly during the rainy season, and then recede quickly below very shallow beds.

"Drought" is a yearly occurrence in the Sertão. The seriousness of the phenomenon depends on the volume of precipitation--which can vary up to 30 percent from the average--and perhaps more importantly, on the timing and relative concentration or dispersion of the rainfall throughout the year. Severe droughts result from particularly adverse combinations of the above two factors; their occurrence follows no regular cycle, but on average is once per decade. They can be unrelieved for two to three successive years.

Vegetation on the Sertão is sparse. It consists primarily of indigenous, low-growing xerophilous plants. The economically valuable xerophytes are used almost exlusively in non-food industries or as cattle feed. Mocó (tree) cotton, carnaúba palm, the oiticica tree, coroa and palma forage, and sisal are the most important.

The above-mentioned crops and beef cattle production on extensive holdings are the economic underpinnings of the sub-region. Range carrying capacity is low. The use of 10 hectares per head is not uncommon. In a few scattered parts of the Sertão the general landscape is briefly interrupted by combinations of climate and soil which allow for diversified agriculture closely resembling that practiced in the Agreste. The interruptions do not fundamentally change, however, the precariousness of the sub-region's life.

The fourth sub-region consists of the tropical rain forest areas of Maranhão and southern Bahia. These areas can perhaps more accurately be regarded as surviving extensions of the original Zona da Mata - type. The steady inroads of slash-and-burn agriculture, particularly in Maranhão, foreshadow eventual deforestation.

The population of the Northeast is concentrated along the Atlantic Coast. (Eight of the state capitols are also port cities.) The vast Sertão hinterland is the least settled.

Regional population has been growing steadily in recent decades at an annual net rate of between two and three percent, slightly below the national average. Precise data are lacking, but the difference between regional and national growth rates almost certainly results primarily from a steady migration of Northeasterners to the Center-South. Significant transfers of population have also been occurring within the Region.

Intra-regional flows have generally been from the rural Agreste and Zona da Mata to the urban centers. A study of migratory patterns converging on Recife, the largest of the Northeast

cities, performed by the Joaquim Nabuco Institute, indicated a stepwise flow from the densely settled adjacent countryside to successively larger urban concentrations. (The migrants from the Sertão seemed more likely to move out of the region southward.)

Clearly the influx to the coastal cities, particularly in the decade of the fifties, has been radically in excess of the demand for urban labor. The population of Fortaleza nearly doubled in that period; Recife's increased by an estimated 60 percent. Unemployment and under-employment, in varying degrees of severity, are visibly apparent in all of the cities bearing the brunt of the rural-urban transfer. The major municipalities have been extremely hard pressed to deal with the enormous burdens placed on water, sanitation, power, marketing and traffic systems, on housing,facilities and on police and welfare services, by their burgeoning populations. Many of the newly arrived must struggle to exist with neither the expected amenities of urban life nor the relatively easy access to subsistence income which they may have left behind.

Much smaller streams of migration have been moving in the direction of Maranhão and the lower Amazon Basin, and also toward the sparsely settled Central Highlands of the states of Goias and Mato Grosso. During the late fifties, Northeasterners left in large numbers to join the construction of Brasília. As their task has neared completion, demand for their labor has dwindled rapidly. The mobility of the region's population continues to be governed primarily by the hardships of life in the rural sector, the contemplated attractions of the larger cities, and the prospect of jobs in the Center-South.

Economic History[2]

Either in fact, or by historians' convention, Brazil was discovered by Pedro Cabral in 1500 on the Bahian Coast south of Salvador. The first permanent settlement, however, developed at Olinda, on a hillside north of the present city of Recife. Although thoughts of gold probably lingered in the minds of the first colonists (and were later to be borne out), the Portuguese were initially preoccupied with the establishment of a sugar industry. In terms of production techniques, they held a competitive advantage derived from considerable experience with the planting and refining of cane on the Atlantic island possessions of Portugal.

The geography of the Zona da Mata was found to suit eminently their purposes. But the ensuing task was by no means an easy one. The tropical environment was a formidable obstacle. The natives of the region were dangerous foes, difficult to round-up and regiment, recalcitrant and thought to be relatively inefficient laborers. Food crops were somewhat less easily grown than sugar cane, and supplies of many major commodities had to be shipped from across the sea.

Still, cane and sugar production flourished. International markets were expanding rapidly, and through the mid-17th century the Northeast of Brazil had a virtual monopoly on world sugar exports. During the last quarter of the 1500's, output increased tenfold. At one point in the expansion process, it appears that the industry could have self-financed a doubling of output capacity every two years.[3] Northeast of Brazil may well have been the most profitable colonization effort of any European Power in the Western

Hemisphere for the century and a half following Cabral's landing.

The dazzling economic upsurge had already begun to slacken, however, when the Dutch--at war with the Spanish annexers of Portugal--occupied the Northeast during the second quarter of the 17th century. The occupiers left at the end of the quarter with hardly a shot being fired, but took with them to the Caribbean intimate knowledge of cane and sugar production processes. Moreover, the Netherlands had firm control over the commerical distribution of sugar in European markets. The Northeast's monoply on sugar was rapidly broken as production increased in the Antilles and West Indies. Before the century ended, the economic fortunes of the region had been reversed. A long period of decline began.

Cattle production in the Northeast was originally a supply subsidiary of the sugar industry. Draft animals were required in practically every phase of the industry's operations. Since the expansion of cane production proceeded primarily by incorporating additional land, the demand for traction and transport beasts apparently increased more rapidly than the expansion of cultivated area. Moreover, the exceptionally high profitability of sugar production virtually precluded the production of other crops or of livestock in the Zona da Mata. Indeed, cattle raising in the Forest Zone was prohibited by edict of the Portuguese Crown.[4] As a result, livestock production spread widely throughout the Agreste and Sertão in the first two hundred years of colonization.

The market position of Northeast sugar producers continued to worsen during the 18th century. In addition, the price of African slaves, who had largely displaced the indigenous captive

laborers, began to rise. The discovery of gold in the area of the present state of Minas Gerais attracted both capital and population out of the sugar area.

The problems besetting the sugar industry had adverse effects on cattle production, but the effects were mitigated. The fall in foreign exchange earnings from sugar motivated the creation of primitive import substitution industries along the coast; a market developed for hides and leathers produced in the region. Gold mining in the Minas Gerais region generated a new source of demand for draft animals, which apparently helped to improve prices for Northeast cattle. Finally, the operating capital requirements for livestock production were considerably lower than those of the sugar industry; fixed asset investments were comparatively nil; declining employment in the sugar sector made cheap labor available to cattle raisers. Thus, over-all, the livestock producers were in a fairly good position to weather the negative impact of the declining sugar economy.

By the end of the 18th century, the Brazilian economy as a whole was organized around five centers of activity. To the north, in Maranhão, a rather prosperous forest-extractive industry had been set up by the Jesuits, and manned by Indian laborers. Sugar continued to dominate economic life in the Zona da Mata. Still within the sphere of sugar influence, but developing independence, were the Northeast cattle producers of the Sertão. Gold and diamond mining was concentrated in the Minas Gerais area. Far to the south, another area of cattle production was developing rapidly in what is now that the state of Rio Grande do Sul. The latter

area was the chief source of mules for the mining activities. Most of the Brazilian population lived in the Northeast, but in 1762 the capital of the Country was moved from Salvador to Rio de Janeiro. The move clearly signalled the end of the Northeast's political and economic hegemony over the rest of Brazil.

The American and French revolutions and the Napoleonic Wars indirectly led to a brief revival of sugar prosperity in the Northeast during the first part of the 19th century. The re-establishment of peace and later the introduction of sugar beets in Europe, and the expansion of cane production in the United States, cut short the precarious up-swing of the Northeast's sugar economy.

Toward the second half of the 19th century world cotton prices provided the stimulus for the commercial production of mocó tree cotton in the Sertão. A sizeable textile industry emerged during the 1840's. The American Civil War and subsequent collapse of world supplies added impetus to cotton and textile production in the region. Before the end of the century, however, the Northeast had lost considerable ground in both the raw material and semi-finished product markets internationally. Coffee production was developing rapidly in southern Brazil, drawing population and capital once more out of the Northeast and leading to a sizeable influx of European immigrants to the São Paulo region. By 1872, Brazil's population was about evenly split between North and South. Thereafter, the Northeast's proportion declined steadily.

During the first half of the present century articulation between Brazil's economic centers increased, but integration lagged far behind. The burgeoning of coffee production in the Center-South

was accompanied by the rapid expansion of southern consumer markets. When the Great Depression disrupted international coffee trade, the Center-South had already laid the bases for subsequent industrial growth; diversification of agricultural and mineral output accelerated. The formation of social overhead capital and full-blown development of import substitution industries followed. The effects on the Northeast of growth in the Center-South were primarily centripetal.

For most of the first half of the 20th century the Center-South market was more important to Northeast sugar producers than were their world outlets. The industry was once more revived and output expanded; generally buoyant international prices further stimulated the expansion. The long-term consequences of the return to relative prosperity were probably unfavorable on balance, however, to the regional economy. Occupation of the region's best agricultural resources by the sugar "mono-culture" was reinforced; production of foodstuffs was relegated primarily to the remaining limited areas outside the Drought Polygon, in particular, the Agreste. Even in the latter sub-region the expansion of food production confronted a land tenure and use system better adapted for extensive cattle raising and subsistence farming. Industrialization was predicated on the lowering of food prices in urban markets, a proposition largely precluded by the inelasticity of the region's food supply. Indeed, the Northeast's sales of sugar and other non-food agricultural products to the Center-South were off-set partially by food imports from the latter region.

Furthermore, Northeast sugar producers began to encounter heavier competitive pressures as production of sugar in the Center-

South began to increase. To maintain their market position, the Northeast producers in turn brought downward pressure to bear on wages in the industry. Their immediate objective was not very difficult to accomplish, in view of the extreme in elasticity of the rural labor supply at the subsistence wage level. With wages extremely low, however, the effective size of the regional market for industrial and consumer goods remained severely limited, thus encumbering the industrialization process.

The relative lag in Northeast growth behind the Center-South was worsened by a flow of low-cost labor from the former to the latter region. Wages in the São Paulo area tended to increase less rapidly than labor productivity, thus accelerating returns to capital. A natural consequence was a flow of capital from the Northeast to the Center-South. There also appeared to be a steady worsening in the terms of trade between the two regions, particularly at mid-century. Throughout the period 1947-1960 the Northeast earned substantial foreign trade surpluses, with the exception of one year.[5] The relative backwardness of the region's industrial growth implied proportionately greater demand for the more highly taxed imports. National trade policy favored the importation of capital goods, and thus a large portion of the region's export earning were transferred southward—perhaps 40 percent of its earnings in the above period.[6] On the other side of the coin, the Northeast was forced to do it buying from the "infant," high-cost industries of the Center-South. Typically the Northeast purchased high value-added goods from the Center-South and sold low value-added commodities, or raw materials, to the Center-South. Moreover, fiscal resource transfers at the federal level

tended on balance to favor the Northeast. Thus, in relation to the Center-South, the Northeast accumulated chronic financial deficits.

In addition, Northeast importers typically paid higher rates for foreign exchange, compared to the rates paid by Center-South importers of "perferred" capital goods. Proceeds from Northeast purchases of exchange were used to some extent in support of the coffee economy, and also to increase the lending capacity of the Bank of Brazil, which does most of its business in the Center-South.

Transfers to the Northeast through the federal fiscal mechanism were probably substantially in excess of direct tax revenues supplied by the region throughout the first half of the century. As will be explained, however, these transfers were primarily for emergency drought relief and a variety of public works intended to mitigate the effects of droughts. The contribution of the transfers to the growth of productive capital in the region was probably modest.

The Northeast thus can claim to have contributed importantly to the industrial development of the Center-South. The claim is justified to a large extent merely on the basis of the region's foreign trade performance in the decade and a half following World War II. The period coincided generally with the expansion of import substitution industries in the Center-South, which necessarily implied a substantial increase in capital goods imports. Northeast surplus earnings frequently covered the deficits incurred by the rest of the country during the period.[7]

Despite the nature of the regional inter-action during the first half of this century, it can probably not be said that the relative retardation of the Northeast was a necessary condition of development in the Center-South, nor that the centripetal effects of the latter region's growth process were primarily at fault in the widening gap between the two. The process of economic decline in the Northeast has been traced back to the late 17th century. Temporary and partial recoveries occurred at intervals in the two and a half centuries which ensued, but the basic structure of the region's economy remained unchanged. The most serious consequence of the brief recoveries may in fact have been to delay the day of reckoning with the structural changes needed to provide for sustained, long-term regional development. The poor resource endowment of the Northeast compared to the Center-South was also a natural point of divergence for the inter-regional growth disparities.

By mid-20th century, when national income accounting statistics first became available, the extent of the divergence in growth between the regions was evidenced. In 1920, São Paulo employed 29 percent of the nation's industrial workers, the Northeast 27 percent. By 1950, the percentages were 39 and 17, respectively. São Paulo's share of total industrial output increased from 39.6 to 45.3 percent from 1948 to 1955. In the same period, the Northeast's share fell from 16.3 to 9.6 percent.[8] The gap was large and clearly widening. Efforts to close the gap were shortly to achieve high priority in national development policy.

Regional Development: Policies and Programs[9]

The preceding description of the historical evolution of the Northeast economy does not imply that until the 1950's Brazil was unaware of or indifferent to the problems of the region, nor that there existed a policy of decelerating the region's development for the benefit of the rest of the country.

To begin with, it may plausibly be argued that inter-regional differences in levels of growth were relatively insignificant at the beginning of this century. In addition, the deep gap documented by the national accounts fifty years later was a relative disparity in growth rates: The Northeast had not failed entirely to grow; but it had not kept pace with one of the truly outstanding development performances in Latin America. Perhaps it is more important to note, however, that in fact Brazil began a genuine effort to deal with the perceived problems of the Northeast even before the last century had ended.

The long, cruel drought of 1877-79 and the enormity of the human suffering which ensued, propelled the Northeast into the national consciousness as a problem area. As already has been pointed out, the Sertão is subject annually to dry spells of varying intensity. Two factors accounted for the epic proportions of the 1877-79 drought: first, the extreme adversity and persistence of the combination of weather elements which "normally" gives rise to the semi-aridity of the sub-region; second, the population of the Sertão had increased significantly in the proceding twenty years of relatively good (drought-free) weather. In short, a large body of people were for the first time affected. Their

presence in the Sertão when the drought hit is primarily attributable to the displacement of labor from the declining sugar industry to the jobs being created in the expansion of cotton production on the hinterland plateau.

The government responded to the crisis by creating a Royal Commission to investigate the causes and provide relief for the consequences. The Commission was, however, relatively ineffective in executing its mandate, and rather quickly retired into obscurity.

In 1902, the publication by Euclides da Cunha of his classic novel Os Sertões re-stimulated the national conscience to the plight of the drought flagelados. In 1909, the Inspetoria of Works Against the Droughts was created at the federal level to deal with the phenomenon. By law, the Inspetoria was to be run by engineers and natural scientists. The approach they adopted centered on the so-called "acude" solution. They proposed the widespread installation of water retention structures, theoretically for the purpose of providing water for human and livestock consumption during dry periods, and to facilitate food production in the area throughout the year. Their plans advanced only slightly, however, prior to the re-currence of severe drought in 1919.

Significantly, the drought of 1919 coincided with the beginning of the term in office of the only Northeasterner to govern Brazil, Epitácio Pessoa. The new president set as an objective of his administration the "extinction" of the drought in the Northeast. He followed through with a vengeance.

From 1916 to 1919 the expenditures of the Inspetoria averaged about 4 million milreis annually. In the period 1921-22,

they jumped to an average of 142 million, a phenomenal 15 percent of total national revenues. From 1919 to 1923, the Inspetoria expended the approximate equivalent of US$150 million in current purchasing power.[10]

The startling rise in expenditures was made possible in part due to a "shelf" of projects developed by the Inspetoria since its creation. It should also be noted that the construction works envisioned were contracted primarily to foreign firms. Exclusive of contractors' fees, about half of the total expenditures of the Inspetoria were payments for imported equipment.

President Epitácio left office in 1923. His successor, a native of Minas Gerais, eliminated the allocation of 2 percent of federal revenues to the Inspetoria which had been made mandatory in the preceding administration. All works of the Inspetoria, many of which had not reached completion, were abruptly suspended in 1925. By that time, expenditures of the Inspetoria had fallen to 0.5 percent of federal revenues. The cut-back in spending was part of a general policy of fiscal retrenchment. The lesson, as pointed out by Hirschman, is that a relatively stagnant region is likely to be the step-child of a dynamic region. Spending on the poor region can tend to be regarded as a luxury, generally ill-afforded.

The ascendancy of the Vargas regime in 1930 evoked a re-commitment to the ideas of Epitácio Pessoa, triggered by the return of a drought lasting from 1930 to 1932. The extension of help to the suffering Northeast also coincided with the social reform objectives of the Vargas government. Inspetoria expenditures swung upward again, peaking at 10 percent of federal revenues

in 1932. Several major dams were completed. Total storage capacity was quadrupled in the thirties to a level of about 2.5 million cubic meters. Road construction advanced significantly. The morale of the Inspetoria was buoyant. For a short period at least (1934-37) a mandatory allocation of 4 percent of federal revenues to the Inspetoria was re-instated.

The forties were free of drought, making life relatively uneventful for the Inspetoria--except that 4 percent of federal revenues were again mandatorily assigned to it under the 1946 Constitution, and its name was changed to the National Department of Works Against the Drought, DNOCS.

The forties were in other ways eventful, however. At their outset, the wisdom of the Inspetoria approach was incisively criticized from within the ranks of the agency. The first director of the agency's agricultural research and extension service, Jose Augusto Trinidade, spoke out forcefully against the proliferation of dams without adequate provisions being made to ensure the use of the water stored for the production of food crops. He accurately noted that the dams benefitted primarily the large landowner, who typically owned both the dam site and the irrigable lands below, but by profession and outlook had no interest in irrigation. Water relieved the impact of drought on the livestock of the region, but water plus irrigation was needed, to produce the foods crops required for the security of the local human population. In goods years, irrigation might even yield a surplus of foodstuffs to alleviate supply problems in the major urban centers. Dam construction without irrigation might even yield a surplus of

foodstuffs to alleviate supply problems in the major urban centers. Dam construction without irrigation also served to retain cheap labor in the area, which again benefitted chiefly the large landowner, but increased the numbers of people likely to be hardest hit by drought.

Trindade's arguments were convincing, and have been often repeated since, but to little avail. As of 1961, only 7000 hectares adjoining the dams built with public funds were under irrigation. The Orós Dam, largest in the region, alone was the key potentially to the irrigation of perhaps 100,000 hectares in the Jaguaribe Valley.[11] The problems to be confronted in adjusting property rights to facilitate irrigation have become steadily more complex.

The other event worthy of note was the shift in emphasis which occurred in the 1940's from the problems of the Drought Polygon center region to the São Francisco River Valley.

The São Francisco is the larger of the two perennial streams which traverse the Northeast Region, and is navigable over large portions. It does not flow through the heartland of the Drought Polygon; its adjacent soils are comparatively poorer, and receive less rainfall. In general, however, the river basin is less subject to the more severe effects of drought.

The creation of the São Francisco River Valley Commission, CVSF, at the federal level in 1948 not only represented a shift in geographical focus; it marked the beginning of a new approach to the problems of the Northeast. The Commission was guaranteed 1 percent of federal revenues, in keeping with the precedent established (at intervals) by the Inspetoria. Similarly, the

Commission was headquarted in Rio. The difference resided in the Commission's broad mandate to transform a total economic environment, rather than to deal with a single, specific feature of the environment. The approach owed much to the TVA pattern. Unfortunately, the indefinite nature of the Commission's task led to dispersion of effort. Its resources were spread widely, but thinly.

In 1948 a federally owned "mixed" company was formed to exploit the hydro-electric potential of the Paulo Afonso Falls located approximately at the mid-point of the São Francisco. Unlike the Commission, the São Francisco Hydro-electric Company, CHESF, was not endowed with a guaranteed portion of the federal revenues. Moreover, its purpose was singular and well-defined: the production and distribution of power. It has succeeded admirably. Almost on schedule, the first three 60,000 kilowatt generators went into operation in 1955, and lighted the cities of Salvador and Recife, each about 400 kilometers distant. CHESF also generated the prospect of power grid adequate for regional industrialization.

In 1951 drought stuck again. The government's initial response was limited to the traditional "hydraulic" solution. The search began, however, for a fresh conceptualization of the region's ills. The first publication of national income estimates in 1951 and 1952 provided an appropriate framework. Henceforth, diagnosis of the "Northeast Problem" had as a starting point the widening inter-regional gap. The problems was to narrow the divergence.

Hirschman has cited three primary consequences, in terms of regional development policy. First, income generation took priority over the fights against the drought. Second, the region laid claim to the continuous attention of the nation, in place of periodic and temporary emergency relief. Finally, the sugar zone of the Northeast was brought into the development discussion.

One concrete expression of the new thinking and loss of faith in past approaches, was the creation in 1955 of the Bank of the Northeast. The Bank was assigned 0 8 percent of federal revenues. Its mandate initially was to extend medium and long-term credit for agriculture, particularly with regard to the commercial xerophilous crops. Early in its existence, however, the Bank broadened its objectives in the direction of general development banking. Unlike all other agencies previously created to deal with Northeast problems, the Bank was headquartered in the Northeast, at Fortaleza.

The Bank encountered considerable difficulty at the outset in accomplishing its broader objectives. It had no "shelf" of development investments to draw upon. After five years, short-term general commercial credit still accounted for 75 percent of outstanding loans. By 1962, however, specialized medium and long-term loans occupied about half of the Bank's portfolio.[12]

Severe drought returned to the Northeast in 1958, and in its wake the bankruptcy of the Inspetoria's "hydraulic" solution stood out starkly. Although 6.4 billion cubic meters of storage capacity had by this time been created, the combined relief employment rolls of DNOCS and the Federal Highway Bureau numbered

more than a half million people. The term "drought profiteering" entered the national vocabulary and disillusion was complete.[13]

In May 1958 President Kubitschek charged the head of the National Economic Development Bank, economist Celso Furtado, with the task of analyzing the economy of the Northeast and preparing a comprehensive proposal for federal action. Furtado reported back in early 1959:

> "The Brazilian Northeast stands out in the Western Hemisphere as the most extended and populous zone where income per capita is below 100 dollars. The average income of the Northeasterner is less than one-third that of the inhabitant of the Center-South. Since income is far more concentrated in the Northeast, the disparity in living levels of the mass of the population is even greater."[14]

There was no doubt in his mind but that the disparity of income levels between the regions was the most serious problem facing the nation's development. He reviewed the national institutional biases which had reinforced the growth of the disparities, and he delineated the structural obstacles which would have to be overcome within the Northeast's economy in order for the region to sustain accelerated long-term development.

In particular, Furtado focussed on the strong braking effect which high urban food prices exerted against industrialization. The high food price levels he attributed to a combination of inadequate, unstable and inelastic supply, and even in good crop years, to exceptionally high costs of marketing. The level of food prices in his view deprived the Northeast of its most significant comparative advantage, cheap labor. Without this advantage, the Northeast would not be able to develop the new, potentially dynamic markets in the Center-South which were urgently needed to motivate its industrialization process.

His proposals for governmental action were direct and uncomplicated. Essentially, there were (1) to put under irrigation the basins of the dams constructed with federal monies so as to generate a food reserve in the Sertão; (2) to head-off the advance of slash-and-burn agriculture in the virgin tropical rain forest of Maranhao and colonize the territory on the basis of rational agricultural techniques; and (3) to reorganize land use in the Zona da Mata, so as to bring portions of the region's best lands into production of food for regional markets. The common denominator of his proposals was more food at lower prices in the urban markets.

Each of the proposals raised delicate and fundamental issues. Irrigation of the federal dam basins would require revision of an entire land tenure system. Colonization of Maranhão suggested large-scale population movements across political boundaries. Reorganization of land use in the sugar zone would entail the basic transformation of an economy which had perpetuated itself without significant change for four and a half centuries.

The Superintendency for the Development of the Northeast: SUDENE

The inevitable storm of controversy which followed the publication of Furtado's report was tangible proof of the sensitivity of the issues he had raised. The fact that his proposals were incorporated in the creation of SUDENE in December 1959 demonstrated that development policy in the Northeast had come of age. The stage was set for a direct attack on the root causes of the region's economic ills.

The legislation giving birth to SUDENE endowed the agency with powers commensurate with its tasks. It was given control over the policies, plans and investments of all federal agencies operating in the Northeast; their activities were henceforth to be coordinated with the over-all regional development planning of SUDENE. The agency was to execute its plans through the existing structure of federal entities, in cooperation with state and local administrations, and where necessary directly under its own authority. The legislation also permitted SUDENE to recommend the creation, retirement or reform of federal agencies in the Northeast. Power to expropriate property in "the interests of social welfare" was given to the agency, as well as primary responsibility for public works and emergency relief in time of drought. SUDENE was authorized to provide federal income tax and customs duties relief, as well as preferential treatment in foreign exchange transactions, to private firms in furtherance of regional industrialization. No less than two percent annually of federal revenues were to be provided to the agency, and such additional funds as Congress approved.

SUDENE's First Master Plan was submitted to Congress in mid-1960. It was essentially an elaboration of the proposals which Furtado, now the first Superintendent of SUDENE, had submitted to President Kubitschik early in 1959. The initial opponents of the proposals took advantage of the opportunity to launch a second attack. Tumultuous debate prevented Congress from approving the Plan until December 1961. Appropriation of the requested budgetary funds followed approval, and SUDENE was in operation.

In August 1961 Furtado met in Washington with President Kennedy and top U.S. AID officials. It was agreed that a special mission of U.S. experts would be dispatched promptly to the Northeast to study SUDENE's plans and assistance requirements. The Bohan Team arrived in Brazil in the fall of 1961 and reported back to President Kennedy in February 1962. In April the U.S. signed with Brazil the Northeast Treaty pledging US$131 million for the first two years of a five-year program of cooperation.

Flush with the preceding series of achievements, SUDENE moved quickly to initiate investments, but concentrated primarily on relatively non-controversial projects. Highway construction, water and power supply, and the promotion of industrial investment were the primary thrusts. In agriculture, the agency devoted most of its efforts to the colonization of Maranhão.

Nevertheless, the authors of the First Master Plan left no doubt about the priority attached to solution of the regional food supply problem. They wrote:

> "One notes that the high proportion of expenditures on food in the social accounts of the Northeast--in the city due to shortages, in the countryside due to income stagnation--reduces the portion which would be destined to another expenditure, including for manufactured goods. The ultimate consequence is the restriction of the market for manufactured goods and the discouragement of industrial production."

And furthermore:

> "In the diagnosis of the Northeast economy, on the basis of which the government decided to create SUDENE, the same priority was given to these measures to increase agricultural output and facilitate its distribution as was attributed to the intensification of industrial investment, since 'the industrialization of the Northeast has been seriously hindered by the inadequate supply of foods in the principal urban

> centers of the region.' And the report, for greater emphasis, clearly affirms that 'the solution of the supply problem of these centers constitutes a prerequisite of the success of any industrialization policy'."[16]

Thus, the central problem of Northeast development was recognized as that of promoting the simultaneous, mutually reinforcing growth of both agriculture and industry. The problem was seen to hinge primarily on the relationship between urban food price levels and the size of markets for the products of the region's industry. It was also preceived that the food distribution and marketing systems played a key role in determining the real level of urban food prices. Finally, the writers of the First Plan emphasized that agricultural development was not only crucial to successful industrialization, but that the growth of industry would substantially enhance the performance of the agricultural sector.

With the publication in mid-1965 of the Third Master Plan, SUDENE was able to report signs of substantial improvement in the regional economy. Per capita income in the Northeast, as a percentage of per capita income for the country as a whole, had continued to decline through the mid-fifties. Thereafter, however, upward trend was discernible: the region's relative position in terms of national per capita income had increased from a low of 44 percent (1953-56 average) to an average of 54 percent in the period 1960-62.

Improvements in statistical techniques may have tended to over-estimate slightly the upward trend. Moreover, regional population was growing more slowly than that of the rest of the country, and the rate of increase in per capita income for the

rest of the country had measurably decreased in the early sixties. In the period 1960-62, regional per capita income increased at the rate of about 5 percent annually, and at less than 3 percent for the country as a whole.

The conclusion could still be tentatively entertained, however, that the inter-regional gap had ceased to widen and apparently had closed slightly.

Expansion was occurring most rapidly in the agricultural sector. The Third Plan reported that from 1955 to 1962, non-livestock output had increased by 43 percent; livestock production was up 22 percent; the sector as a whole had expanded output at an average rate of 4.7 percent annually. Of particular importance was a notable change in the composition of agricultural production: food output had increased by 52 percent from 1955 to 1962, as compared to 37 percent expansion in non-food and export crops. Among foodstuffs, rice production had increased most, manioc production least. The SUDENE analysts were dismayed over the apparent lack of improvement in agricultural productivity: output expansion was nearly matched by the increase in cultivated land. Nevertheless, 48 percent of regional product was contributed by agriculture. The sector's growth was therefore a key factor in the over-all improvement of the region's economic performance.

The authors of the Third Plan singled out two major factors causing the unsatisfactory levels of investment and productivity improvement in the agricultural sector: agrarian structure and the marketing system. With respect to the latter, they noted

that the stimulus which price increases should transmit to the producer were being intercepted and blocked by the marketing system. In the other direction, the deficiencies of the marketing system were also regarded by the SUDENE analysts as inhibiting the development of the over-all regional economy by reducing the volume and increasing the price of foodstuffs reaching the urban markets.

Indication of growth in the industrial sector were disappointing. At the time the Third Plan was prepared, 66 percent of the Northeast population continued to live in the rural sector, as compared to 55 percent for Brazil as a whole, and less than 50 percent in the Center-South. Urban population in the region grew rapidly during the fifties (4.8 percent annually), even though more slowly than in any other region of Brazil. Industrial productivity in 1962 was up 54 percent, compared to 1955. The number of firms with five or more employees had increased 74 percent from 1958 to 1962, but the average number of employees in such firms had declined from 41 to 29, and employment in the aggregate had increased by only 22 percent. The apparently strong inclination toward labor-saving investments troubled the SUDENE analysts. They foresaw a worsening of the employment problem and a less than satisfactory distribution of income resulting from the labor-saving trend.

Food products continued to dominate the region's industrial structure, even though this industry's contribution to value product in the sector declined slightly from 33 to 30 percent in the period 1958-62. Its share of total value added was relatively

constant at about 29 percent. The textile industry was a close second using both criteria, and continued to be pre-eminent in terms of employment, accounting for 37 percent and 31 percent of the industrial labor force in 1958 and 1962, respectively. The food industry's share in the labor force increased slightly over the same period from 25 to 29 percent.

The writers of the Third Plan could find no significant trends indicating a basic transformation of the region's industrial structure. Nevertheless, they were optimistic that such changes would begin to occur as investments in social infrastructure matured and the impact of the SUDENE private investment incentives program started to be felt.

Generally, favorable trends in terms of volume and value of exports were discernible for the half-decade ending in 1962. These trends permitted the conclusion that the external sector contributed decisively to the reduction of disparities between the Northeast and the rest of the country. However, preliminary indications from 1963 on suggested the possibility of reversals in regard to several major exports of the region.

Despite the good reasons for optimism with regard to the future, based on observable improvements in the region's economic performance, the authors of the Third Plan were careful to point out the seriousness of the problems which remained, as well as several major potential sources of difficulty.

Per capita income in the Northeast was still less than half that of Latin America's as a whole. Only Bolivia, Haiti and Paraguay were worse off, but the Northeast had twice the combined

population of these countries. In addition, the intra-regional distribution of income revealed extreme inequities, both geographically and as among social groups. Concern for the distribution of income among the regions population was, in fact, a dominant characteristic of the Third Plan. SUDENE's concern in this regard was expressed as follows.

> "In effect, the problem of income distribution is equivalent in magnitude to the problem of income growth, not only for reasons of social welfare, but equally because of the damage which accentuated unequal distribution of the receipts of the community can do to the expansion of the market, and as a consequence, to the expansion and diversification of the economic activities which are characteristic of the economic development process."[17]

The planners also foresaw an approaching end to the cultivable land available in the region for agricultural expansion. Most of what remained, especially in Maranhão, could be brought into cultivation only with sizeable investments in infrastructure. If the agricultural sector were to continue to play a dynamic role in the region's economy, improvements in productivity could no longer be delayed. The apparently worsening trends in the export sector, in addition to having a potentially serious impact on regional income, could also adversely affect the agricultural sector's progress.

In the industrial sector, job creation was not keeping pace with additions to the labor force resulting from natural population growth and migration to the cities. Unemployment, in short, was becoming an increasingly serious problem.

The investment program stipulated under the Third Master Plan was basically an extension of the programs begun under the

previous two Plans. Two general shifts in emphasis were notable. Infrastructure investments were to be scaled down slightly in relation to all others. Human resource investments were to increase substantially, and to involve a much broader range of activities. The latter shift reflected on of the most prominent features of the Third Plan, in contrast to the preceding two: attention to the human resource not only as a factor of production, but also as the direct beneficiary of the development process. The substantial increase in programs planned for human resource development also constituted one approach to the income distribution problem.

With respect to agriculture, the Third Plan was intended to maintain SUDENE's original emphasis on the increase of food production. A major policy innovation was the high priority given in the Plan to improvements in the agricultural marketing system. Deficiencies in the marketing system were viewed by the SUDENE analysts as constitutiing a serious obstacle to regional industrialization. In the words of the Third Plan's authors:

> "The deficiencies of the marketing and distribution system thus constitute a serious obstacle to agricultural development...and also prejudice the development of the economy as a whole, for it reduces the supply of food to the urban centers, even while food production is increasing."[18]

Two fundamental conclusions formed the basis of programming for SUDENE's investments in the agricultural sector under the Third Plan. First,

> "...the process of Northeast industrialization may be frustrated if, in the short-run, [agricultural] marketing is not improved and the supply of food and raw

> materials for regional industries is not substantially increased;"

Second,

> "...the increase in regional agricultural production verified in recent years was of a purely extensive character, and thus has resulted in appreciable increases in the costs of production, with direct consequences for the very process of development."[19]

The marketing program's share of allocation to agriculture was to increase from 15 percent under the Second Master Plan to 35 percent by the end of the Third Plan. Marketing improvements were expected to contribute significantly to a short and medium-term increase in effective regional food supply.

In industry, the Third Plan called for continuation and acceleration of the investment incentives program than in its fourth year of operation. The results already achieved under the program were positive and significant. They indicated clearly that the program was the most effective single action undertaken by the government directly to simulate regional industrial development. The Plan re-affirmed SUDENE's basic policy to exclude from the incentives program only those investments resulting in the production of "non-essential" goods, the installation of idle capacity, or the worsening of the balance of payments.

Five over-all objectives were established for the Third Plan. They are:

(1) To increase gross regional product by 7 percent annually (which implied a 4.7 percent annual increase in regional per capita income);

(2) To increase the internal spatial and inter-sectoral integration of the regional economy, and to accelerate the integration of the regional economy with the national economy in general;

(3) To create new job opportunities, particularly in the industrial and services sectors, so as to diminish the unemployment problem;

(4) To accelerate the expansion of output in agriculture and mining, in order to increase per capita food supply, and expand the capacity of the rural population to consumer manufactured products; and

(5) To broaden direct access to the benefits of development, thus facilitating greater individual achievement and social mobility.

A very brief description of the SUDENE investment incentives program--how it operates, the response of the private sector to it, and its effects on regional economic growth--will round-out this section of the chapter.

The basic program was established in the legislation accompanying Congressional approval of SUDENE's First Master Plan in 1961. It was subsequently revised under the legislation of the Second Plan in 1963. The relevant provisions of the two pieces of legislation are, respectively, Articles 34 and 18; hence, the program is generally referred to as the "Articles 34/18" program.

Originally, the program allowed corporate entities in Brazil to deposit up to fifty percent of their federal income tax liabilities in the Bank of the Northeast for subsequent investment in the region's industrial sector. The amount of the tax deposit had to be matched by an equal amount of private funds in the final investment project. The depositor could undertake an investment of his own, or invest in the project of another corporate entity, in which case the latter was responsible for the matching funds. SUDENE approval was required for all (investment projects.)

Since 1966, the matching funds requirement may be set at 25, 50 or 75 percent of the total investment, depending on the

Northeast will supply up to fifty percent of the matching funds required, in the form of a loan at very favorable interest rates. Theoretically, therefore, an investor in a maxium priority project could draw on 34/18 funds (his own or those of other corporate depositors) for up to 75 percent of the total investment; he could borrow up to 12 1/2 percent of the project cost from the Bank of the Northeast, and would thus have to provide a minimum of only 12 1/2 percent of the project cost in matching funds.

The program was extended in 1965 to the agriculture and telecommunications sectors. In addition to fixed capital investment funds, limited working capital financing for Northeastern firms is now also available under the program.

In 1962, the first full year of the program, almost 2,000 corporate tax payers made deposits. By the end of 1966, the number of depositors had increased tenfold, to include approximately 10 percent of all eligible firms in Brazil. São Paulo firms accounted for more than half the number of deposits. Over the same period, the number of cruzeiros deposited annually increased from 6 million to 252 million new cruzeiros.

Deposits have accumulated much faster than projects have been approved and disbursements made. Of total deposits in 1966, for example, sixty percent had been allocated and only fifteen percent disbursed to approved projects, as of mid-1967. The lag from deposit to investment has itself, however, been instrumental in facilitating regional growth by enabling the Bank of the Northeast to expand its short-term commercial lending operations. Over the past four years the Northeast borrower was thus spared the full

impact of the federal government's tight credit policy. As Hirschman has pointed out, the deposit-to-investment lag is to some extent unavoidable, given the complexity of preparing new projects. It also helps drive the system forward by stimulating the search for investment opportunities. (Unutilized funds revert to the Federal Treasury three years after deposit.)

As for the effect of the program on regional growth, Hirschman has estimated that 34/18-induced investments through mid-1967 will account for a doubling of the industrial capital stock existent in the region just prior to the initiation of the program.[20] Equally important will be the impact of the program on the stucture of industry in the Northeast. In Hirschman's words:

> "The projects subsidized by the 34/18 mechanism, in short, are bringing a more diversified and sophisticated industrial sturcture to the Northeast, with sharply increased representation of industries that are both dynamic and linkage-rich."[21]

In addition:

> "The 34/18 projects approved up to June 1967 will give rise to 67,800 new jobs. This figure compares to a total industrial work force of 176,800 in 1959."[22]

Although the nature of investments taking place under the program are relatively capital intensive, the industries which should appear to service the 34/18 industries will probably be comparatively labor intensive and thus will tend to alleviate the unemployment problem.

The 34/18 program is just beginning to build up momentum. Its full impact on Northeast development will not come into operation for several years. It clearly stands out, however, as the

most dramatic and consequential growth process to be initiated in the Northeast since the great sugar boom of the early colonial period.

The 34/18 program will be discussed in somewhat more detail in the next and subsequent chapter. Here, however, an advance indication should be given of two major problems confronting the program. First, it seems likely that the creation of output capacity under the program is proceeding at a rate which exceeds the growth of effective demand for the products of the new industries. If this trend becomes exaggerated, the new industries may be forced to operate at low levels of capacity-utilization, and thus at high unit cost levels. Market sizes would be even further restricted as a result. The problem in this regard boils down to the discretionary income of consumers being inadequate to sustain the rapid expansion of output capacity; real consumers' income, in turn, is largely a function of the relative price of food. In other words, Furtado's original analysis of the relationship between food supply and regional industrialization is still valid and of critical relevance to the formulation of Northeast development policy.

Second, the 34/18 program has been restricted primarily to the financing of investment and operating costs of firms engaged in production. Marketing and distribution activities have been largely excluded from 34/18 financing. It is our contention that the latter activities can be of direct and vital importance in determining the economic success of investments in productive capacity. Of particular importance in this regard would be the

distribution and marketing of (1) agricultural inputs, such as fertilizers and farm equipment, and (2) agricultural outputs, both raw materials for industry and commodities for human consumption. Improvements in the efficiency of the marketing systems for such goods could lead to the lowering of production costs, the expansion of output, and the increase of effective supply of agricultural products, and thus ultimately, to the enlargement of markets for the products of the region's industry.

Government Marketing Agencies

A large number and a wide variety of government agencies are directly and indirectly involved in the marketing systems of the Northeast. In some instances the agencies are organized to deal with single commodities, for example, the Sugar and Alcohol Institute and the Coffee Institute. Other agencies perform a single marketing function across many different commodity channels. For example, CIBRAZEM, the Brazilian Warehousing Company, deals specifically with storage; SIMAN is the Northeast Agricultural Market Information Service. CANESA, the Northeast Supply Company, and SUNAB, the National Supply Superintendency, are organized to deal generally with problems in the marketing sector, the former on a regional basis, the latter nationally. The Production Financing Commission, CFP, provides minimum prices supports in the agriculture sector; credit and investment capital are supplied to the sector from many public sources. The Brazilian Food Commission administers the equivalent of the U.S. Pure Food and Drug Act. Another system of government agencies exists to regulate

competitive behavior and the use of economic power in the private sector of the Brazilian economy, much like the U.S. Federal Trade Commission and Justice Department.

The preceding list is illustrative, not exhaustive; it does not include, for example, any of the state and local agencies which affect marketing operations. A separate treatise would be required to fully describe the host of government mixed-economy and other semi-public entities which influence or engage in describing the roles of the two agencies most prominent in Northeast marketing, SUDENE and SUNAB, and the basic approaches of these agencies to the problems of marketing.

As is evident throughout the remainder of this report, analysis of marketing system dynamics is employed essentially as a tool for investigating the over-all process of economic development. The marketing systems studied by the SUDENE/MSU team are not limited to the agricultural sector of the regional economy, but extend to the distribution of industrial products, the exchange processes between sectors, and the flows of general import and export commodities. The marketing systems are used as convenient mechanisms primarily for studying the transfers of goods and the corresponding transfers of income within the Northeast community and between it and other communities. In this general sense, most of the programs in which SUDENE is engaged can be viewed as activities which influence the processes of marketing. In practice, however, SUDENE has adopted a more limited, conventional view of its role in marketing, specifically restricting its attention to the agricultural sector.

Thus, within SUDENE's Division of Agriculture and Supply is the Department of Supply, which has the general responsibility for planning, organizing and instituting SUDENE's programs in the area of agricultural marketing. The Supply Department has in the past been chiefly concerned with the collection of marketing statistics, the administration (in cooperation with the national Production Financing Commission, CFP) of minimum price support programs for Northeast producers, and the improvement of the region's storage facilities for agricultural commodities. Other activities of the Agriculture and Supply Division which are conceptually related to marketing have included the distribution of modern agricultural inputs to producers and the organization of producers into cooperatives for the purchase of farm inputs and the sale of agricultural products. A major responsibility of the Supply Department has also been to provide basic policy and planning guidance to CANESA, the Northeast Supply Company, a subsidiary, "mixed-economy" company of SUDENE.

CANESA can be regarded as SUDENE's principal vehicle for operations in the agricultural marketing sector. Ultimately, the CANESA system is to consist basically of a network of central wholesaling establishments in the major cities of the region, initially in Recife, Fortaleza and Salvador. The central wholesale markets will also function as collection and distribution points for price, supply, demand and quality information linking rural and urban channel operators; they are also to serve to coordinate the use of transportation and storage facilities and to promote the adoption of grading systems. Producer cooperatives are to be given

special treatment under the CANESA plan in an attempt to foster this particular form of rural organization.

To date, CANESA has been severely constrained by financial limitations. Construction of the Recife wholesale center, CARE, is nearing completion and the center is in partial operation. The centers planned for Fortaleza and Salvador are still on the drawing boards.

SUNAB, the National Supply Superintendency, was created in 1962. Until recently it was a "semi-autonomous" agency of the federal executive; it is now subordinate to the Ministry of Agriculture, delegated Law No. 5 which established SUNAB endowed the agency with comprehensive powers to regulate and perform activities in the marketing sector. Its general authority includes:

1. preparation and execution of a national plan for the supply of essential products;
2. maintenance of a national system of storage and refrigeration facilities;
3. establishment of import and export quotas for essential products;
4. "intervention" in the private sector to ensure the unhindered distribution of essential goods and services;
5. maintenance of stocks for the purpose of supply and price regulation;
6. establishment of information systems regarding production, distribution and consumption, with the right to requisition data from whatever source necessary;
7. regulation of transport and distribution services;
8. establishment of norms and execution of measures designed to regulate and improve marketing conditions;
9. establishment and regulation of prices;

10. examination of the stocks and written records of any marketing firm;

11. performance of all other acts necessary in carrying out its responsibilities.[23]

Although the preceding list amply illustrates the breadth of SUNAB's powers, the agency has primarily concerned itself with the selective regulation of prices at the retail and wholesale levels. Also, through COBAL, a subsidiary "mixed-economy" company, SUNAB has attempted to maintain adequate supplies of staple commodities in major urban centers; through CIBRAZEM, another such company, it has maintained a network of storage and refrigeration facilities; through the CFP, SUNAB has instituted a program of minimum price supports for selected agricultural commodities, at the level of producers. As previously noted, the CFP price support program in the Northeast is operated in conjunction with SUDENE.

There are similarities and differences in the ways SUDENE and SUNAB have approached the problems of marketing. Despite the broad mandate of each agency, the have both restricted their attention to marketing in the agriculture sector, that is, to the exchange process leading from the farmer to the final consumer. This conceptualization of the scope of marketing has the basic limitation of failing to account for the vital exchange linkages between the agricultural and other sectors of the economy. The supply of modern farm inputs, such as fertilizers, insecticides and machinery, is left out of the picture. Similarly absent is the supply of non-food consumption goods from the urban to the rural areas. At the urban market level, this narrow view of the marketing process does not provide the basis for analysis of the relationship

between real food prices and the size of markets for manufactured consumer goods. In short, the exchange processes from farmer to consumer do not constitute a closed system, and can not be adequately analyzed as such.

Looking at marketing as the movement of goods from the farmer to the consumer has the second major disadvantage of failing to recognize the highly important effects which the modern urban marketing enterprise can have on the coordination of the supply channel back to the level of the producer. Supermarkets and certain forms of efficient wholesale establishments have been described as guaranteed market outlets looking for stable sources of supply. Because of their imperative need for dependable, high volume, consistent quality supply, these types of firms have in many countries effected major improvements in the efficiency with which goods reach urban centers, and the condition and quality of goods entering the urban marketplace. Moreover, such firms can effect relative food prices at the level of the consumer, even without becoming heavily involved in "backward vertical coordination" activities, as will be demonstrated in subsequent chapters.

For a variety of reasons, both SUDENE and SUNAB have in effect adopted to "static" view of the urban distribution sector. The fact, for example, that SUDENE's 34/18 funds are not available to urban food marketing enterprises (and that such firms generally can acquire only very short-term credit from public lending instiutions) suggests perhaps not enough consideration has been given to the real urban consumer income which might

be generated by fostering enlargements in scale and improvements in efficiency of urban distribution firms. SUNAB, on the other hand, has concentrated its efforts on the selective control of prices at the retail and wholesale levels. Anti-inflationary policy and political considerations have been the principal factors behind SUNAB's price control efforts. Implicit, however, in the attempt to control prices is the assumption that the firms whose prices are being controlled are in a monopolistic or similar position to consistently exploit, or indeed to engender, the generally inflationary trends of the economy. The evidence presented in subsequent chapters does not support such an assumption. What it does indicate is that firms which have been able to increase the scale and efficiency of their operations have maintained consistently lower prices than have firms without similar management "know-how" or access to investment capital. Government control of prices is obviously a short-run expedient at best. For food prices to decline in relative terms, greater efficiency and improved coordination of the marketing system should be fostered, and may such gains can be achieved at the urban distribution level.

Both SUDENE and SUNAB (through the CFP) are to be praised for their efforts to establish a minimum price support program for Northeast producers. Here again, however, the full complexity of the marketing system should be carefully considered. The support price necessary to generate a positive supply response on the part of the producer should be coordinated with the level of prices which are controlled at the wholesale and retail stage.

The spread between supported producer and controlled consumer prices obviously will determine the economic viability of intermediate channel operators. The more fundmental question, however, is whether price controls at the wholesale and retail levels are preferable to direct promotion (including the provision of government financing) of more efficient wholesale and retail operations.

Despite these general short-comings in the approaches SUDENE and SUNAB have adapted to the problems of marketing, both agencies have contributed substantially to improvements in the sector. Their joint efforts to establish minimum price supports have already been mentioned. Both agencies have been able to make progress in improving the physical infrastructure of agricultural marketing in the region. SUDENE, in cooperation with the Ministry of Agriculture, is instituting a market new information system, SIMAN. SUDENE is also engaged in sizeable research and experimentation efforts, has made 34/18 funds available to agriculture, and is fostering the development of producer cooperatives. CANESA is moving to expand and improve urban wholesale markets, even though its progress has been slowed due to lack of funds. Through COBAL, SUNAB has been able to avert several major food shortages in principal cities of the Northeast, and has unquestionably had some success in slowing the inflation of food prices at the consumer level.

FOOTNOTES

[1]Furtado's work was published in 1959 as "A Policy for the Economic Development of the Northeast," by the Northeast Development Council, CODENO, a precursor of SUDENE.

[2]The summary of Northeast economic history is drawn primarily from Celso Furtado's book, The Economic Growth of Brazil.

[3]Celso Furtado, The Economic Growth of Brazil (Berkeley and Los Angeles: University of California Press, 1963) p. 49.

[4]Ibid., p. 62.

[5]Werner Baer, Industrialization and Economic Development in Brazil (Homewood, Illinois: Richard D. Irwin, Inc., 1965) p. 178.

[6]Ibid., p. 175.

[7]Ibid., p 174.

[8]Celso Furtado, The Economic Growth of Brazil, pp. 264-5.

[9]The description of Brazil's efforts to deal with the development problems of the Northeast is taken mainly from Albert O. Hirschman's case study. "Brazil's Northeast" in his book Journeys Toward Progress.

[10]Albert O. Hirschman; Journeys Toward Progress (New York: The Twentieth Century Fund, 1963) p. 30.

[11]Ibid., p. 69.

[12]Ibid., p. 64.

[13]Ibid., pp. 68-9.

[14]Ibid., p. 74.

[15]Brazil, I Plano Director de Desenvolvimento Econômico e Social do Nordeste, 1961-1963. (Recife: Dir. de Documentasão da SUDENE, 1966) p. 118.

[16]Ibid., p. 194.

[17]Brazil, III Plano Director de Desenvoluimento Economico e Social do Nordeste, 1966-1968 (Recife: Div. de Documentacão da SUDENE, 1966) p. 24.

[18]Ibid., p. 194.

[19]Ibid., p. 111.

[20]Albert O. Hirschman, "Industrial Development in the Northeast and the Tax Credit Mechanism of Article 34/18," a preliminary draft report prepared under contract AID-12-544 for the United States Agency for International Development (July, 1967), p. 16.

[21]Ibid., p. 19.

[22]Ibid., p. 21.

[23]Brazil, Superintendencia Nacional do Abastecimento, Antecedentes, Organizasão, Legislacão Corvelata, Documento No. I da SUNAB (Rio de Janeiro: SUNAB, 1963), pp. 21-2.

Chapter 3

INDUSTRIALIZATION IN THE NORTHEAST

The Region's Industry Sector

Although almost a third of Brazil's population resides in the Northeast, approximately 90 percent of the nation's industrial output is produced in the Center-South, over 50 percent in the state of São Paulo alone.[1] The Center-South accounts for about 80 percent of all labor employed in Brazilian industry.[2] Clearly, when placed on a national scale, the Northeast's industrial establishment carries little weight.

Within the Northeast, industry provides only 17 percent of regional value product; 30 percent of national value product comes from industry.[3] The structure of Northeast industry in the early 1960's contrasted markedly with that of the nation's as a whole, as illustrated in the following table.

As seen in Table 3.1, Northeast industry is comparatively heavily concentrated in the processing of agricultural products, and in light consumer industries. Food processing is its most important industry in terms of output and value added. Textiles run a close second and provide the largest single source (about 30%) of industrial employment.[4] In 1962, these two industries together accounted for almost 60 percent of employment, 55 percent of wages paid, 61 percent of value of product and 56 percent of value added in the region's industrial sector.[5] As also seen in Table 3.1, the ratio of value

TABLE 3.1

STRUCTURE OF INDUSTRIAL PRODUCT IN THE NORTHEAST

	Value Added-% of Total (1962)		Investment Represented by
	Brazil	Northeast	Approved 34/18 Projects*
1.CAPITAL & INTERMEDIATE GOODS	58.8	29.2	67.4
Non-ferrous metals	5.0	6.3	9.4
Metallurgy	12.4	2.7	8.7
Comm. & Electric Material	5.6	0.1	3.3
Transport Material	10.2	0.4	6.7
Mechanical Industry	3.2	0.2	2.3
Lumber	2.5	1.0	1.6
Paper & Cardboard	2.9	0.9	0.5
Rubber	2.0	0.9	0.5
Leather & Furs, etc.	1.0	1.2	0.1
Chemical & Pharmceutical	14.0	15.5	34.3
2.CONSUMPTION GOODS	41.2	70.8	32.7
Furniture	2.0	1.5	0.4
Textile	13.8	26.8	18.2
Clothing, shoes, handicraft	3.4	1.7	1.4
Food Products	13.2	30.4	7.9
Drinks	2.6	3.9	3.9
Tobacco	1.9	4.3	---
Printing	2.5	1.9	0.4
Miscellaneous	1.8	0.4	0.5
TOTAL	100.0	100.0	100.0

Source: SUDENE and BNB/ETENE: presented in Albert O. Hirschman, "Industrial Development in the Brazilian Northeast and the Tax Credit Mechanism of Article 34/18", a preliminary draft report prepared under Contract AID-12-544 for the United States Agency for International Development, July 1967.

*Approved from 1963 through Mid- 1967.

added in capital and intermediate goods to value added in consumption goods was in 1962 nearly inverted as between the Northeast and Brazil as a whole.

Industrial Growth and Transformation

The beginnings of recent industrial modernization and expansion in the Northeast can be traced to the late fifties and early sixties. A key factor in the initiation of industrial change was the availability of hydroelectric power from the Paulo Afonso site and other sources. From 1956 to 1959, total power generation in the region more than doubled and was more than re-doubled by 1964.[6] Development lending by the Bank of the Northeast also gained momentum and contributed to the growth of industry. With the exception of two drought years, food processing increased steadily, output in the industry expanding by almost 40 percent from 1956 to 1964.[7] Textile production, also subject to the drought phenomenon, but more importantly, beset by acute obsolescence and increasing competition from the Center-South, fluctuated erratically. Over the period, only in 1962 did textile production exceed the 1956 level of output.[8] Substantial increases in production were registered in mining and chemicals, indicating the beginnings of structural change in the secondary sector, but both industries continued to play a minor role in total regional industrial output.

SUDENE's Article 34/18 Program

SUDENE's program of industrial investment incentives came into effective operation in 1963. At about the same time, public investments in roads, power and other infrastructure were increased

significantly by SUDENE and other federal and state development agencies. The private sector responded quickly to these initiatives. Investment in industry accelerated dramatically. On the basis of then available information, Albert O. Hirschman predicted that actual and approved investments under SUDENE's incentive program through mid-1967 would probably eventutate in the doubling of the Northeast's capital stock over its 1964 level.[9]

About 75 percent of investment funds under the SUDENE program have been coming from the States of São Paulo and Guanabara.[10] Thus, a large portion of the plants built, expanded and modernized under the program are subsidiaries of Center-South enterprises. In general this has resulted in the transfer to the region of more up-to-date managerial practices and production techniques, in addition to the fresh capital. The recent development of a "new industrial mentality" in the Northeast owes a great deal to this transfer mechanism.

Moreover, Hirschman pointed out that an important change in the structure of Northeast industry was occurring as a result of the SUDENE investment incentives program. Comparing the 1962 regional industrial structure with the structure of the SUDENE program investments, (see Table 3.1) Hirschman noted a nearly exact reversal of proportions as between consumption goods industries and capital and intermediate goods industries.[11] In other words, the new investments were closely approximating the more sophisticated structure of industry elsewhere in Brazil. The prospect was thus raised of a significantly more dynamic and linkage-rich industrial sector for the Northeast.

Comparisons of Northeast and Center-South Industrialization

The changes described in the region's industry broadly parallel the preceding import-substitution phase of industrialization in the Center-South. From industry dependent heavily on agricultural raw materials, the Northeast is apparently moving toward the production of substitutes for imports previously purchased from the Center-South.

Several differences in the process are notable, however. First, the resource base of the Northeast is severely limited for the purposes of certain heavy industrial groups, the most prominent of which is steel. The nature of the region's primary resources will thus determine the extent to which import substitution will proceed in some sectors. Assembly plant operations, in industries relying heavily on steel inputs, will likely persist. Thus, in such industries the initial benefits of an investment inflow from the Center-South will be partially attenuated by relatively thin layers of value added within the region, and by continuing outlays for assembly inputs. In other areas, however, such as petroleum and chemicals, the Northeast's resources appear likely to be capable of supporting substantial heavy industry complexes.

A second major difference lies in the interaction of the rural and urban complexes. The industrialization process in the Center-South was accompanied and largely made possible by a dynamic agricultural sector. Not only did agriculture--principally coffee--generate large sums of foreign exchange and domestic savings for industrial investment, it provided a sizeable and diversified market for manufactured products, both capital and consumption goods. In addition, it ensured

an adequate supply of food items, at relatively low prices, to the cities' sector. The latter was vital in the expansion of the urban market for manufactured products and in the generation of savings for housing and infrastructure development in the urban centers.

In short, the urban-rural exchange system provided the dynamic linkage between the industrialization and agricultural growth processes in the Center-South. In this respect, the situation in the Northeast is far from similar. The region's agricultural sector, although a net earner of substantial foreign exchange resources, has performed this function erratically; moreover, the principal earners of foreign exchange--sugar, cacao and cotton--confront increasingly precarious international market conditions, as well as extreme competitive pressure from domestic producers outside the region (principally in the Center-South). The region's foreign exchange earnings have, in any case, long tended to be spent largely on industrial imports to the Center-South, giving rise to the "triangular" trade pattern which was first given wide public recognition by Celso Furtado. (See Chapter 2 for description of "triangular" trade pattern.)

As a market for manufactured products, and generator of domestic resources for investment, Northeast agriculture has also performed far from optimally. The significance of this failure is simply dramatized by the fact that two-thirds of the region's population reside in the rural area, and a majority of its work force is engaged directly by agriculture.

Also in contrast to the Center-South, the Northeast rural sector has not supplied food in the quantity or at the relative prices needed to sustain adequately the expansion of an urban market for industrial output.

Finally, population migration patterns differentiate the growth processes of the Northeast and the Center-South. In the latter region, industrialization drew on an influx to the cities of former rural workers (a large portion of them Northeasterners) for a ready supply of low-cost labor. In addition, sizeable immigrations from Europe and Japan provided skilled labor for both industry and agriculture.

In the Northeast, there is also a pronounced rural-to-urban migration flow. Over all, SUDENE has estimated that the region's urban population is growing at about 4.7 percent per year, its rural population by only 1.1 percent. [13] This pattern has not, however, been enhanced by migrants possessing readily marketable skills to the same extent as occurred in the Center-South. Virtually no immigration of skilled farmers has taken place. In addition, the influx to the cities has not apparently been in response to effective and growing demand for urban labor, but has been primarily a reaction to the comparative stagnation and privation of the rural sector.

Thus, on the one hand, the growth of the Northeast's urban population has not constituted a proportional increase in the effective market for manufactured foods. On the other hand, it has substantially increased the pressure on available urban food supply, while raising the costs of urban infrastructure and administration

more than proportionally to the expansion of the tax revenue base.

It is also worth noting that public development investments in the Center-South during that region's "take-off" period were financed almost exclusively from tax revenues generated within the region. Northeast development expenditures have required large net transfers of revenues from the Center-South (which, incidentally, pays about 90 percent of total federal taxes).[14] The SUDENE 34/18 program of investment incentives in particular is dependent almost entirely on business savings generated in the Center-South's private sector. To this extent, the region's industrialization is vulnerable to the vagaries of a unique political relationship involving critically the willingness of the private entrepreneur from the Center-South to continue to invest in the Northeast. The instability inherent in this relationship has been amply illustrated by the series of recent attempts, on the part of Center-South interests, to have the 34/18 program curtailed, and to divert 34/18 resources back to the Center-South.

Future Outlook

The preceding and other considerations suggest that it would be dangerously illusory to presume, on the basis of superficial similarities, that the current phase of the industrialization process in the Northeast will necessarily proceed to the same results as the phase just ended did in the Center-South.

The rapid increase of urban population in the region will likely continue through the foreseeable future. Indeed, it might be argued that it should proceed even faster, implying no growth or

a net reduction of the region's rural population, in order for per capita income and levels of savings to rise in the rural sector.

Even at its current rates of increase, the burgeoning urban population creates increasing demands on available food supply, and thus directly, on the food marketing process. Effective supply must not only keep pace with urban population increase and the possible acceleration of the rate of increase, but it must also expand enough faster to cause real food prices to decline. Otherwise, discretionary consumer income will not grow rapidly enough to sustain the current industrialization process.

Traditionally, the food supply problem has been viewed forward from the level of the agricultural producer. Investigation of the exchange processes highlights the importance of marketing channel efficiency in reducing losses on the way to market, and improving the quality of food delivered to the urban consumers. Additionally, the exchange processes underscore the fundamental bearing of the organization of the urban marketing enterprise on real food prices. Simply put, the traditional urban marketing enterprise should not be expected to be the nexus simultaneously of incentives for expanded agricultural output and lower real food prices. This assertion is dealt with in the following three chapters. Moreover, the technological revolution which the region's agriculture must undergo will necessarily involve, among other things, the modernization of techniques for the marketing of manufactured farm inputs. Chapters 7 through 10 deal with this aspect of the problem.

Of prime importance at this juncture of the report is understanding that the current process of industrialization in the Northeast is in jeopardy as a result of (1) the absence of adequate growth of effective demand for urban products in the rural sector, (2) the extremely slow expansion of corresponding urban markets, largely as a result of high food prices relative to prices of other goods, and (3) the unique political basis of the region's current industrialization process.

Thus, the optimism expressed by Hirschman and others with regard to the region's industrialization must be carefully qualified. Northeast industrial investment has accelerated sharply as a result of the SUDENE incentives program and basic improvements in economic infrastructure. The changing structure of the region's industry, as implied by the Article 34/18 investments, is potentially more dynamic and rich in forward and backward linkages than the traditional structure.

Nevertheless, the dramatic expansion under way in regional industrial capacity is not being adequately matched by the growth of effective demand for industrialized products in either the rural or urban markets. The beneficial economic impact of the new investment stream is thus in danger of being throttled. The political contract underpinning the 34/18 program will be increasingly in danger of recission to the extent that capacity creation exceeds the effective regional demand for goods, profitability expectations go unrealized and the willingness of Center-South entrepreneurs to supply investment resources declines accordingly.

Conceptually, the SUDENE 34/18 program is a masterpiece of development strategy (and one which many countries could profitably study.) It has been skillfully and effectively administered. Yet it should be recognized as a form of "forced feeding" of the industrialization process. Its success ultimately will depend on the extent to which (1) the potential transactions-productivity of the new industries is actually realized, (2) the rural sector is activated out of stagnancy, and (3) effective demand for industrialized products is developed in both rural and urban markets. In other words, the exchange process within the Northeast's industrial sector and between that and other sectors of the regional economy will play a decisive role in determining the viability of the current phase of Northeast industrialization. "Forced feeding" of the marketing process appears now to be a necessary concomitant of regional industrialization.

Analysis of Entrepreneurship, Industrialization and Regional Development

Research Objectives and Procedures: In examining the process of industrialization in the Northeast, three operational objectives were established.

First, an attempt was made to determine how owners or managers of firms in the region formulate policies and make decisions with regard to (a) the employment of resources, and (b) the firm's growth rate in terms of sales. The objective here was to determine what differences exist between efficient and inefficient firms with regard to the formulation of policy and decision making, and how these differences relate to rates of growth in sales.

The criterion of efficiency was based on the value of a firm's output (excluding raw materials costs) per person employed and per monetary unit invested. Both denominators were given equal weight. Policy and decision-making procedures were studied specifically in relation to:

1. managerial perception of the effect of competition on a firm's operations;
2. the nature of a firm's relationships to raw material and other input suppliers;
3. marketing and distribution activities; and
4. operations internal to the firm.

The second question considered was the impact of the general economic, technological and sociological changes occurring in the region on decisions of the private industrial sector to expand capacity and increase real value of output. Particularly important in this regard was the responsiveness of entrepreneurs to the incentive and facilitative programs of government, and their sensitivity to over-all business and market conditions.

Third, an attempt was made to evaluate the changes occurring within the region's industry in terms of the over-all Northeast economy. The emphasis here was on the value and geographic source of inputs; the value and geographic destination of outputs; transactions-productivity within industry and between the industrial and other sectors; and the relationships between the urban and rural complexes.

Although a general summary investigation of Northeast industry was performed, primary attention was given to the industrial establishment of the Greater Recife area and its interaction with the 4-state

area of Pernambuco, Alagoas, Sergipe and Paraiba, i.e., the Recife "foodshed".

Within Recife's industrial establishment, three industry groups were studied intensively. These were (1) food processing, (2) consumer goods, and (3) agricultural input manufacturing. The first was selected because of the effect of relative prices of processed foods on consumers' real discretionary income. The second was studied on the theory that the real prices and available variety of consumer goods are critical determinants of how consumers allocate discretionary income.

Simply stated, the theory holds that the availability of a wide variety of relatively low-priced consumer goods acts as an incentive for consumers to seek additional income or spend discretionary income already held on non-food consumption. If such goods are not available discretionary income and additions to income may be dissipated in hoarding or inflationary hedges, rather than adding to effective demand for industrialized products. Particular interest was attached to the effect of consumer goods availability on inducing rural residents to work more and spend additions to their incomes on non-food consumption. The problem here was to determine how the distribution and marketing of consumer goods is related to the development of effective demand for such goods.

Agricultural input manufacturing was investigated in depth because of the critical role of this industry in the expansion of agricultural production. Again, primary attention centered on the problems of marketing technologically superior farm inputs in the

appropriate areas, in a timely manner, in the necessary combinations and at prices making their use economically justified.

All firms in each of the three industry groups were studied. Where there were more than ten firms in a particular industry sub-group, the leading firms were studied together with a random sample of the remaining firms.

The following table presents the industry groups, sub-groups and respective numbers of firms which were studied.

TABLE 3.2

INDUSTRIAL GROUPS, SUB-GROUPS AND FIRMS STUDIED

	Number of Firms Studied
A. Food Processing	42
1. Wheat processing and baking	11
2. Beverages	9
3. Vegetables	4
4. Fruits	4
5. Meats	4
6. Milk	2
7. Packaging materials	8
B. Agricultural Inputs	10
1. Fertilizers	5
2. Farm implements	3
3. Irrigation tubes	2
C. Non-Food Consumer Goods	31
1. Textiles	8
2. Furniture	8
3. Electrical Applicances	3
4. Soap	4
5. Consumer Goods	8
TOTAL	83

Data were collected through extensive interviews with the owners, and general, production and sales managers of each firm. Important secondary information was supplied by SUDENE, FUNDINOR and Dunn and Bradstreet.

Findings

Characteristics of Efficient Enterprises

The relationships found to be associated with the most efficient enterprises, in at least 60% of the industries studied, indicate that the more efficient firms:

a. feel the competition does not make it difficult to increase output,

b. regard their market as reliable, stable, and predictable,

c. generally have a more rapid rate of growth in output,

d. have a higher concern for marketing,

e. attempt to differentiate their products from those of competitors,

f. have a larger value of sales,

g. employ a larger amount of capital per worker,

h. have a higher rate of reinvestment,

i. have a higher rate of capacity utilization of their investment.

Typically, the more efficient firms were found to have a more rapid increase in their value of sales, even though the value of their sales is greater than for less efficient firms. The managers of these firms do not perceive that their competitors make it difficult to increase output; they are relatively confident of a secure market for their output. They are more "marketing-oriented", as opposed to being primarily concerned with production or finance problems. They consciously pursue policies of product differentiation. Nevertheless, their costs of advertising and distribution (as a percentage of sales) are not greater than the

less efficient, non-marketing-oriented firms. The relatively efficient firms are also more capital intensive, have a higher rate of reinvestment, and utilize this investment more.

The preceding profile of the more efficient firms is not especially surprising. Most of the characteristics cited would normally be associated on a comparative basis with more efficient enterprises.

Several particular features of the more efficient firms are, however, worthy of special mention. First, the more efficient tended to purchase their raw materials directly from producers rather than from intermediary suppliers, and to extend technical assistance to their suppliers of raw materials. This suggests that the more efficient firms are also more effective change agents and play an important role in developing between-firm linkages in the industry sector. Second, the more efficient firms in general raised prices at lower rates than did the less efficient. Their pricing policies reflected greater concern with the reduction of gross margins as a means of stimulating sales. The product lines of these firms also tended to be more diversified and thus presumably offered a higher degree of incentive to consumers to work and earn more in order to be able to consume a wider variety of goods. Finally, fewer workers were employed per unit value of sales, yet average wages paid by the more efficient firms were typically higher in relation to the less efficient.

The preceding considerations illustrate one of the dilemmas which has beset the SUDENE 34/18 program since it began. In view of the high levels of unemployment prevailing throughout the region,

SUDENE has given priority in the use of 34/18 funds to relatively labor intensive industrial investments. Still, the bulk of 34/18 applications implicitly have rather low labor/capital ratios. Hirschman found that one job was being created per the equivalent of U.S. $7,600 invested.[15] He noted, however, that this was to be expected in light of the concentration of 34/18 investments in capital and intermediate goods industries. He also pointed out that the industries which will develop to service the 34/18 enterprises will tend to have higher labor/capital ratios.

Study of the industrial sector by the MSU/SUDENE marketing research team supports Hirschman's observations. In addition, it has revealed (again, not too surprisingly) that within an industry group the more capital intensive firms are more efficient, employ more modern price and marketing policies, develop stronger linkages to other industry groups, and pay higher average wages. These considerations militate against an indiscriminate preference for relatively labor intensive 34/18 investments. An untoward effect of such policy could be to deprive more progressive entrepreneurs of appropriate advantage under the 34/18 program. In the extreme, exaggerated emphasis of the direct employment consequences of proposed 34/18 investment could tend to shift the over-all structure of these investments back in the direction of the traditional, less dynamic and linkage-poor industries.

Short-term Growth: Leading and Lagging Industries

In investigating the industrial sector, an attempt was made to identify the particular industries which appeared likely to lead

or lag in the sector's short-term growth. Each of the firms studied was considered in light of its own perceived ability to double output and sales within a five-year period. The prospects of acquiring the investment resources, factor inputs, management personnel and labor required for this purpose were taken into account. Each firm's perceived sales potential--based implicitly, of course, on its expectations with regard to effective demand or the development of markets for its products--was also considered.

The difficulties inherent in this type of analysis are obvious. Relative degrees of optimism and of caution on the part of managers importantly influence the results and are not necessarily related to actual growth potential. Moreover, the one-by-one study of firms probably does not yield entirely valid conclusions in the aggregate. If all firms in an industry group attempt to expand sales simultaneously (viewing the demand curves confronting their individual firms as being relatively elastic), the total demand for the industry's product may turn out to be sharply inelastic and, thus, the aggregate expansion possibilities considerably less than the sum of the individually perceived possibilities.

Despite these and other analytical problems, the effort to identify likely leading and lagging industries can shed some light on the extent of short-term integration in Northeast industrial growth. Taken together with other analyses, the results may be relevant to policies designed to promote regional industrial investment.

The 15 industry sub-groups of the food processing, agricultural inputs and non-food consumer goods industries were categorized into

"leading," "potentially leading," "contributing" or "lagging" groups. The results are presented below.

TABLE 3.4

CLASSIFICATION OF GROWTH POTENTIAL OF INDUSTRY SUB-GROUPS STUDIED

A. Leading Group

Beverages
Vegetable Oils
Farm Implements
Electrical Appliances

B. Potentially Leading Group

Wheat Processing and Baking
Fruit Processing
Packaging Materials
Irrigation Tubes
Textiles

C. Contributing Groups

Meat Processing
Milk Processing
Fertilizers
Furniture
Soap

D. Lagging Group

Consumer Goods

One of the implications of the above presentation is that the manufacturing of farm implements, irrigation tubes and fertilizers are apparently likely to grow at uneven rates. To the extent that for technical reasons a variety of such agricultural inputs (including improved seed varieties, pesticides, insecticides, etc.) must be made simultaneously available to farm producers in order to maximize input complementarity, the possibility arises that special efforts should be undertaken to stimulate the relatively slow-growing input manufacturers to accelerate their rates of output expansion.

Another important consideration in terms of regional economic growth is the source of inputs for local industry. Overall, it is estimated that approximately 45 percent of the value of non-labor industrial inputs in the Recife area is represented by inputs purchased from the Center-South and international sources.[16] Two industries in the "leading" group--farm implements and electrical goods--purchase even greater proportions of their inputs outside the region. The implication here is obvious: continued close attention to the development of intra-regional supplies of industrial inputs is critical. Inter-industry linkage potential may not otherwise be adequately developed. SUDENE policy under the 34/18 program has justly emphasized this priority and should continue to do so to the extent possible and consistent with the region's resource endowment.

Output Capacity and Demand for Industry's Products

Earlier in this chapter, concern was expressed with regard to the "purchasing power" problem. In essence, the concern is that Northeast industrial output capacity (or sales potential) may be increasing in excess of the growth of effective demand for industrialized goods in both urban and rural markets. Contrary to the presumed implications of Say's Law, supply does not necessarily create its own demand. The rapid advances in industrial investment under the SUDENE 34/18 program may thus fail to achieve their expected impact on regional development in the absence of special efforts to bolster consumer purchasing power, i.e., real discretionary income.

The specific nature of this problem may be illustrated as follows. Assume, as suggested by Hirschman, that capital stock in

the Northeast will double over its 1964 level as a result of 34/18 investments realized and approved through mid-1967. Assume that the doubling will actually occur at a more or less even rate over the five-year period beginning in 1967, and that output capacity will also thereby be doubled. (The doubling of output capacity does not, of course, necessarily follow from a doubling of capital stock. The assumption is plausible, however, recalling that capacity is the variable under discussion, and that the existing capital stock is not merely being identically reproduced. The new capital stock is presumably of better quality, i.e., has higher technical coefficients of output.)

Consider the Greater Recife area alone, and only the food processing industry. In 1967 it is estimated that total output of the Recife food processing industry was equivalent in value to U.S. $64 million and that sales of this output were distributed as follows:

	(Millions of Dollars)
To Recife:	29.5
To the 4-State Area:[1]	25.9
Outside the 4-State Area:[2]	8.6
	64.0

[1] Pernambuco, Alagoas, Sergipe and Paraiba, excluding Recife.

[2] Including exports.

Recife's demand for processed foods was met from the following sources in 1967:

	(Millions of Dollars)
From Recife Industries	29.5
From the 4-State Area:	2.1
From Outside the 4-State Area:[1]	7.4
	39.0

[1] Including imports.

Projections based on interviews with processed food manufacturers in Recife indicate that the industry's output sales potential by 1971 may reach a total of U.S. $82.5 million equivalent, to be sold as follows:

	(Millions of Dollars)
To Recife:	38.0
To the 4-State Area:	33.4
Outside the 4-State Area:	11.1
	82.5

In the same year, demand for processed foods in Recife is expected to be met from the following sources:

	(Millions of Dollars)
From Recife Industries	38.0
From 4-State Area:	2.6
From Outside the 4-State Area:	10.1
	50.7

The estimated totals of consumer incomes in Recife for 1967 and 1971 respectively are U.S. $329 million and U.S. $417 million. The 1971 figure implies a 6 percent cumulative annual increase in total consumer income over the period, and a 4.7 perdent annual increase in the urban center's population.

Assuming now that Recife output-sales potential in processed foods doubles over the five-year period to U.S. $128.0 million and that sales to the 4-State area (excluding Recife) and outside the 4-State area (including exports) achieve their expected totals by 1971 (U.S. $33.4 million and U.S. $17.2 million, respectively), then U.S. $77.4 million in processed foods would be produced and available to supply the Recife demand. Assuming still further that processed

foods produced in Recife entirely displaced purchases from within and outside the 4-State area, there would be a net excess of production, or of utilizable production capacity, of about U.S. $26.7 million; i.e., U.S. $77.4 million minus U.S. $50.7 million.

To clear the market of this excess, total 1971 consumer income in Recife would have to increase to almost U.S. $630 million, an increase of more than 90 percent over the 1967 level, or by 14 percent cumulatively each year from 1967 to 1971.

Of course the doubling of output in the local food processing industry would itself generate an appreciable increase in consumer income. Nevertheless, the entire industry sector now generates less than 15 percent of consumer income in Recife, and food processing only a quarter of the amount generated by all industry. Clearly supply, by itself in this example, would fall far short of creating its own demand.

The extent to which prices alone would have to fall in order to clear the market would almost certainly be below the production costs of all, or at least all but the most modern, food processors. Exit from the industry of the bulk of the less efficient firms as a result of drastic price declines would, of course, remove a corresponding source of consumer income.

The preceding example of the "purchasing power" problem is illustrative, based on a particular set of simplifying assumptions, and dependent on the accuracy of the relevant estimates of parameter magnitudes. While it is not intended to predict imminent calamity in the region's industrial sector, it is sufficient to underscore the

delicate relationships between real consumer income, effective demand for manufactured products and the absorptive capacity of the region's economic system for increases in industrial output.

The problem could also, of course, be illustrated in terms of the rural market's effective demand for manufactured products, and the underlying requirements for rural consumer and producers' income.

Distribution, Marketing and the Development of Effective Demand

A special case study of beverages firms in Recife amply demonstrates the importance of distribution and marketing programs in expanding and strengthening the effective demand for consumer products. The study was performed by the MSU/SUDENE research group.

The beverage industry is comprised of two beer and soft drink bottlers and five exclusively soft drink bottlers. The two beer bottlers are members of Brazil-wide chains, as are three of the soft drink bottlers.

In beer bottling there was only one firm until 1965. With the entry in that year of the second firm in the industry, the original bottler was prompted to improve its plant facilities and adopt a smaller 10-ounce bottle designed to appeal to consumers who do not want or cannot afford the customary 21-ounce bottle. Since 1965, the local production of beer has increased almost 300 percent; both firms have rapidly expanded and modernized their plant facilities; an additional 400 percent combined increase in capacity was being planned at the end of 1967.

Much of the dramatic expansion in local beer production is, of course, in substitution of beer previously purchased from outside the region. Nevertheless, a significant portion is the result of wider spread, more aggressive marketing programs in the adjacent rural areas.

Similarly, sales of the two leading soft drink manufacturers have been rapidly expanding due to streamlined distribution systems, use of modern production and transport equipment, aggressive promotional campaigning and the extension of sales territories into the rural areas. Penetration of the rural market has been accomplished through a combination of decentralized production and warehousing facilities, efficient distribution systems and extensive advertising.

The success of firms in the beverage industry in reducing costs, narrowing margins and expanding both urban and rural markets for their products through modern distribution and marketing techniques is a lesson to be carefully studied by firms in other industries, and also by the makers of regional policy regarding industrial development.

With regard to the supply of productive factors from industry to the agricultural sector, it was found that distribution systems for the kinds of farm inputs--such as fertilizers, insecticides, fungicides, irrigation and other equipment--which are necessary for technological revolution in the region's agriculture, are both inadequate and costly.

In most of the rural areas surveyed, it was found that modern farm inputs were not available locally for sale, and that there was a close correlation between the use of purchased farm inputs by

producers and the availability of such inputs in local markets. The high degree of statistical correlation between use and availability does not, of course, establish a causal relationship. Much other evidence suggests that under current farm practices the association of input and product prices is such that the use of purchased inputs may not be economical. Nevertheless, the delivery price of such inputs is significantly affected by their respective distribution systems; low volume distributors must spread the burden of fixed marketing costs over relatively few factor units. High delivery prices and low volume usage are also connected to less-than-capacity utilization of input production facilities, and thus, to high costs of production.

Complicating problems are the lack of reliable experimental evidence on the technical output coefficients of modern input usage, and the widespread ignorance of farmers with regard to the potential benefits of such input usage. There are also significant problems of credit availability for the purchase of farm inputs. These types of problems are dealt with more fully in Chapters 7 through 10.

No claim is made here that the introduction of modern distribution and marketing techniques for manufactured agricultural inputs will by itself lead to rapid expansion of farm output. Still, it seems evident that the absence of rural distribution systems for manufactured inputs e.g., chemical fertilizers, or the existence only of high-cost, low-volume systems, is a major factor contributing to the low levels of usage.

Conclusions and Recommendations

Beyond any doubt, the process of industrialization in the Northeast has been given a tremendous boost forward primarily as a result of the SUDENE 34/18 incentive program, and the massive public investments which have been taking place in highway, power and related infrastructure. Industry has progressed more in the past five years than in any other such period of the region's history.

Capacity and Demand

Optimism for the immediate and long-term future is warranted, but must be carefully qualified. The creation of industrial capacity, if allowed to exceed by too wide a margin the rate of increase in effective demand for industrial products, could lead to serious adverse consequences for the entire regional economy. Much evidence has been found which indicates that industrial capacity in the Northeast is likely to be increasing significantly faster than corresponding demand.

It is our view, however, that the solution to this problem does not lie in the curtailment of investment. We do not argue, for example, that project approval or fund releases under the SUDENE 34/18 program should be slowed in the aggregate, or that the rate of deposits should be restricted.

The basic recommendation in this regard is two-fold. First, regional industrialization policy should give high priority to incentives and facilitative programs for the development of markets by the private sector. Given present price relationships, the region's

market for manufactured goods is extremely shallow and narrow. Most of the rural sector is outside of it, both for industrialized agricultural inputs and for non-food consumer goods. Broad ranges of the urban community are also isolated. It is our contention that current price relationships can be significantly and appropriately altered through the adoption of modern distribution and marketing techniques.

Simplistically, there appears to be a paradox here. If the purchasing power of consumers is, on the one hand, limited and inadequate, how can producers and final distributors be motivated to increase output and sales? Resolution of the apparent paradox is almost entirely definitional. The purchasing power of consumers, or level of effective demand, is a function of the relative prices of the goods being consumed. Prices, in turn, are functions of production and distribution costs. Furthermore, efficient marketing practices, by increasing sales volume, can reduce both distribution and production costs and thus lead to a decline in prices and expansion of effective demand.

At present levels of income, the extent to which demand in the Northeast for manufactured goods can be expanded is, of course, critically determined by relative food prices. Even, however, at current income and food price levels, there appears to exist substantial leeway for the expansion of non-food markets through efficiently employed volume-increasing, cost-reducing marketing and distribution techniques.

Still, in practical terms, a certain amount of "forced feeding" of the marketing process for non-food commodities will probably be necessary, particularly in the penetration and development of rural market areas. It is unlikely that many individual firms will assume the high risks, uncertainties and costs of market development on their own initiative and entirely with their own resources.

The case of industrialized farm inputs is illustrative. The critical first issue to be determined here is under what farm management practices and price relationships is fertilizer, for example, an economically feasible input. On the basis of these determinations, a reasonable estimate could be made of potential market size i.e., the probable volume of sales in a particular area. Working back, then, through the system, estimates could be made of distribution and production costs. Expenditures on this type of research could be financed or subsidized by an appropriate governmental agency. If subsidies were necessary to launch operations, these might be included in governmental financing of the required new or remodeled distribution facilities.

Incentive devices for penetrating rural markets for non-food consumer goods might be similarly designed. The experience of the beverage industry in Recife could profitably be studied in this regard.

The creation of effective demand within the region is also a function in part of the linkage-richness of the industrial establishment. Here the recommendation involves primarily

increase of existing effort, rather than a re-arrangement of priorities. Under the SUDENE 34/18 program, utilization of the region's raw materials has always ranked high in the criteria for evaluating investment proposals. This emphasis should be maintained and strengthened as much as possible. Steel, petroleum and chemical complexes are, of course, prominent examples of industries with strong backward and forward linkages. So also, however, is the food processing industry, even though it is one of the largest and oldest components of industry in the Northeast. Food processing should not be slighted in the search for new dynamic industries to modify the region's industrial sector.

The Scope of Industrialization Policy

Given the critical role of relative food prices in determining the demand for industrial products, it would seem logical to include within the purview of a general industrialization program, enterprises which can positively influence food price levels. Specifically, modern urban food marketing enterprises, although not classified as industries, bear heavily on the industrialization process. This assertion is documented fully in the following three chapters. The essential point here is that regional industrialization policy, particularly as executed under the SUDENE 34/18 program, should not be exclusively confined to the industrial sector per se. It should also take account of those economic activities, such as food distribution and retailing, which vitally affect growth in the industrial sector.

The Development of Marketing Skills

An inflow of new up-to-date business talent has generally accompanied the 34/18 investments from the Center-South. As a result, competition has livened in several industries, e.g., beverages, and management practices have begun to improve. While some improvements in distribution and marketing practices have been noted, additional efforts to up-grade management skills in these areas should be under taken.

One of the problems confronting such efforts in the Northeast is the absence of a university or similar institution providing training of the appropriate kind and level. With the qualified exception of the University of Bahia, there is simply no institution which offers advanced courses in distribution and marketing. In the long-run, this institutional gap should be closed by creating the appropriate educational facilities within the region. In the meantime, a variety of short-term solutions should be given careful consideration.

First, an incentives scheme could be established to encourage all firms in the Northeast to send key management personnel for advanced training in business schools in the Center-South and outside Brazil. The training costs could be divided equitably between the private firm and the sponsoring government agency. For example, under the 34/18 program, training costs could be included in the total costs of an investment project. It might be desirable to require of participating firms that personnel trained under such a program be kept in the Northeast for some minimally acceptable period, or that reimbursement be made if trained personnel are transferred elsewhere. Alternatively,

a general advanced management training fund could be established through mandatory contributions under the 34/18 program. A percentage of all 34/18 deposits could be allocated to the fund. Trainees could be selected from within the region, on the basis of open competition, and/or participating firms could nominate a number of candidates proportional to their contributions to the general fund.

Second, advanced management seminars and intensive training courses could be instituted periodically in Recife. Personnel from Brazilian and other universities and other sources of relevant expertise could be obtained to conduct the session. Emphasis would be given to modern practices in marketing and distribution. This type of program could also be financed from a general fund under the 34/18 program with contributions and assistance from local Federations of Industry, Industrial Productivity Centers, Commercial Associations, FUNDINOR, and similar organizations.

FOOTNOTE PAGE

[1]Brazil, Brazilian Embassy, Survey of the Brazilian Economy, 1966, (Washington, 1967), p. 29.

[2]Ibid.

[3]Ibid., p. 115.

SUDENE, III Plano Director de Deseuvolvimcuto Econômico e Social do Nordeste, 1966-1968, (Recife, 1966), p. 42.

[4]SUDENE, III Plano Director, p. 42.

[5]Ibid.

[6]Survey of the Brazilian Economy, 1966, p. 26.

[7]Ibid.

[8]Ibid.

[9]Albert O. Hirschman, "Industrial Development in the Brazilian Northeast and The Tax Credit Mechanism of Article 34/18", a preliminary draft report prepared under contract AID-12-544 for The United States Agency for International Development (July, 1967), p. 16.

[10]Ibid., p. 9.

[11]Ibid., p. 19.

[12]In Chapter 1, the concept of "transaction-productivity" was defined for use in this report. Hirschman's "linkages", as explained there, can be used as a several term for "transaction-productivity", but the latter provides sharper emphasis of the intra- and inter-sectoral market exchange processes and their effect on regional product and the distribution of income among the region's population.

[13]SUDENE, III Plano Director, p. 24.

[14]Survey of the Brazilian Economy, 1966, p. 29.

[15]Hirschman, p. 21.

[16]SUDENE/MSU Industrial Survey, 1967

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9. Superintendencia Nacional de Abastecimento, Antecedentes, Organizacao e Legislacao Correlata (Rio de Janeiro: SUNAB, 1963).

10. Survey of the Brazilian Economy, Brazilian Embassy (Washington, D.C., 1967).