

STRUCTURAL CHANGE AND  
STATE POLICY:  
The Politics of Sugar in Brazil since 1964\*

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The distinctive blend of authoritarian and technocratic rule in Brazil since 1964 has been well explored in its implications for industrial policy, but the consequences of two decades of military rule for agriculture are only now being studied.<sup>1</sup> This article will analyze state policy in the single agricultural sector of sugar in light of major changes in socio-political and economic structures and in view of the particular relations between the state and civil society that have characterized Brazil after 1964. Although debate continues over the precise nature of these relations, it is widely held that the state played the dominant role in the policy process, subordinating elites, excluding popular classes from the decision-making arena, and incorporating international capital as a critical element in economic growth.<sup>2</sup>

An inspection of individual cases such as sugar, however, casts doubt on attributing ultimate policy supremacy to the bureaucratic-authoritarian state. It will be argued here that despite the considerable authority of the public sector, transformations in agriculture cannot be viewed primarily as the result of state initiatives. Instead, state policy was both a response to and an influence on secular trends in the agricultural economy, and producer elites retained significant leverage over decision making. In the sugar industry, the behavior of the producer class, the regime's pursuit of its own developmental objectives, and the effects of long-term social and economic changes all interacted in a way that reflected the general public-policy process in Brazil during this period.

After the military assumed power in 1964, government policies promoted a particular model of agricultural development linked to the regime's overall accumulation strategy. Emphasizing expanded exports,

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this approach envisioned the industrialization of agriculture and the integration of various phases of agricultural activity into centralized agro-industrial complexes.<sup>3</sup> Such operations required the concentration of land and capital into large-scale enterprises. This process of agro-industrialization in the private sector was supported by public policies made in an increasingly centralized and bureaucratic state apparatus that the regime sought to infuse with a technocratic ethos. Decisions emanating from this technocracy tended to favor economic growth at the expense of social equity.

The regime's drive to expand exports coincided with increased opportunities for Brazilian sugar on the external market. These opportunities in turn dictated the need to improve Brazil's competitive international position through higher levels of output and greater productivity. This goal would be accomplished by extending the state-promoted agricultural model—horizontally integrated agro-industrial production with high land concentration and intensive use of capital—from areas where it already predominated (such as the Center-South) to regions where retrograde production patterns persisted, especially in the Northeast.

This effort to modernize the sugar sector required more than a simple technical rationalization of production; it demanded the rupture of traditional clientelist ties between the state and the Northeastern sugar oligarchs. It also necessitated the dismantling of the paternalistic institutional structure created in the 1930s by Getúlio Vargas to regulate the industry and simultaneously mobilize political support for his regime. Replacing this structure was a new system of state-society relations that engendered two sets of losers: inefficient producers whose political power no longer redeemed their inability to compete economically as well as small and medium-sized independent cultivators who had traditionally supplied large processing mills. The change also produced winners among the Center-South agro-industrial elites that were able to wield both economic and political influence through new vehicles of interest mediation, the producers' cooperative associations.

The main features of this new system of relations between the post-1964 state and civil society in the sugar sector will be delineated in this study. First, however, a brief overview of the history of sugar in Brazil before 1964 will provide the necessary background for analyzing recent policies. A discussion of the major structural transformations affecting sugar production will be followed by an examination of state responses to these changing conditions between 1964 and 1978. Finally, an epilogue will touch briefly upon recent events.

## AN OVERVIEW: SUGAR POLICY BEFORE 1964

The history of sugar in Brazil dates to the sixteenth century, when cane was first produced for export. Significant state intervention in the sector began only in the early 1930s, however, when President Getúlio Vargas first created the Instituto do Açúcar e do Alcool (IAA), one of several semiautonomous autarchies established to support and regulate key commodities in the wake of disastrous world-market conditions. Initially treading a fine line between cooptation and control of producing elites, the IAA often carried out contradictory tasks. As a regulator, it functioned monopsonistically, determining prices and acting as buyer of last resort. It regulated all aspects of agricultural and industrial production in the sector, setting quotas by region, state, and individual mill, and it determined national allocations for the export and domestic markets for both sugar and alcohol. Periodically, the IAA also undertook direct refining activities. Through most of its history, the institute was virtually autonomous in its financing through taxes levied on producers. Particularly in later years, it deposited profits earned by exports into a special export fund, which was then recycled into the sugar industry at the IAA's discretion.<sup>4</sup>

Reflecting the populist impulses of the Vargas regime, the IAA was also charged with mediating social and economic relations between various productive classes in the sugar sector. It had an explicit mandate to protect medium-sized and small growers, the *forneceadores* who supplied cane to large mills. Forneceadores were to be shielded from exploitation and even extinction by the passage of the Estatuto da Lavoura Canavieira, an important piece of social legislation passed in 1941, ostensibly for the purpose of ensuring a stable annual quota of independently supplied cane.<sup>5</sup>

Besides providing regulation and social protection, the IAA was also seen by Vargas as an instrument of political cooptation. In return for their support, sugar oligarchs attained an impressive degree of autonomy through the influence they were able to exert on the decentralized operations of the IAA. Northeastern *usineiros* (millers) were the particular target of this mechanism. Although the Northeast had dominated Brazilian sugar production for three centuries, the region began to lose its competitive edge by the 1930s to the burgeoning sugar industry of the Center-South region. Physical causes underlying the Northeastern decline included the depletion of soil layers, uncontrolled blights of stem and rind diseases in Pernambuco, and topographical handicaps such as hilly inclines, which with the advent of the tractor became severe liabilities when compared with the flat terrain of the Center-South. These agricultural deficiencies led in turn to problems in the industrial refining process: lower agricultural and industrial yields

meant slower capitalization and modernization of industrial plants, thus beginning a vicious circle of stagnation and decay. The Center-South, in contrast, profited not only from its proximity to markets (assuring lower transportation costs) but also from a nearly perfect climate for cane cultivation. In addition, soil conditions in the meridional plateau of São Paulo, which had been exhausted and abandoned by coffee cultivators, turned out (with the help of chemical fertilizers) to be highly productive for sugarcane.<sup>6</sup>

As a result, one of the IAA's principal institutional goals became to delay the effects of the natural superiority of the Center-South sugar industry. In pursuit of this objective, the IAA became associated with extreme political clientelism by extending credit and subsidies to non-competitive Northeastern producers, by hiring paternalistically, and in the second Republican period (1944–64), by providing political support to candidates representing the sugar oligarchy.<sup>7</sup>

These policies notwithstanding, the IAA's intention was not to return the competitive advantage to the Northeast. This notion was clearly recognized as impossible. Indeed, by 1951 the Center-South had actually surpassed the Northeast in total sugar production.<sup>8</sup> What the IAA did manage to accomplish was the preservation of many inefficient Northeastern mills that might have failed without government intervention.<sup>9</sup>

From the 1930s through the 1950s, these paternalistic policies were possible because pressures to compete on the export market were comparatively few. A relatively minor portion of Brazilian sugar production was devoted to exports.<sup>10</sup> Moreover, safeguarding an adequate supply of sugar for domestic consumption had traditionally been a key determinant of IAA quota policy. Excess production, when it did occur, was to be channeled into the manufacture of alcohol for combustible and industrial purposes. This policy was formulated as an explicit response to the excessively vulnerable position in which the Brazilian sugar industry found itself in the aftermath of the world market disaster of 1930.<sup>11</sup>

In 1960 the underpinnings of this policy were dramatically altered when the United States cancelled the quota for Cuban sugar on its preferential market. Brazil received the lion's share (one hundred thousand metric tons) of this quota and in 1962 was awarded a permanent quota on the American market with the passage of the new U.S. Sugar Act. By 1967 Brazil had a quota of 360 thousand metric tons and an overall export level of 1,006,000 metric tons.<sup>12</sup>

The opening of the U.S. preferential market was not the only spur to Brazilian exports. When Cuba turned to a protected market among socialist block countries, the per capita consumption in those nations rose while their internal production of sugar beets fell. Succes-

sive harvest failures in Cuban sugar production in the early 1960s provided an opportunity for Brazil to take up the shortfall. In addition, intense fluctuations in international sugar supplies and therefore in prices took place between 1962 and 1968. As a result, the international sugar agreement limiting export by participating countries was suspended in 1968.<sup>13</sup>

These factors conditioned the IAA's formulation of an expansionist strategy for the Brazilian sugar sector. Policy was aimed at increasing sugar exports and augmenting industrial and agricultural production capacity to supply both the international and domestic markets. The military government that came to power in 1964 was thus presented with widening market opportunities for Brazilian sugar but also with serious constraints on the industry's ability to perform. In addition, the government was burdened with an institutional apparatus that had not kept pace with the major structural transformations occurring in the sector.

#### STRUCTURAL CHANGE IN THE SUGAR SECTOR SINCE 1964

##### *Export Expansion*

The increased opportunities for Brazilian sugar on the world market in the 1960s coincided with a strong push to expand exports, a push motivated both by requirements of the national economy and by specific conditions in the sugar sector itself. Nationally, the rapid acceleration of the process of capital accumulation necessitated high levels of foreign exchange for the purchase of imports. Because export earnings generated by domestic manufactures were inadequate to this task, the state had to rely heavily on primary commodity exports. On a sectoral level, the sugar industry remained vulnerable to chronic crises of overproduction, despite state interventions. Two such crises occurred in 1964–65 and 1967, providing further incentive to utilize the export market as a channel for mounting sugar stocks. The convergence of these national and sectoral factors resulted in a sugar policy with an augmented emphasis on exports.

Between 1965 and 1974, the volume of sugar exported by Brazil increased by about 250 percent, and the percentage of production devoted to exports increased from 17.8 percent to 41.8 percent. During this same period, the percentage of Brazilian sugar exports sold on the U.S. preferential market averaged 45.7 percent (see table 1).<sup>14</sup> The remainder of the exports were distributed among thirty-two other countries in the nonquota capitalist world market. By 1972 Brazilian sugar exports earned U.S. \$403.5 million on a volume of 2,640,000 tons, making sugar the second most important export next to coffee (see table 2).<sup>15</sup>

TABLE 1 *Brazil's Role in World Sugar Exports, 1955–1974*  
(in thousands of metric tons)

Year	World Exports	Brazil Total Exports	Brazil Exports to U.S.
1955	14,173	462	0
1956	14,160	184	0
1957	14,730	328	0
1958	15,045	566	0
1959	15,057	717	12
1960	17,002	854	114
1961	19,619	783	293
1962	18,439	645	361
1963	16,785	527	417
1964	17,419	453	162
1965	19,793	710	323
1966	18,756	1,005	492
1967	20,406	1,001	591
1968	20,887	1,026	615
1969	19,999	1,099	652
1970	22,315	1,075	607
1971	21,692	1,191	598
1972	21,285	1,854	621
1973	22,345	2,177	446
1974	24,433	2,879	700
1975	20,315	1,244	155
1976	22,568	1,252	0
1977	28,190	2,487	680
1978	24,797	1,924	580
1979	25,979	1,942	1,053
1980	26,831	2,662	806
1981	29,044	2,670	946
1982	30,403	2,788	286

Sources: U.S. Department of Agriculture, *Statistical Bulletin* no. 562, "Sugar: World Supply and Distribution," 1954/55–1973/74, Washington, D.C., 1976, p. 12; and International Sugar Organization, *Sugar Year Book*, various years.

The stress on exports peaked in 1973–74, when world sugar prices surpassed all previous levels. Crop failures in both world beet and cane production pushed the market price up to an unprecedented seventy cents per pound by the latter half of 1974. That year Brazilian sugar exports earned U.S. \$1.26 billion—an increase of 127 percent over the previous year.<sup>16</sup> For the first time since the nineteenth century, sugar outranked coffee as the nation's most profitable commodity export.<sup>17</sup>

The fact that the state was promoting a major export program in

the sugar sector was all the more significant because such a policy posed heightened risks of vulnerability and dependence—precisely the conditions that state intervention had sought to mitigate when it first began in the 1930s. Moreover, this policy reversal was not simply a matter of shifting commercialization of sugar from the internal to the external market. It meant instead that the entire system of production and administration of the sugar sector would have to be transformed to meet competitive world-market standards. The need to acquire a competitive edge became critical, and thus an urgent priority was placed on increasing the efficiency of both agricultural and industrial production units. In consequence, the state undertook a massive modernization program and attempted to alter its long-standing policies of subsidizing noncompetitive producers.

#### CHANGE IN THE REGIONAL BALANCE: EXPANSION OF SUGAR PRODUCTION IN THE CENTER-SOUTH

The move to export was not the only determinant of state policy in the sugar sector after 1964. Policy was also deeply affected by the significant growth of sugar production in the Center-South and the resultant shift in the balance of economic power between that region and the Northeast. Although the irreversibility of this trend was evident by the early 1950s, the full impact of Center-South dominance was not reflected explicitly in state policy until after 1964. An understanding of that policy requires consideration of the profound implications of the expansion of Center-South sugar production for agricultural development in the region, for the overall model of production in the national sugar industry, and for the welfare of the different productive classes within the sector.

The impact of increased sugar cultivation on agricultural patterns in the Center-South itself was dramatic. The state of São Paulo was perhaps the most heavily affected. Sugarcane in 1976 accounted for almost 17 percent of all cultivated land in São Paulo. With a crop that year of 41.3 million tons, sugar production became the most important single agricultural activity in the state, exceeding even coffee in gross income.<sup>18</sup>

This expansion resulted in an increasing inclination toward sugar monoculture in São Paulo at the expense of food crop cultivation. From 1973 to 1976, the area occupied by cane in the region of Campinas reached 275.2 thousand hectares. On the surface, the increase was just 32.4 thousand hectares, or 11.7 percent of planted land. This additional area, however, corresponded exactly to the decrease in land planted with beans, potatoes, tomatoes, onions, and peanuts. Even soybeans, whose cultivation increased by 226 percent during the same period,

TABLE 2 Main Brazilian Agricultural Exports, 1971–1982  
(value in U.S. millions of dollars)

Product	1971	1972	1973	1974	1975
Coffee	776	989	1,244	864	155
Soybeans	24	128	494	586	685
Sugarcane	147	314	455	978	770

Sources: Central Bank of Brazil, cited in *Índice do Brasil*, 77/78 (Rio de Janeiro: Gráfica Lord, 1978), Statistical Appendix; and International Monetary Fund, *International Financial Statistics* 37, no. 3 (1984).

occupied only 15 thousand hectares—less than half of the area gained by sugarcane.<sup>19</sup>

Food crops were not the only target of sugarcane usurpation. Encroachment onto land once devoted to traditional coffee plantations was also considerable. Indeed, the area of land allocated to coffee cultivation in the state of São Paulo was reduced by half since 1950, while the number of hectares planted with sugarcane increased more than 300 percent by 1976.<sup>20</sup>

The incursion of cane into land previously planted with other crops diminished the Center-South's self-sufficiency in food production and resulted in a periodic need to import large quantities of basic food products into the region (see tables 3 and 4).<sup>21</sup> Furthermore, the accelerated rate of land acquisition by rapidly spreading sugar *usinas* produced an inflationary spiral in real property values in São Paulo and other states.<sup>22</sup> The region suffered social costs as well from cane's proliferation. Due to cane's seasonal nature, increased sugar production meant a greater use of temporary, nonresidential labor in São Paulo agriculture, labor that was often drawn from subsistence farmers displaced by *usina* expansion. The lack of employment alternatives for these temporary workers during sugar's off-season aggravated the rate of rural-urban migration.<sup>23</sup>

Sugar's expansion in the Center-South was based on a large-scale, capital-intensive refining process, on the augmented concentration of land holdings, and on the increasing integration of both industrial and agricultural aspects of production with marketing activities into one continuous operation. In particular, the growing tendency for *usinas* to incorporate surrounding land and to produce their own cane for processing had extremely negative consequences for the independent cane supplier (*fornecedor*). Despite the long history of protection afforded the small grower by such IAA legislation as the Sugarcane Cultivation Statute, the position of this class of producers eroded significantly after 1964. Whereas 60 percent of all cane processed in the state of São Paulo in 1964 had been furnished to central *usinas* by small

1976	1977	1978	1979	1980	1981	1982
1,144	2,299	1,947	1,918	2,486	1,517	1,858
719	2,143	1,515	1,650	2,277	3,191	2,122
95	332	229	270	942	666	336

autonomous planters, such planters supplied less than 40 percent by 1977.<sup>24</sup> The decline of the "middle class" of producers in the sugar industry paved the way for agglomerating small plots of land into large holdings and implementing further economies of scale in the refining of cane into sugar.

The weakening of the independent supplier can be traced indirectly to the steady expansion of exports. Increased demand for exportable sugar revealed a deficit in production capacity in the Center-South. The IAA responded to this heightened demand, particularly in the 1973–74 period of high world prices, by temporarily suspending production quotas throughout the sector. Although quota restrictions were restored in the following season, their "temporary" liberation made a permanent crack in the Sugarcane Cultivation Statute, which had been designed to protect the small independent grower.

In order to ensure that 60 percent of the cane was supplied by *fornecedores* rather than *usinas*, this legislation had required that each *usina* buy a specific quota of cane from individual growers. Lifting these quotas, however, meant that *usinas* could produce unlimited amounts of cane and that they were not obligated to buy a fixed percentage from their assigned *fornecedores*. Thus in order to minimize their risk and to reduce transportation costs, large *usinas* increasingly relied on their own cane plantings during this period, driving out of business those *fornecedores* whose size and financial precariousness could not withstand such a hiatus in cane sales. These bankruptcies prompted many *usineiros* to purchase surrounding land vacated by *fornecedores*. *Usinas* were thus able to claim insufficient supply as reasonable justification for quota relaxation. This strategy was further reinforced by the unlikelihood that an eligible *fornecedor* would appear at a later date to repurchase the land and claim the quota. Given the economies of scale and high entry costs in sugar production, small growers were typically unable to mobilize sufficient resources to regain access to quotas.

In short, the decline of the *fornecedor* made possible the culmi-

TABLE 3 Annual Growth Rates of Quantities Produced in Selected Crops in Brazil

Food Crops	1947-67 (%)	1967-79 (%)	Export Crops	1947-67 (%)	1967-79 (%)
Rice	5.96	2.31	Cotton	3.74	-1.58
Banana	5.90	-1.50	Coffee	4.12	-3.60
Potato	4.39	2.96	Sugar	5.82	5.77
Beans	4.05	-1.58	Oranges	4.60	15.98
Manioc	4.80	-1.66	Soybeans	4.33	25.50
Corn	4.74	2.90	Wheat	0.70	10.02
Average	4.97	.57	Average	3.89	8.68

Source: I. T. Lyra and T. B. B. Ryff, "Agricultura de Abastecimento Interno: Problemas e Perspectivas," *Revista de Economia Rural* 18, no. 3 (July-Sept. 1980): 581-600.

nation of a process of capital and land concentration that was already taking place in the Central-South industry. The IAA, by failing to enforce the Sugarcane Cultivation Statute, provided tacit support for this process.<sup>25</sup>

The growth of sugar production in the Center-South had its principal locus in São Paulo. By the late 1970s, with the relaxation of government-imposed restrictions on the geographical mobility of the mills, usina expansion spread from that state into other areas. Paulista-owned usinas began to expand, mostly to the south in the state of Paraná and to the north in Minas Gerais, purchasing land and, de facto, production quotas as well. Although such purchases were sanctioned by the IAA, they were viewed by some resident usineiros and growers in these neighboring states as unacceptable violations of their economic territory. On one occasion, their protests resulted in an inquiry by the legislative assembly of Minas Gerais into the domination of that state's sugar industry by São Paulo firms, but the session's consequences were negligible.<sup>26</sup> The growth of cane cultivation in the Center-South, and in São Paulo in particular, transformed not only the structural face of agricultural production in the region but also the balance of sugar production in the country as a whole. This development also gave rise to a new set of political and economic actors and to a new form of interest articulation that had important implications for state policy.

*The Growth of Producers' Cooperatives: An Emergent Political Force*

Since the mid-1960s, the key economic and political actors in the Brazilian sugar industry have been the Center-South usineiros. Descended predominantly from nineteenth-century European immigrants (many of whom started their agricultural activities in coffee in São Paulo), the sugar producers of the Center-South began, as did their

TABLE 4 *Percentage of Variation in Cultivated Areas and Average Yields of Selected Crops between the Periods of 1966–1970 and 1976–1979*

Food Crops	Cultivated Area (%)	Yield per Hectare (%)	Export Crops	Cultivated Area (%)	Yield per Hectare (%)
Rice	28	4	Cotton	-5	30
Banana	2	-25	Coffee	-35	31
Potato	-2	40	Sugar	33	12
Beans	22	-23	Oranges	149	12
Manioc	19	-16	Soybeans	773	44
Corn	19	8	Wheat	179	-13
Average	15	-2	Average	182	19

Source: I. T. Lyra and T. B. B. Ryff, "Agricultura de Abastecimento Interno: Problemas e Perspectivas," *Revista de Economia Rural* 18, no. 3 (July–Sept. 1980): 585.

Northeastern counterparts, as owners of family concerns. Some developed into owners of the largest usinas in the country.<sup>27</sup> But Center-South usineiros could be distinguished from Northeastern millers by their reputation for thrift and industry, not to mention their rate of capital reinvestment in the sugar sector. They were also set apart by the degree of diversification of their investment portfolios within the agricultural sector, which included holdings in other export crops such as coffee, soybeans, and citrus fruits as well as holdings in urban-based industry. Perhaps most significantly, Center-South producers emerged through corporate entities as financial participants in various stages of the production process, including the supply and manufacture of agricultural and industrial inputs, cane cultivation, and sugar and alcohol refining and marketing.

The principal organizational manifestation of these Center-South agro-industrial activities was the development of large sugar producer cooperatives in the mid-1960s. Beginning as producers' associations with predominantly marketing functions, they first evolved into conglomerates that were active in all aspects of the production process. Later they became involved in other agro-industrial enterprises and in multinational ventures as well. Although producers' cooperatives existed in the Northeast, the mechanism that provided the model for Brazilian agricultural development under the post-1964 military regime was most fully epitomized by the two dominant cooperatives in the Center-South, COPERFLU (Cooperativa dos Produtores de Açúcar e Alcool Fluminense) and most strikingly by COPERSUCAR (Cooperativa Central dos Produtores de Açúcar do Estado de São Paulo).

Linking industry with agriculture, COPERSUCAR set out initially to finance and market the alcohol and sugar of its associated

firms. By 1977 COPERSUCAR included seventy-seven usinas, sixty-eight of which were located in São Paulo, with nine others in Paraná, Goiás, Minas Gerais, and Rio de Janeiro. COPERSUCAR represented 86 percent of all the São Paulo sugar producers and was responsible for the commercialization of nearly 41 percent of all national sugar production and 64 percent of all national alcohol production. Within the state of São Paulo, it accounted for 90 and 91 percent respectively of sugar and alcohol production.<sup>28</sup>

COPERSUCAR gradually expanded its functions, blending agricultural, industrial, and commercial activities. As commercial agent for its member usinas, the association collected refined sugar from the mills and sold and distributed it to wholesalers and retailers in the Center-South region. COPERSUCAR packaged and distributed its own brands of sugar and alcohol and operated a large alcohol refinery that processed nearly 33 million liters a year.<sup>29</sup> In addition to these productive and commercial activities, COPERSUCAR extended credit to its affiliates. It also undertook an elaborate agricultural research program to conduct genetic research and ran experimental irrigation projects whose size dwarfed corresponding programs under state auspices. Consolidating its position as an agro-industrial conglomerate, COPERSUCAR diversified its interests in the late 1970s to include the processing and distribution of a variety of agricultural commodities, especially coffee. It established a network of food product distribution that supplied fifty thousand clients with over thirteen million sixty-kilo sacks of sugar and more than eighteen million kilos of coffee. COPERSUCAR soon embodied what its director, Jorge Wolney Atalla, called the "Brazilian model of agroindustrial integration."<sup>30</sup>

COPERSUCAR's activities were not just domestic. It also made spectacular moves in the multinational arena, becoming the first Brazilian transnational corporation when it purchased Hills Brothers Coffee, a coffee roasting and distributing firm in the United States. COPERSUCAR also entered into a joint venture with the government of Kuwait to build a sugar refinery in that country for Brazilian raw imports. COPERSUCAR was aided in these pursuits by the Brazilian government. Financing was arranged through the Banco do Brasil and the Banco Central, negotiated through the Ministério de Fazenda and Secretaria de Planejamento Nacional, and later implemented through Interbras (Petrobras Comércio Internacional), the government-owned international trading company.<sup>31</sup>

As a highly visible model of successful agro-industry, COPERSUCAR had a significant impact on state policy. The cooperative lobbied intensely on issues it considered critical to its interests. For example, COPERSUCAR pressed with other producers' cooperatives for price policies favorable to the usineiros. Besides advocating higher do-

mestic prices (to compensate for rising production costs),<sup>32</sup> COPERSUCAR led the fight to introduce a system of miniadjustments in the price-setting mechanism that would more frequently regulate the price of sugar to correct for inflation. Although the proposal was never formally adopted, the Conselho Interministerial de Preços had adjusted the price of sugar three times by the end of 1976.<sup>33</sup>

During 1973–74, COPERSUCAR also tried to block the support of the Conselho Monetário Nacional for the retail price of sugar. This five-million-cruzeiro subsidy was intended to cushion urban consumers against elevated prices caused by the world sugar-market boom. It was financed through windfall profits accumulated in a special export fund and caused considerable resentment among usineiros, especially when prices dropped a year later. After substantial public debate and an intensive media campaign waged by COPERSUCAR, the consumer subsidy was terminated in April 1976.<sup>34</sup>

COPERSUCAR also urged the government to establish a large-scale program to manufacture alcohol. It proposed an enormous expansion of state-controlled alcohol production to help alleviate the balance of payments deficit incurred largely by soaring oil prices. Inasmuch as COPERSUCAR accounted for 64 percent of all alcohol produced in Brazil, its interests in the nature, scope, and control of national alcohol policy were considerable. Between the time that the Programa Nacional de Alcool (Proálcool) was first initiated in 1975 and late 1977, the key alcohol issue for usineiros regarding the alcohol program was the degree to which the state would allow them to transfer production resources from sugar to alcohol, given the traditional priority placed on supplying sugar to the domestic market. In large part, this question hinged on the distillery arrangement to be chosen. The selection of annexed distilleries, on the one hand, would mean that alcohol would be produced as a derivative of sugar, with a lower production cost but also a lower yield per ton. The option of autonomous distilleries, on the other hand, implied the independent production of alcohol for its own sake, thus risking the diversion of cane from sugar to alcohol and jeopardizing domestic supply. Although the latter position was by no means a unanimous stand, it was the route advocated by COPERSUCAR and other elements of the usineiro community. The IAA, realizing that its capacity to regulate the flow of cane to either sugar or alcohol would be threatened by autonomous distilleries, opposed them. In the initial phase of the Programa Nacional de Alcool, state preferences for annexed distilleries seemed to dominate the policy-making process. With oil costs rising and sugar prices plummeting, however, producers' advocacy of autonomous distilleries (with their higher yields per unit) began to pay off. Although it cannot be concluded that the pressure exerted by producers' cooperatives singlehandedly determined the

adoption of autonomous distilleries, little doubt exists that such pressure ultimately contributed to the decision to take the autonomous route.<sup>35</sup>

The extent of COPERSUCAR's political influence could also be gauged by the degree to which its abuse of power was tolerated by state policymakers. As COPERSUCAR Director, Jorge Wolney Atalla provided colorful and daring leadership, but he involved the cooperative in activities of questionable legality. Notwithstanding the considerable political support mobilized by Atalla for many of his endeavors, a coalition of detractors (many of whom had been mistreated by COPERSUCAR) emerged to charge the association with illegal and unethical practices. They brought charges before the parliamentary inquiry commission empowered to investigate COPERSUCAR's possible "abuse of power in a monopolistic economic situation" regarding the ineligibility of usineiro associations to qualify legally as "cooperatives"—a status conferring considerable economic and political benefits. Retailers complained not only that COPERSUCAR distributors were guilty of price gouging—a practice facilitated by the cooperative's monopolistic position in the Center-South consumer market—but also that this monopoly was further reinforced by the illegal affiliation of usinas from outlying regions into the COPERSUCAR association.<sup>36</sup>

Despite such opposition to COPERSUCAR activities, official sanctions were never imposed on the cooperative. Without doubt the growing political and economic power of producers' associations bestowed exalted legal status as well. COPERSUCAR Director Atalla underscored this power in his comment that "COPERSUCAR enjoys 'acquired rights' that entitle it to certain exemptions from Brazilian law."<sup>37</sup> When questioned about the cooperative's murky legal status, another COPERSUCAR representative responded succinctly, "How can a firm with so many official contacts and so much influence in the sugar industry be considered illegal?"<sup>38</sup>

Interestingly enough, these "official contacts" did not center on the IAA. On the contrary, the patterns of political access established by large producers' cooperatives characteristically bypassed the state autarchy because it was viewed by Center-South usineiros as an agency that delivered too little too late. Political influence was more likely to be wielded through personal links between co-op members and well-placed officials in higher-level organs such as the Banco do Brasil or even the presidency.

The emergence after 1964 of producers' cooperatives as a powerful political and economic voice in sugar policy can be seen as the culmination of the fundamental structural changes occurring in the sector. Producers' associations such as COPERSUCAR symbolized the transfer of regional dominance of sugar production from the Northeast to the

Center-South, the adoption of a new model of large-scale agro-industry predicated on production for export, and the establishment of new patterns of political influence.

STATE POLICY AFTER 1964: RESPONSE AND STIMULUS TO  
STRUCTURAL CHANGE

*The Modernization Program*

Appreciating the structural changes described above is crucial to understanding state policy-making in the period after 1964. In response to these structural transformations, the state undertook a series of policies intended to rationalize and modernize the Brazilian sugar sector. The government sought to transform and standardize the physical infrastructure, the model of production, and the agricultural production capacity of the sugar industry throughout the country. The effort at reforming the policy-making apparatus was an attempt to facilitate the implementation of this modernization program.

The ambitious modernization program begun in the early 1970s by the IAA was not the first effort in this direction. Earlier attempts to wrench the sugar sector out of its past had generally focused on the Northeast, where the economic situation was most desperate and the need to defuse potentially explosive social problems was acute. The principal predecessor of the IAA modernization program was GERAN (Grupo Especial para a Racionalização da Agroindústria Açucareira do Nordeste), which began in 1966. Its goals were to modernize sugar production while simultaneously instituting land reform in the Northeast. Ineffective administration, lack of support from local oligarchs, and (it was widely suspected) sabotage by the IAA together ensured the ultimate failure of this program. The unsuccessful efforts to tie socially progressive land reforms to technical modernization led the state to omit social considerations in its next attempts at modernization in the 1970s. The IAA's solution to production problems was thereafter to be strictly technocratic.<sup>39</sup>

In 1970 the IAA delineated three major structural problems in the sugar industry: chronic overproduction and low productivity on the agricultural side and low industrial productivity. These conditions were associated with several structural impediments. Low industrial productivity was linked to a proliferation of undersized usinas, which often had obsolete plants. Low agricultural yields were connected to low levels of mechanization and degenerative varieties of cane.<sup>40</sup>

These problems were aggravated by inattention to microregional variations, which were reflected in the state's restrictions on the geographical transferability of production quotas. The existing quota sys-

tem forbade the transfer of production quotas from one location to another—even within the same production region. Thus usineiros wishing to improve productivity by transferring resources to zones that were more conducive to cane cultivation were stopped by IAA regulations.<sup>41</sup>

Low sectoral productivity in turn created difficulties in obtaining reinvestment capital. In the absence of private financial incentives for mill and farm improvements, the remaining option was to mount a state-directed modernization program. The auspicious moment for this state-driven program came in the early 1970s, when the IAA's special export fund began to grow due to windfall export profits. The IAA's response outlined three main objectives for its modernization program: first, to eliminate nonprofitable mills through mergers, incorporations, and relocations in order to create large-scale centralized mills (that is, mills whose production capacity would exceed forty thousand tons annually); second, to modernize the remaining physical industrial plants; and third, to extend on a national basis existing private initiatives geared toward implementing integrated scientific research projects in the areas of genetics, entomology, and agronomy, the objective being to breed new high-yield cane varieties.

The IAA's modernization program was instituted in two phases. Beginning in 1971, phase one sought to provide fiscal incentives for eliminating small, inefficient usinas by merging two small usinas, by incorporating smaller usinas into larger ones, or in the case of usinas whose location precluded economic survival, by relocating such mills and their production quotas to another area or state within the same production region. This legislation also decreed that any usina whose production process had been paralyzed for more than three consecutive harvests was to be shut down and merged or incorporated with another functioning mill.<sup>42</sup>

Of these three options, the merger of two small usinas (those mills with a production capacity of less than 13,200 tons annually) was less common than the incorporation of a small adjacent mill by a large usina. Relocations were usually complicated and required large amounts of capital, even with substantial government financing. When they did occur, relocations were mostly carried out from one area of the Northeast to another. Frequently, the physical plant of mills relocated to another area would be used to produce other, less profitable cane by-products such as wood pulp or cellulose.

The IAA's policy helped erode the position of certain social classes in the sugar sector while enhancing the standing of others. For example, the promotion of economies of scale in merging small mills into larger units of production reinforced the trend toward the disappearance of small family-owned mills, which were often vestiges of the

*engenhos* (sugar plantations) that had dominated sugar production until the twentieth century. The beneficiaries of this trend were those corporate *usinas* able to acquire the additional quotas. Thus the effect of this phase of modernization was to consolidate trends concentrating land and capital.

The mergers, eliminations, and relocations of sugar mills had important social implications as well, especially in the Northeast. Even where sugar *usinas* were replaced with some other form of commercial activity, the layoffs of large numbers of cane and mill workers were still likely. These laborers' few remaining options were temporary agricultural work, employment in the urban sector, or both. Ironically, the fear of popular upheaval stemming from the economic displacement of rural masses had long been an explicit justification for traditional IAA subsidies to inefficient Northeastern planters.<sup>43</sup> Fear of insurrection reached its apex in the early 1960s with the organization of peasant leagues and land invasions.<sup>44</sup> By the 1970s, however, such fears had become attenuated by the effectiveness of state repression and the overwhelming need to respond to opportunities on the world market.

For independent suppliers, the implementation of phase one of the IAA's modernization program had varying consequences. *Fornecedores* could adapt somewhat more easily to mill mergers and incorporations by supplying their cane to the newly formed larger mill. Indeed, in some cases centralization facilitated transportation and lowered costs for the supplier. Relocations were more problematic, however. *Fornecedores* could only continue to operate if they could replace a relocated *usina's* quota with that of a neighboring *usina*. The search for a suitable substitute *usina* was complicated by the need to find a mill that was close enough to keep down transportation costs and that did not already have an abundant number of *fornecedores*. The difficulties in finding such situations forced many *fornecedores* to relinquish their quotas. The state's response to the plight of these suppliers was at best lukewarm. *Fornecedores* who lost quotas were awarded minimal financial compensation as an incentive to engage in new activities, and the opportunities for real alternatives were limited.

Phase one of the IAA's modernization program was well underway when the special export fund began to receive windfall profits from the 1973–74 sugar boom. This financial stimulus persuaded the IAA to accelerate the pace of modernization. Having completed the transformation of the structure of production, the IAA began to modernize the obsolete physical plants of those *usinas* that met minimal scale requirements. It also began to elaborate the export infrastructure through the construction of bulk-loading terminals in several ports. Specifically, phase two established a system of financing for *usina* modernization, offering credit at negative interest rates with flexible repay-

ment schedules. It also instituted financing for the acquisition of agricultural inputs through *fornecedor* cooperatives and banks. In addition, funds from the special export fund went into strengthening the export infrastructure, beginning with the construction of sugar-loading terminals in Recife, Maceió, and Santos. Finally, the IAA began a national agricultural research program, PLANALSUCAR (Programa Nacional de Melhoramento de Cana-de-Açúcar). Through this program, the IAA proposed to carry out research at centralized experimental stations in the various producing regions, with a particular focus on the development of cane varieties adaptable to varying ecological conditions.

In their attempts to modernize the sugar industry, IAA policymakers focused considerably more attention on improving industrial capacity rather than agricultural productivity. For example, expenditures for the industrial components of the modernization program outweighed those made for the agricultural aspects by nine to one in both the Northeast and the Center-South. By 1977 PLANALSUCAR had received approximately 40 million cruzeiros from the special export fund, an amount equal to about 1 percent of all disbursements during that period.<sup>45</sup>

Despite the minimal emphasis on agricultural problems, the yield of sugar per hectare did rise in the nation as a whole after 1974, increasing from 46.5 to 54.9 tons per hectare by 1980 (see table 5). When disaggregated geographically, however, such overall yield increases reveal continuing regional disequilibria. Table 6 shows that by 1980, productivity increases had been largest for the states of Rio de Janeiro, Minas Gerais, São Paulo, and Paraná, with the latter two demonstrating yields far superior to those of all other producer states. In the Northeast, modest gains were made by Alagoas, but gains in other states in the region remained constant or actually declined, as in Bahia. In addition, average yields in Brazil continued to compare unfavorably with international standards despite improvements.

IAA officials stressed that the emphasis placed on industrial versus agricultural improvements was a conscious state policy. Indeed, the IAA was persuaded that industrial improvements had to precede agricultural advances; otherwise, production of raw material would not be matched by processing capacity and would therefore be subject to chronic stockpiling. Moreover, decision makers within the institute rejected an incremental approach to modernization that might have resulted in a more balanced program. Rather, they argued that given the rapid accumulation of resources in the special export fund and an inflation rate of over 50 percent, expenditures on heavy infrastructure were better made sooner than later.<sup>46</sup>

The modernization program's impact on industrial production

TABLE 5 *Production, Area Planted, and Yields for Sugarcane in Brazil, 1974–1980*

Year	Area Planted (1,000 hectares)	Production (1,000 tons)	Yield (tons per hectare)
1974	2,057	95,624	46.5
1975	1,969	91,525	46.5
1976	2,093	103,173	49.3
1977	2,270	120,082	52.9
1978	2,388	129,223	54.1
1979	2,541	139,896	55.1
1980	2,701	148,279	54.9

Sources: Fernando Homem de Melo and Eduardo Giannetti da Fonseca, *Proálcool, Energia e Transportes* (São Paulo: FIPE/Pioneira, 1981), p. 8; and original data from the Fundação Instituto Brasileiro de Geografia e Estatística (FIBGE).

capacity can be seen in table 7. By the program's end in 1978, the total number of usinas in the country had been reduced from 249 to 206. Of the 43 mills closed, 9 had been located in the Northeast and 34 in the Center-South. These closings succeeded in increasing the scale of production throughout the country. While small-scale mills (those with a capacity less than eighteen thousand tons) constituted 59.4 percent of all usinas in 1971–72, by 1978 such mills accounted for only 17.9 percent of production.<sup>47</sup> Small-scale usinas made up 9.2 percent of all mills in the Northeast and 8.7 percent of the productive units in the Center-South. The production capacity of the national industrial plant rose from 5.4 million metric tons in 1971–72 to 11.4 million in 1978.<sup>48</sup> Sugar production levels did increase during this period, showing a fluctuating, but gradual, rise from 1975 to 1983.

The IAA's program of usina modernization was directly linked to the resource levels of the special export fund, an arrangement that made extensive investment in expanding industrial infrastructure entirely contingent upon favorable conditions on the external market. During the euphoria of 1974, when world prices soared to U.S. \$1400 a ton, IAA policymakers optimistically anticipated a continual expansion of demand for the remainder of the decade. Indeed, IAA President Alvaro Tavares Carmo predicted that between 1974 and 1980, world sugar demand would increase by twenty-five million tons.<sup>49</sup> In fact, the world demand for sugar rose by only ten million tons during that period; and to make matters worse, the price of sugar dropped to U.S. \$172 a ton in 1975 and remained depressed through most of the late 1970s.<sup>50</sup> These events cast serious doubt on the wisdom of the IAA's market-dependent policy. This concern was expressed by one institute critic: "The very definition, in fact, of the present sugar policy depended on a favorable situation on the world market, which, on the

TABLE 6 Evolution of Yields per Unit of Area Harvested for Sugarcane by State, 1974–1980 (tons per hectare)

State	1974	1975	1976	1977	1978	1979	1980
São Paulo	54.8	57.3	63.5	65.5	66.9	67.1	66.0
Pernambuco	48.0	48.0	46.9	48.0	48.0	48.4	47.5
Alagoas	45.2	46.1	46.1	50.2	50.5	52.5	52.0
Rio de Janeiro	35.2	45.0	39.6	47.0	48.4	48.4	48.5
Minas Gerais	38.0	32.6	36.2	40.6	40.1	40.9	43.0
Paraíba	56.7	40.9	43.5	53.1	46.5	51.3	49.3
Bahia	42.0	42.0	38.0	38.0	38.0	40.4	40.0
Paraná	57.0	50.1	50.1	70.1	63.0	68.8	70.0
Brasil	46.5	46.5	49.3	52.9	54.1	55.1	54.9

Sources: Same as table 5.

one hand, furnished the indispensable resources for the execution of a program of such huge dimensions and, on the other hand, encouraged the euphoric climate that justified and approved successive projects to expand usina productive capacity. Consequently, the viability of the government's investment policy in the sugar sector became critically dependent on sustaining favorable conditions on the world market.<sup>51</sup>

Between 1973 and 1975, the special export fund had disbursed U.S. \$4.3 billion.<sup>52</sup> But by 1976, the fund was depleted, its resources spent, and the world price of sugar at a record low. No new modernization projects were approved after this time, but some financing was later made available through the Banco do Brasil and the Banco Central to complete improvements begun under the program. Some of the usina modernization projects resorted to private sources of financing at market interest rates.

More important, perhaps, was the effect of these programs on the institutional integrity of the IAA. The institute was bankrupt. In 1977 the Conselho de Desenvolvimento Econômico approved an allocation of four billion cruzeiros from the Ministério de Indústria y Comércio to bail the IAA out of its financial difficulties. It was, as one critic noted, the "unhappy finale of the IAA's new sugar policy."<sup>53</sup>

Whatever its difficulties, the IAA's technical modernization program did achieve the regime's goal of transforming the structure of the sugar sector according to its overall objectives for Brazilian agriculture. The IAA created an agro-industrial complex with large, capital-intensive production units and high levels of land concentration. Agro-industrial producers in the Center-South gained. The losers were small and middle-sized growers, displaced laborers, and ironically, the IAA itself.<sup>54</sup> Indeed, this modernization process was accompanied by profound changes in the bureaucratic policy-making apparatus, changes

TABLE 7 *Change in Scale of Production between 1971/72 and 1978*

Production Scale (tons of sugar)	North/Northeast		Center-South		Total	
	1971/72	1978	1971/72	1978	1971/72	1978
Less than 6,000	14	5	11	2	25	7
6,000–18,000	49	14	74	16	123	30
18,000–36,000	26	34	41	23	67	57
36,000–60,000	8	22	19	54	27	76
60,000–90,000		12	6	10	6	22
90,000–120,000		1		4		5
More than 120,000			1	9	1	9
Total	97	88	152	118	249	206

Source: Confúcio Pamplona, *Proálcool* (Rio de Janeiro, 1984), p. 9, t. 1.

that reflected the larger institutional alterations taking place under the post-1964 regime.

### *Institutional Reform*

As has been shown, major structural transformations took place in the Brazilian sugar sector after 1964. The policy environment was significantly altered by the increased importance of the export sector, the reversal of the regional balance of economic power from the Northeast to the Center-South, and the emergence of a powerful agro-industrial elite among Center-South *usineiros* and the articulators of their interest—the producers' cooperatives. The state's response to these structural changes—the ambitious program of technical modernization—reinforced them. Changes also occurred within the institutional structure of policy-making in sugar: the increasing centralization of sugar policy-making, first within the IAA and then within the state bureaucracy as a whole; the fragmentation of decisional power within the centralized state apparatus; the rationalization and technocratization of bureaucratic behavior within the IAA; and the changing position of sugar elites vis-à-vis the newly reconstructed decision-making apparatus.

The post-1964 regime began its efforts to adapt the institutions making sugar policy to the task of modernization by initiating an administrative reform of the IAA. The strategy consisted of three broad measures: first, rationalizing recruitment and promotion procedures to eliminate the impact of informal influence networks; second, instilling "technocratic" values and techniques in IAA procedures; and third, restructuring the IAA's administrative organization.

Since the 1930s, public policy in the sugar sector had been made somewhat autonomously by the IAA. Decision making was reputed to

have functioned largely through informal, personalistic networks in which favors were exchanged. These networks were based upon *panelinhas*, the mutual promotion groups operating throughout Brazilian society.<sup>55</sup>

The post-1964 government sought to mitigate the impact of these informal networks on IAA policy-making by tightening the controls of the Departamento de Administração dos Serviços Públicos (DASP) over recruitment and promotion. The DASP instituted procedures to prevent the hiring of employees who formerly would have been outside its legal control. It also implemented a series of measures that prevented recruiting personnel contracted outside permanent staff quotas, blocked promotions of those employees who had previously been hired outside of these quotas, enforced the use of standardized civil-service exams for institute positions, and limited the size and personnel budget of various administrative divisions within the IAA.

In its efforts to reform the bureaucratic practices of the IAA, the military regime also reorganized the institute's administrative operations. This reorganization was designed to centralize the IAA administrative structure by reducing the numbers and the power of local regional branches and concentrating power in a few superintendencies. The main result of this reorganization was to consolidate the power of the high-production states (São Paulo, Pernambuco, Minas Gerais, and Rio de Janeiro) that would house these superintendencies. In addition, the reorganization centralized decision making within the IAA by creating three superdepartments that were to respond directly to the IAA president.<sup>56</sup>

Beyond establishing these legalistic reforms, the regime also sought to impose a new style of policy-making on the IAA's bureaucratic operations. Serious efforts were made to infuse IAA performance with the technocratic norms that had come to be associated with the military regime in Brazil. Substituting the "scientific values" of technocracy for personalistic, ascriptive bases of behavior was viewed as a key to rescuing the institute from its paternalistic past and making it a catalyst for the overall modernization of the sugar sector.<sup>57</sup> An important part of the military's efforts to reform the IAA thus involved actively recruiting technocrats into key institute positions, especially in the Departamento de Modernização and in PLANALSUCAR. Indeed, the creation of these divisions was closely associated with the triumph of technocratic values within the institute. The number of functionaries with technical expertise in areas ranging from chemical engineering to agronomy grew from twenty to one hundred.

The regime also sought to reform bureaucratic behavior by placing military personnel in high administrative positions. By 1970 the

IAA posts of president, chief of staff, and the director of the security and information division had all been filled by generals. Direct recruitment of military officers reflected the high priority attributed to sugar by the regime and its interest in monitoring the activities of the institute more closely, but such recruitment also reflected a desire to find a way to put old soldiers out to pasture.<sup>58</sup>

Nonetheless, these efforts to transform the IAA into a model of technocratic efficiency were less than comprehensive. Because the recruitment of technocrats was limited to somewhat isolated pockets of IAA administration, their policy impact was circumscribed. Moreover, even where technocrats were heavily recruited (for example, in the Departamento de Modernização), evidence of adherence to nontechnical, personalistic norms could still be found. For example, informants reported numerous cases of loans being granted by technocrats to usineiros on the basis of personal ties. Indeed, anecdotal data suggest that technocrats were as inclined toward ascriptive decision making as the old-line bureaucrats of previous IAA administrations.<sup>59</sup>

### *Centralization of Policy-Making*

While the military regime was attempting to reform administrative processes within the IAA, fundamental changes were also taking place in the structure of the state apparatus, essentially toward centralizing economic decision making. This centralization had important consequences for the power configuration in the sugar sector. The shift of policy-making to higher levels of government weakened the IAA, which had once been a semiautonomous autarchy. Formerly influential Northeastern elites lost access to key decision makers, and those Center-South elites promoting large-scale agro-industry found support from the new makers of state policy.

The centralization of economic policy-making under the military was hardly a sudden shift; rather, it culminated a long historical process in Brazil. But after 1964, new "superagencies" took over key economic decisions and gradually eroded the power of the "decentralized state." National policy was coordinated on ministerial, or more often, on interministerial levels, which stripped lower-echelon agencies of their discretionary powers. After 1967 the principal power arena for central state policy became the Conselho Monetário Nacional. Although its membership varied over time, the council consisted of representatives of the Ministries of Finance, Planning, Industry and Commerce, Agriculture and Interior, the Banco Central, the Banco do Brasil, the Banco Nacional de Desenvolvimento Econômico, the Banco Nacional de Habitação, the Caixa Econômica Federal, and two members without portfolio.

lio. This organ set industrial, agricultural, monetary, and trade policy. Indeed, until 1974 the Conselho Monetário Nacional acted as coordinator for the entire economic policy of the regime.<sup>60</sup>

The direct effect of this centralization of policy-making on the sugar sector could be seen in the gradual usurping by centralized state organs of policy functions once performed by the IAA. The first blow to the IAA's institutional powers occurred in 1967. Previously, autarchic institutes such as the IAA had operated on a par with, but independently of, regular ministries. In 1967, however, under the reforms of the Costa e Silva regime, the status of autarchies was reduced. The IAA then fell under the jurisdiction of the Ministry of Commerce and Industry, and the IAA president no longer enjoyed direct access to the president.<sup>61</sup> The 1967 reform also changed patterns of interest representation within the IAA. The number of sectoral representatives on its deliberative council was reduced, and the number of ministry representatives was augmented. The IAA thereafter was no longer the locus of corporatist representation in the sector. The Northeast lost influence over the policies of the institute, but the interests of Center-South producers did not become fully represented. The IAA thus became a forum in which the principal participants were from the state apparatus. The new limits on access by private sector actors to IAA policy-making led the sugar elites to seek influence in other decision-making arenas, especially the Ministry of Commerce and Industry, the Ministry of Planning, and the Banco do Brasil.

In the same year, other agencies encroached further on functions traditionally carried out by the IAA. Its policy-making role in setting national sugar prices was usurped by the Conselho Monetário Nacional and its subordinate unit, the Conselho Interministerial de Preços. Now the IAA could only make price recommendations to these organs, based on studies that its staff performed in conjunction with the Fundação Getúlio Vargas. Moreover, the setting of the domestic price of sugar passed from the IAA into the sphere of SUNAB (Superintendência Nacional de Abastecimento), the agency charged with regulating the price levels of consumer foodstuffs.

Thus the IAA lost much of its power to increasingly centralized policy-making bodies. It also surrendered many of its functions to private producers' cooperatives such as COPERSUCAR and COPERFLU. This phenomenon probably resulted less from the trend toward the privatization of sugar policy than from several other factors. Over the years in which the Center-South sugar industry began to assert its superiority in Brazil, the IAA was remarkably unresponsive to the shift in the balance of power from the Northeast to the Center-South. Faced with a sectoral agency that did not adequately represent their interests, Center-South usineiros turned to producers' cooperatives to perform

many of the functions once reserved for the state autarchy. As the IAA's bases of political support and resources were shrinking in the middle 1970s, producers' cooperatives themselves began to take on more and more sectoral responsibilities.<sup>62</sup>

#### SUMMARY

The above discussion has analyzed the interplay of state policy and structural change in the Brazilian sugar sector since 1964. The period witnessed dramatic transformations in the prevailing model of sugar production: large-scale, capital-intensive agro-industry, which was responsive to expanded demand for exports, replaced smaller, technically backward operations both in sugarcane cultivation and refining. During this process, the natural production hegemony of the Center-South over the once dominant Northeast became indisputable. The trend toward agro-industry was accentuated by state policies. An ambitious government modernization program promoted the standardized application of this production model throughout the country, largely ending a forty-year policy of paternalistic subsidization for noncompetitive Northeastern sugar oligarchs and protection for small, independent cane suppliers.

At the same time, the institutional structure of the state itself was accommodating these economic and political shifts. In its attempts to create an efficient bureaucratic presence in the sugar sector, the post-1964 regime made efforts to streamline the administrative organization of the Instituto do Açúcar e do Alcool. But the state's inability to root out clientelistic behavior through technocratization during a period of plummeting world sugar prices made the IAA financially and institutionally vulnerable to an already strong trend toward the centralization of economic policy-making in Brazil, and the IAA's influence consequently waned.

These changes in policy signaled an altered political game where new actors emerged as powerful players and new forms of interest articulation were recognized as legitimate. During the period between 1930 and 1964, the state had provided a corporatist solution to what it perceived as a dominant concern in the sugar sector—the need for stability. This solution was based on an alliance between the IAA and the sugar oligarchs of the Northeast. It also afforded protection to the smaller cane grower, the *fornecedor*, who acted as a buffer between *usineiros* and landless cane workers. After 1964 conditions changed. As export opportunities increased, the need to build an internationally competitive industry became more urgent, and the desire to safeguard the stability of the sector from international market fluctuations seemed less pressing. Moreover, the demobilization of the popular classes les-

sened concern over political stability. In addition, the rise of a new political and economic class in the Center-South created an elite group espousing the same doctrine of large-scale agro-industrial growth as the dominant technocratic elements within the state. The existing alliance between the Northeastern producers and the state, which had been mediated through the IAA, had been replaced. The new coalition, which joined the state to the agro-industrial elite of the Center-South (represented by the producers' cooperatives as new channels of interest mediation), also implied a powerful new centralization of policy-making in sugar.

#### EPILOGUE: THE BRAZILIAN SUGAR SECTOR AFTER 1978

The principal focus of this article has been on the sugar sector between 1964 and 1978, when major structural transformations crystallized in the sector and new directions for state policy were charted. The next sections will consider events in the sugar sector in the years after 1978. During the period, trends established earlier were generally reinforced, despite a changing policy environment.

Sugar policy after 1978 was shaped by four main factors: first, the weakness of the world sugar market; second, the accelerating economic crisis; third, the growing emphasis on alcohol as a petroleum substitute; and fourth, the political liberalization begun under the Geisel regime.

Export conditions for sugar were precarious in the late 1970s and early 1980s. Although prices rose in 1980 to 29 cents a pound, they returned to just 8 cents a pound by 1983. Thus for most of the period, export volumes and earnings remained low. Brazil's market position also eroded because of competition from the European community, which had become a net exporter of sugar beets, and because of increasing competition from sugar substitutes such as high-fructose corn syrups. As a result, Brazilian producers eagerly sought alternative outlets for their sugar.

Brazil's economic crisis was rooted in the government's response to the oil shock of 1973. The state attempted to solve the effects of the quadrupling of the oil import bill by moving the economy to a higher level of import substitution, by replacing imported capital goods with national production. The program succeeded in part, but only through heavy foreign borrowing. With the second oil shock, Brazil's petroleum import bill tripled, and by 1981 it accounted for half of all imports. The burden of the ever-mounting foreign debt grew as well when international interest rates skyrocketed, and by 1981, interest payments almost equaled the oil bill. Austerity was the only solution, and Brazil entered a period of negative growth in GNP that lasted until 1984.

The regime responded to the unfavorable prospects for sugar

exports, the oil shock, and the ensuing economic crisis by taking the Programa Nacional de Alcool (begun in 1975) very seriously indeed. Initially, Proálcool had concentrated on producing anhydrous alcohol as a 20 percent admixture to gasoline made mostly in distilleries annexed to sugar mills. By 1979 the program had entered a second phase, turning from anhydrous to hydrous alcohol (destined for 100 percent alcohol fuel for motor vehicles) and emphasizing production in autonomous distilleries (that is, those with higher capacity than the annexed distilleries, but at a higher cost).<sup>63</sup> The level of investment rose from U.S. \$59 million in 1975 to a high of U.S. \$1.4 billion in 1981,<sup>64</sup> and alcohol production reached a total of 7.9 billion liters in 1984, with its rate of increase doubling that of years before 1979. Installed capacity reached 10.7 billion liters. As alcohol production mounted, the manufacture of autos run by pure alcohol also grew. With the support of the government's generous incentive package, 76 percent of all passenger cars produced by automakers in 1983 were designed to use alcohol.<sup>65</sup>

The fourth factor in the sugar equation was the *abertura* that was gradually redemocratizing Brazilian society. By 1979 arbitrary government repression of dissidents had virtually ceased, the press had been freed from almost all censorship, and two relatively open national legislative elections had occurred. By the start of the Figueiredo administration in 1979, the policy process itself had begun to open. After the direct legislative and gubernatorial elections of 1982 confirmed the prospect of a civilian president in 1985, ministers with presidential aspirations began to perceive the importance of building political constituencies. Under this budding pluralism, new actors began to enter the policy debate, and many interests that had been previously neglected under authoritarian rule could no longer be ignored.

#### *The Alcohol and Sugar Sector: Trends since 1978*

The emphasis on alcohol production after 1978 accentuated some ongoing trends. First, the Center-South continued to dominate, producing 66 percent of all sugar and 82.1 percent of all alcohol by 1982.<sup>66</sup> The state's Proálcool policies promoted this domination: by 1984 projects approved for financing Center-South alcohol distilling facilities accounted for 80 percent of total production capacity.<sup>67</sup> Second, producers' cooperatives maintained their position as key articulators of the *usineiros'* interests. Earlier questions over the cooperatives' legal status were resolved, and COPERFLU and COPERSUCAR remained the most powerful entities in the sector, although under changed leadership.<sup>68</sup>

Proálcool's acceleration also accentuated the expansion of sugar cultivation into heretofore untouched areas. Between 1972 and 1982, the area planted in sugarcane throughout Brazil rose from 1.35 million

hectares to 3.36 million hectares, an increase of 150 percent.<sup>69</sup> From the takeoff stage of Proálcool in 1976 to phase two in 1980, the national area devoted to cane cultivation grew by 810,000 hectares.<sup>70</sup> Approximately two-thirds of this hectarage was in the Center-South, where hectarage under cane grew from 40 percent to 49 percent between 1972 and 1983. But the most dramatic individual gains were made by the so-called new states of sugar cultivation, when vast new areas of Paraná, Minas Gerais, and Mato Grosso do Sul came under cane cultivation. The spread of cane production throughout these new areas was linked to the allocations of the government's alcohol program. Through 1983 the Center-West received 43.5 percent of all project financing for alcohol distilleries, 30.8 percent went to the Southeast, and only 3 percent went to the Northeast.<sup>71</sup>

The expansion of cane cultivation was accompanied by increased levels of land concentration. In Riberão Preto, the largest sugar-producing area of São Paulo, the average property size increased from 242 to 369 hectares between 1977 and 1980.<sup>72</sup>

It also appears that the expansion of cane cultivation under Proálcool contributed to the decline of the independent *fornecedor* because the Sugarcane Cultivation Statute was not applicable to alcohol production. Thus cane grown to be used as alcohol was not subject to the quota system that nominally kept the contribution of independent suppliers constant.<sup>73</sup>

The sugarcane "invasion" also took its toll on other segments of the agricultural economy. The additional area used for cane cultivation consisted of land once planted in coffee, newly irrigated land not previously used for agricultural purposes, and land that had once been planted in food crops. It was this incursion into the production of food crops that constituted sugar's most devastating impact during the period since 1978. The most dramatic effects of this encroachment were evidenced in São Paulo, where the area planted in sugarcane grew by 35 percent between 1977 and 1980.<sup>74</sup>

This increasing sugar monoculture resulted in a "green desert," a term used by the mayor of Sertãozinho, a sizable town in the heart of the sugar expansion area. This official, who represented the Partido do Movimento Democrático Brasileiro, described a green desert as a place where "there are no more vegetable gardens; all food is bought in the supermarket, and the landowner controls everything."<sup>75</sup> In general, land previously planted with food crops was acquired from large and small landowners by sugar *usineiros* who offered inflated purchase or rental prices.

The reduction of land planted in food crops was an uncomfortable outcome for a regime whose official policy was to increase food

production as a means of controlling inflation. With reduced hectareage and no significant increase in productivity, basic food production began to decline. Between 1983 and 1984, national rice production fell by 20 percent, potato production by 20 percent, beans by 42 percent, and corn by 13 percent.<sup>76</sup> Critics asserted that such food scarcities represented a particularly insidious side effect of the increasing emphasis on alcohol.

Declines in domestically produced food fueled the spiraling inflation of the early 1980s. Between 1982 and 1983, food price increases of 334 percent clearly galloped ahead of the rise in the general price index, which reached 197 percent during the same period.<sup>77</sup> As the abertura continued to widen, these issues of inflation and food scarcity became increasingly subject to political debate.

Political concern also focused on the poor, who were the most likely to be hard hit by uncontrolled inflation and rapidly rising food prices. Those families living below the income equivalent of five minimum salaries (about U.S. \$250 per month) spent an average of 51 percent of their budget on food purchases in 1983. As a result, even marginal changes in food prices were critical to their survival.<sup>78</sup>

Growing opposition to the negative impact of Proálcool's sugar expansion on the production of food crops prompted a response from the state. In 1980 PLANALSUCAR initiated a limited experimental program investigating the production potential and socioeconomic implications of cultivating sugarcane jointly with other crops. One hundred and fifteen projects, forty-nine in the Northeast and sixty-six in the Center-South, were set up. Preliminary data showed that average yields for sugarcane rotated or alternated with other food crops were frequently higher than for cane planted alone.<sup>79</sup>

### *Political Opening and Social Stress*

Political liberalization also resulted in increased activism by mill laborers and cane workers. Social unrest sprang mostly from groups of temporary, seasonal workers—*bóias frias*—whose ranks swelled as the production process became more mechanized, concentrated, and vertically integrated. *Bóias frias* were not like mill workers, who were generally organized into the Rural Workers' Union (the Sindicato dos Trabalhadores Rurais) and were able to articulate grievances through the rural tribunal system. Rural workers were more numerous, less educated, and usually more economically desperate. Such workers did not belong to unions and rarely sought legal solutions to their problems.

In May of 1984, *bóias frias* began a strike in Riberão Preto. They expressed a series of grievances about poor working conditions, and by week's end, their frustration broke into uncontrolled rioting and loot-

ing, which caused several deaths and massive property damage.<sup>80</sup> Even more threatening to usineiros, however, was the burning of sugarcane crops in the fields.

This level of violence was unprecedented in the region. Although some observers credited political groups or parties such as the PT (Partido dos Trabalhadores) with having organized or incited the activities, the riots more likely reflected the increasingly precarious conditions of rural workers who had been forced more and more into temporary wage labor, with few legal protections and diminishing access to land for subsistence production. The general economic crisis of the post-1978 period aggravated these conditions with high food prices and high overall rates of inflation.

At the same time, the abertura allowed the first opportunity to articulate protest collectively. It also created pressure on both state officials (who were governed by the opposition PMDB) and federal officials to persuade usineiros to negotiate. In the end, usineiros, government representatives, and rural workers worked out a package of concessions.

#### *The IAA Loses More Power*

After 1978 the IAA increasingly lost control over sugar policy. One key IAA function after another was shifted to policy organs at higher levels. In 1978, for example, the authority to set production quotas for individual usinas shifted from the institute to an interministerial working group installed in Brasília under the Ministério de Indústria e Comércio. Thus annual cropping plans, once prepared by the IAA, were made instead by the ministry and sent to the institute's deliberative council for rubber stamping. IAA President Alvaro Tavares Carmo lamented at his last meeting with this council, "We are here to approve decisions consecrated in Brasília and not to discuss anything."<sup>81</sup> In addition, the IAA's special export fund was officially taken over by the Banco Central and consolidated into a superfund for sugar and alcohol projects. Price setting continued to be carried out by the Conselho Monetário Nacional, which was increasingly dominated by Antônio Delfim Neto, the powerful planning minister. Finally, within the Programa Nacional de Alcool, the IAA became little more than a technical agency executing policy made by a proliferating set of actors struggling to control what had become an important pot of national resources.<sup>82</sup>

The IAA's loss of power was reinforced by several factors. One was the continuing financial difficulties that had resulted from earlier mismanagement and the depressed market. By 1982 the institute's defi-

cit reached 260 billion cruzeiros, more than that of the national welfare system. Part of the debt was assumed by the Banco Central, part was refinanced through international sugar sales, and another part was refinanced through additional credit from the private sector. But the IAA's image remained tarnished, and its continued poor performance became less tolerable in the context of the rapidly deteriorating national economy. By late 1983 and 1984, serious consideration was being given to proposals to privatize the IAA's export functions.

By late 1983 and early 1984, opposition was also mounting to IAA price and credit subsidies, especially those still aimed at inefficient Northeastern producers. In a sense, these policies illustrated the paradox of *abertura*. The opening not only brought new participants into the public arena, it also provided new stimuli for old patterns of relations. Thus favoritism to the Northeast made good political sense for the regime because much of the government party's electoral support came from that region. (The nine states of the Northeast plus the four states of Rondônia, Acre, Mato Grosso, and Mato Grosso do Sul yielded only 26 percent of the 1982 voters but controlled 38 percent of the chamber seats and 49 percent of the deputies of the Partido Democrático Social, or PDS.) For example, in 1980 Minister of Planning Delfim Neto, at that time a leading candidate for the presidency, increased the price the government paid for sugar while simultaneously asking Northeastern planters to join the PDS, the party of the regime.<sup>83</sup>

Increasingly, however, the *abertura* was being overshadowed by the cloud of economic collapse, and economic crisis took precedence over political strategy. State subsidies were simply too costly. Key state policymakers including the Ministers of Planning and Finance as well as the president were forced to support the dismantling of traditions that had been politically useful but economically wasteful.

## NOTES

1. Discussions of the agricultural development model that prevailed in the post-1964 period can be found in a growing number of recent works. See, for example, Bernardo Sorj, *Estado e Classes Sociais na Agricultura Brasileira* (Rio de Janeiro, 1980); Manuel Correia de Andrade, *Agricultura e Capitalismo* (São Paulo, 1979); Maria de Nazareth Baudel Wanderley, Vilma Figueiredo, Lúzia Alice Guedes Pinto, and Abdias Vilar de Carvalho, *Reflexões sobre a Agricultura Brasileira* (Rio de Janeiro, 1979); Octavio Ianni, *Didadura e Agricultura* (Rio de Janeiro, 1979); José Graziano da Silva, *Progresso Técnico e Relações de Trabalho na Agricultura* (São Paulo, 1981); *Estrutura Agrária e Produção de Subsistência na Agricultura Brasileira*, edited by José Graziano da Silva (São Paulo, 1980); Barbara A. Kohl, "State and Capital: Agricultural Policy in Post-Coup Brazil," Ph.D. diss., Ohio State University, 1981; Tito Ryff, "A Cornucópia Agrícola: Mito e Realidade," in *A Economia Política de Crise*, edited by Maria da Conceição Tavares and Maurício Dias David (Rio de Janeiro, 1982), 89–100; Charles C. Mueller, "Formulação de Políticas Agrícolas," *Revista de Economia Política* 2/1, no. 5

- (Jan.–Mar. 1982):89–122; Geraldo Muller, “Estado e Classes Sociais na Agricultura,” *Estudos Econômicos* 12, no. 2 (1982):81–94; Alberto Passos Guimarães, *A Crise Agrária* (Rio de Janeiro, 1978); Maria Yedda Linhares and Francisco Carlos Teixeira Silva, *História da Agricultura Brasileira* (São Paulo, 1981); Tamás Szmrecsányi, “Análise Crítica das Políticas para o Setor Agropecuário,” in *Desenvolvimento Capitalista no Brasil: Ensaio sobre a Crise*, vol. 2, edited by Luiz Gonzaga M. Belluzzo and Renata Coutinho (São Paulo, 1983), 223–40; and Bertha Becker, “Agriculture and Development in Brazil,” *Regional Development Dialogue* 1, no. 2 (Autumn 1980):160–84.
2. See, for example, Guillermo O’Donnell, “Corporatism and the Question of the State,” in *Authoritarianism and Corporatism in Latin America*, edited by James Malloy (Pittsburgh, 1977), 285–318; and O’Donnell, *Modernization and Bureaucratic-Authoritarianism* (Berkeley, 1973). For the most recent version, see O’Donnell, *El estado burocrático autoritario: triunfos, derrotas y crisis* (Buenos Aires, 1983); see also *The New Authoritarianism in Latin America*, edited by David Collier (Princeton, 1979); and Alfred Stepan, *The State and Society: Peru in Comparative Perspective* (Princeton, 1979).
  3. This process has been documented in a number of studies. For examples, see Graziano da Silva, *Estrutura Agrária*, 57–82; Vilma Figueiredo, “A Intensificação da Agro-empresa no Distrito Federal,” in Wanderley et al., *Reflexões sobre a Agricultura Brasileira*, 41–120; Geraldo Muller, “Agricultura e Industrialização do Campo,” *Revista de Economia Política* 2/1, no. 6 (Apr.–June 1982):47–78; and Geraldo Muller, “O Complexo Agroindustrial Brasileiro,” unpublished report, Fundação Getúlio Vargas, São Paulo, 1981; Bernardo Sorj, “Estrutura Agrária e Dinâmica Política no Brasil Atual,” mimeo, 1977; Sorj, *Estado e Classes*; and Ruben Brandão Lopes, *Do Latifúndio à Empresa* (São Paulo, 1977). For a theoretical treatment of this phenomenon in agriculture in peripheral societies, see Alain DeJanvry, *The Agrarian Question and Reformism in Latin America* (Baltimore, 1981), ch. 1–3.
  4. For a history of state intervention in the sugar sector before 1964, see my study, “State Intervention in the Sugar Sector in Brazil: A Study of the Institute of Sugar and Alcohol,” Ph.D. diss., Stanford University, 1979.
  5. Analyses of the Sugarcane Cultivation Statute are found in Alexandre José da Barbosa Lima Sobrinho, “A Experiência de uma Reforma Agrária Setorial,” *Jurídica* 27, no. 78 (June–Sept. 1962):205–10; and Vicente Chermont de Miranda, *O Estatuto da Lavoura Canavieira e Sua Interpretação* (Rio de Janeiro, 1943).
  6. See Mário Lacerda de Melo, *O Homem e o Açúcar* (Recife, 1975) for an extensive discussion of comparative soil conditions.
  7. The IAAs integration into the clientelist system that characterized electoral politics in the Northeast during the democratic period was widely reported in a series of key informant interviews conducted with sugar industry participants in 1976 and 1977. An interlocking elite existed among usineiros, IAA officials, and elected representatives at both the national and state levels. IAA endorsement was considered crucial for successful candidacies in many contests. Some political figures rose to prominence on the basis of their association with the IAA. But the institute was not a partisan institution. Indeed, politicians associated with various parties, such as Cid Sampaio and Gilberto Freyre of the União Democrática Nacional (UDN), João Cleofas of the Partido Social Democrático (PSD), and even Miguel Arraes of the Partido Trabalhista Brasileiro (PTB), all had links to the IAA.
  8. Annual statistics on sugar production by state were obtained from the statistics department of the IAA in Rio de Janeiro.
  9. The IAAs perpetuation of noncompetitive producers in the Northeast was made possible through the manipulation of Article 28 of the Sugarcane Cultivation Statute. This article empowered the IAA to intervene in the financial affairs of any insolvent mill should its normal industrial activities be paralyzed for more than a week. The mill would be placed in receivership under IAA fiscal supervision until it regained financial health. These interventions were common in the period from the mid-1940s through the mid-1960s. Although the IAA justified intervening in mill administration on socioeconomic grounds, citing the social upheaval likely to result from the collapse of an important usina in a given area, IAA officials were not unaware of the clear side benefits of this public assistance to individual mill owners who were

- foundering financially. For example, Caxangá, a very large mill in Pernambuco that became the scene in the 1960s of intense peasant mobilization, was supported for long periods by the IAA as it lapsed into and out of bankruptcy during a twenty-year span.
10. Between 1935 and 1956, exports averaged only 5.2 percent of total sugar production. From 1957 through 1959, exports grew to 14 percent of production, but the trend was very uneven and total production was rising slowly. This information was obtained from the statistics department of the IAA and the *Sugar Year Book* (London), various years.
  11. In 1930 Brazilian exports fell 87 percent to 12,210 metric tons from the previous year's volume of 92,928 metric tons. Because production had only decreased 13 percent from 1,293,666 metric tons to 1,121,736, the quantity of sugar to be placed on the internal market was significantly burdensome. This situation provided ripe conditions for state intervention in the sector. See figures cited in Tamás Szmrecsányi, *O Planejamento da Agroindústria Canavieira do Brasil* (São Paulo, 1979), 504.
  12. The 1967 quota represented 125 percent of Brazil's average annual exports of sugar in the 1950s.
  13. Omer Mont' Alegre, "A Economia Açucareira Mundial nos Anos 60," *Brasil Açucareiro* 78, no. 1 (July 1971):59–89. Also see Heinrich Brunner, *Cuban Sugar Policy from 1963 to 1970* (Pittsburgh, 1977), 77–137; and D. Gale Johnson, *The Sugar Program* (Washington, D.C., 1974).
  14. United States Department of Agriculture, "Sugar: World Supply and Distribution: 1954/55–1973/74," *Statistical Bulletin* no. 562 (Oct. 1976):12.
  15. *Índice do Brasil, 1977/1978* (Rio de Janeiro, 1977), 209.
  16. *Ibid.*
  17. *Ibid.*, 201, 211. Coffee exports in 1974 earned U.S. \$980,358,000.
  18. Serviço de Documentação do Instituto de Economia Agrícola de São Paulo, mimeo report of production statistics, São Paulo, 1977.
  19. Regina Machado Curi, "Os Barões de Açúcar," *Veja*, 21 July 1976, 23–29.
  20. *Jornal do Brasil*, 8 Oct. 1976. Coffee cultivation was also reduced in São Paulo in response to recurring frosts. Much coffee production relocated to Minas Gerais, where climatic factors were more hospitable.
  21. The increased production of sugar and other export crops at the expense of food crops as an intentional component of national policy during the period in question affected Brazil as a whole. This trend is discussed in much of the literature on Third World agriculture. DeJanvry provides an excellent explanation of its place in the capital accumulation process of peripheral societies in his previously cited book, *The Agrarian Question and Reformism in Latin America*. For a discussion of the national state's policy of promoting export production for foreign exchange earnings in order to fuel industrial growth, see Szmrecsányi's discussion of the public incentives offered to agricultural export crops, which included special financing packages and subsidized interest rates, tax exemptions, and fiscal credit. These government policies coincided with a major boost in the world market prices for these exported commodities, a situation that was perhaps the biggest spur to production. At the same time, the price paid to the farmer for basic food crops was kept artificially low to relieve pressure on urban working-class salaries, thereby allowing for relatively steady economic growth without permitting labor to place unmanageable social and economic demands on the state. This approach in turn provided a disincentive to food crop production. See Szmrecsányi, "Análise Crítica das Políticas para o Setor Agropecuário," in *Desenvolvimento Capitalista no Brasil*, no. 2, edited by Luiz Gonzaga M. Belluzzo and Renata Coutinho (São Paulo, 1983). Also see DeJanvry, *Agrarian Question*, tables 5 and 6.
  22. An interview with José Maria Azambuja Rolim, director of the Associação de Agricultura de Mogi Murim in Campinas, revealed in 1976 that most of the cultivatable land in that region was worth an average maximum of one hundred thousand cruzeiros per hectare. The sugar usinas intent on increasing their area of cultivation were offering to pay as much as two hundred thousand cruzeiros per hectare, however, and although official registration of land sales by small farmers indicated one

- price paid for land, the actual cost of the transaction was rumored to have been higher. See *A Gazeta Mercantil*, 16 Nov. 1976.
23. Various categories of temporary laborers can be found in São Paulo agriculture. *Bóias frias permanentes* (permanent day workers) are linked directly with one agricultural property and entitled to certain legal rights. *Bóias frias esporádicas* (occasional day workers) work on a temporary basis, usually less than two months during the harvest period, and often do not belong to a regular labor force because they are school-age children under fourteen, old people, or housewives. *Bóias frias temporários* (temporary day workers) are employed primarily at harvest time but alternate seasonal employment between the rural and urban sectors. Some portion of this last group are usually *queima-latas*, small sugar producers in the Northeast who work in the São Paulo usinas during peak periods. All of the above categories are classified as *trabalhadores volantes*, or migrant workers. Graziano da Silva finds that these migrant workers increased from 15.8 percent of the rural labor force in São Paulo in 1964 to 35.8 percent in 1975. These workers may find alternative employment as unskilled laborers in nearby cities in the interior of the state, they may work part of the year in the capital, or they may seek supplemental work in the rural sector. When faced with this precarious option of life as a temporary worker, some subsistence farmers choose permanent rural migration to primary or secondary urban centers. See Graziano da Silva, *Estrutura Agrária*, 101–43; Szmrecsányi, “Análise Crítica,” 236–39; Delma Pessanha Neves, *Lavradores e Pequenos Produtores de Cana* (Rio de Janeiro, 1981); and Paulo Rabello de Castro, *Barões e Bóias Frias* (São Paulo, 1982). The increasing use of this form of labor is part of a process of semiproletarianization of the rural work force described at length by DeJanvry in *Agrarian Question*.
  24. Serviço de Documentação do Instituto de Economia Agrícola de São Paulo, mimeo report of production statistics, 1977.
  25. Interviews with IAA officials in late 1977 revealed their conviction that the consolidation of this capital-intensive model of production was an “inevitable and natural phenomenon,” and one that despite the original mandate of the IAA to maintain a stable relationship among the various productive classes in the sugar sector, could not be reversed. Interview with Nilo Area Leão, Regional Superintendent of the IAA in São Paulo, São Paulo, 28 Mar. 1977.
  26. “Levantamento sobre a Influência da Expansão de Produção Açucareira no Estado de São Paulo,” mimeo of the Sindicato da Indústria de Máquinas do Estado de São Paulo, São Paulo, 1977.
  27. Among these large mill-owning families are the Omettos, reputed in 1975 to have produced 12.3 percent of all Brazilian sugar. *Gazeta*, 16 Nov. 1976.
  28. “Relatório da Diretoria,” COPERSUCAR report, São Paulo, 1977, 2; and “O Cooperativismo no Setor Açucareiro,” COPERSUCAR report, São Paulo, 1975, 8.
  29. “Relatório,” COPERSUCAR report, 2.
  30. *Ibid.*, 11. An important link in the chain of interrelated agro-industrial functions was found in the firms that manufactured industrial inputs for sugar cultivation, harvesting, and refining. A number of these industrial firms in São Paulo were also engaged in primary agricultural activities through interests in usinas that were members of the large cooperatives such as COPERSUCAR. Several firms maintained an oligopolistic position in the marketplace. Four companies—Dedini, Zanini, Fives Lilles, and Mausa—owned an average of 77.6 percent of the liquid assets in the sector between 1970 and 1975. See Barjas Negri, “A Indústria Brasileira de Equipamentos para o Setor Produtor de Açúcar e Alcool: Um Estudo de Oligopólio,” *Revista de Economia Política* 1, no. 3 (July–Sept. 1981):83–112.
  31. COPERSUCAR, “Acabamos de Adquirir a Hills Bros. Coffee, Inc.,” “Açúcar Brasileiro Refinado no Kuwait para Atender ao Oriente Médio,” mimeo report, São Paulo, 1976; *A Gazeta Mercantil*, 4 Nov. 1976. By the end of the 1970s, COPERSUCAR had indeed achieved a financial status of enormous proportions. By 1978 it was ranked as the thirty-seventh largest firm in Latin America, with U.S. \$380 million in revenues, U.S. \$495 million in assets, and twenty-four hundred employees. See *Progresso* (Mexico City), Jan.–Feb. 1978, 34. Because this ranking included many state-owned enterprises as well as multinational corporations, COPERSUCAR’s

- standing was all the more striking. By 1981 COPERSUCAR was ranked fifteenth among national privately held companies in Brazil in terms of revenues, liquid assets, total assets, and number of employees, having fallen from eleventh place the previous year. *Negócios em EXAME* (São Paulo), 14 July 1982, 18–22.
32. A good discussion of IAA pricing policies is found in Gustavo Máia Gomes, “Caráter e Conseqüências da Intervenção Estatal no Setor Açucareira do Brasil, 1933–1978,” *Estudos Econômicos* 9, no. 3 (1979):123–50. The issues that dominated the policy debate were related to the question of differential versus uniform pricing systems for the Northeast and Center-South regions—the relationship between the agricultural and the industrial price set for sugar and the criteria for determining product value—and the interaction among cost of production, pricing, and subsidized credit in the sector and their mutual effect on all levels of producers and urban consumers. Máia Gomes argues that with the modernization program of the 1970s, the government pursued a contradictory policy of low prices and highly subsidized credit, thereby paradoxically promoting sectoral contraction and expansion at the same time.
  33. See *Jornal do Brasil*, “FGV Indica Novo Preço para a Cana,” 23 July 1976; and *O Estado de São Paulo*, “CADE contra a COPERSUCAR,” 24 July 1976. Also see Jorge Wolney Atalla, “Informações Levadas a Douta Comissão Parlamentar de Inquérito de Defesa do Consumidor,” unpublished COPERSUCAR report, São Paulo, 15 Sept. 1976, 10–13. Evidence suggests that this policy of miniadjustments actually resulted from steady pressure applied by COPERSUCAR affiliates when they sabotaged the regularized price structure. Indeed, COPERSUCAR was widely accused of price-gouging wholesalers and withholding stocks in order to create false shortages in urban markets. Before a parliamentary commission inquiry on behalf of the consumer, Jorge Atalla defended the practice of manipulating prices, suggesting that it was an informal way of adjusting the wholesale price to the increases in the cost of living, and he recommended that the government officially adopt such a system of “miniadjustments.” The monopolistic leverage thus exercised by COPERSUCAR was roundly denounced in the press as an “abuse of economic power.” See *A Gazeta Mercantil*, 11 May 1976, p. 5. But the only public sanctions applied to COPERSUCAR (and COPERFLU) were nominal fines, despite the coordinated prosecution by CADE (Conselho Administrativo de Defesa Econômica) and SUNAB (Superintendência Nacional de Abastecimento). Indeed, the real outcome of the process was the informal adoption of a miniadjustment in the price of sugar by the following year. See *Jornal do Brasil*, “FGV Indica Novo Preço para a Cana,” 16 Sept. 1976.
  34. *Jornal do Brasil*, 2 May 1976. See COPERSUCAR’s “Relatório,” for a discussion of the cooperative’s position and activities vis-à-vis a consumer subsidy (p. 5). The urban sector reacted strongly and publicly to the cancellation of the consumer subsidy for sugar. Indeed, even the rumor of its elimination caused hoarding and consequent supermarket shortages in Rio. See *Opinião*, “IAA e as Donas-de-Casa,” 13 Feb. 1976. This ultimate decision to end the consumer subsidy reveals an interesting contrast to the situation described by Susan Kaufman Purcell in the Mexican sugar sector during the same period, a contrast that sheds light on fundamental differences in regime strategies. In Mexico political pressure from the urban working classes constrained state policymakers to continue a fixed consumer subsidy, which cut significantly into sugar producer profits. The resulting flight of capital to urban-based enterprise depressed the sugar industry, requiring further state intervention as a “last resort.” See Susan Kaufman Purcell, “Business-Government Relations in Mexico: The Case of the Sugar Industry,” *Comparative Politics* 13, no. 2 (Jan. 1981):211–33. In Brazil the evident strength of the sugar lobby in its quest to retrieve the profits from the special export fund was ill matched by the disorganized response of the urban consumer.
  35. “O Potencial da Mistura Carburante na Solução da Crise de Combustíveis,” unpublished COPERSUCAR report, São Paulo, Sept. 1974. See also *Açúcar e Alcool: Um Grande Projeto Econômico do Brasil*, Anais III Encontro Nacional dos Produtores de Cana-de-Açúcar, held in Campos in 1975 and published by COPERFLU (Rio de Janeiro, 1976). The literature on the alcohol program is already vast and includes

- many discussions of the early phases of the Proálcool program. See William Saint, "Farming for Energy: Social Options under Brazil's National Alcohol Programme," *World Development* 10, no. 3 (Mar. 1982):238; Alceu Veiga Filho, Elcio U. Gatti, and Nilda T. C. de Mello, "O Programa Nacional de Alcool e Seus Impactos na Agricultura Paulista," *Estudos Econômicos* 11, special no. for 1981:61–83; and Amaury Santos Fassy, *O Brasil e o Dilema Energético* (Rio de Janeiro, 1981), for summary discussions of socioeconomic and political issues in the PNA.
36. *O Globo*, "Atalla Critica Dirigismo na Indústria Açucareira," 16 Sept. 1976; and *Folha de São Paulo*, "COPERSUCAR Diz que Não Respeitará Tabelamento," 16 Sept. 1976. Among the most vocal opponents of Atalla's direction of COPERSUCAR's activities were those Paulista usineiros who formed a splinter producers' association called SOPRAL (Sociedade de Produtores de Açúcar e de Alcool). Because SOPRAL members did not share financial resources, they constituted a political, rather than an economic, opponent of COPERSUCAR.
  37. *A Gazeta Mercantil*, 20 Sept. 1976, pp. 1 and 5.
  38. Interview with a COPERSUCAR representative in São Paulo, 15 Mar. 1976. It was also speculated that many of Atalla's excesses with regard to COPERSUCAR were tolerated because of his generous support during the late 1960s and early 1970s of Operação Bandeirantes, a right-wing organization that reputedly tortured political dissidents. See the *London Sunday Times* article by Keith Batsford, "Sinister Backing for Fitipaldi," 1 Feb. 1976, p. 14. This allegation was also widely reported in informant interviews.
  39. GERAN was created as a coordinating agency for various government organs working in the northeastern sugar sector after the 1964 coup. Its deliberative council consisted of representatives from SUDENE (Superintendência de Desenvolvimento do Nordeste), IAA, INDA (Instituto Nacional de Desenvolvimento Agrária), IBRA (Instituto Brasileiro de Reforma Agrária), and the Banco do Brasil. Its development strategy consisted of two basic goals: first, to modernize sugarcane refining and cultivation through technological development, utilizing such methods as irrigation and mechanization to improve agricultural yields per hectare, thus liberating inefficiently used land; and second, to accomplish an agrarian reform of this liberated land for diversification of crop cultivation and for more equitable distribution among small farmers. These goals conformed with SUDENE's desire to improve agricultural and industrial output in the sugar industry and at the same time lessen the regional dependence on sugar monoculture. The plan to redistribute excess land for subsistence purposes to peasants was seen as a remedy that might alleviate the long periods of unemployment between harvests and counteract the proletarianization of the northeastern countryside. The land reform to be enacted was embodied in the rural labor statute legislated by the Castelo Branco regime. This law distributed two hectares of usable adjacent land to each peasant and allowed communal cultivation. Despite its essential emphasis on technical rationalization, GERAN provoked usineiro opposition by virtue of its redistributive implications. GERAN was also administratively anomalous in that it was a regional agency charged with supervising federal organs that were part of its own deliberative council. Its lines of authority were thus extremely confused. In addition, GERAN depended for most of its resources on the Instituto do Açúcar e do Alcool. The IAA had originally favored the creation of GERAN, but soon after its establishment, IAA became convinced by pressure from its own usineiro constituency of GERAN's potential subversion of land tenure patterns in the Northeast. As a result, the IAA managed to withhold a substantial portion of GERAN's funding until 1969, by which time the group's demise was virtually assured. The former secretary general of GERAN, Celson Mendes, was one of the principal architects of the IAA modernization program in the 1970s. He reported that the IAA planners adamantly sought to avoid linking rationalization with social reform in the IAA program (based on interviews with former GERAN functionaries made in Recife during January 1977). See also *Implementação da Política Açucareira: IAA e Governo Revolucionário ao Problema Agroindustrial Canavieiro do Nordeste*, Ministério do Interior (Recife, 1970); and Riordan Roett, *The Politics of Foreign Aid in the Brazilian Northeast* (Nashville, 1972).

40. Augusto Cezar da Fonseca, "Atividades da Agroindústria Açucareira," manuscript, 1975; and Cezar da Fonseca, "Política Governamental de Investimento no Setor Açucareiro," *Brasil Açucareiro* 76, no. 4 (Oct. 1974):41–52.
41. Cezar da Fonseca, "Atividades."
42. Cezar da Fonseca, "Política."
43. For a discussion of this rationale as a moving force behind traditional IAA policies in the Northeast, see Nunberg, "State Intervention," 81–129; also Lacerda de Melo, *O Homem e o Açúcar*.
44. A good summary of the period of intense social mobilization in the Brazilian Northeast is found in Joseph Page, *The Revolution That Never Was* (New York, 1972); see also João Gonçalves de Souza, *O Nordeste Brasileiro* (Fortaleza, 1979), for a discussion of bureaucratic politics in social programming during this period. Also see Kit Sims Taylor, *Sugar and the Underdevelopment of Northeastern Brazil* (Gainesville, 1978).
45. Instituto do Açúcar e do Alcool, *Annual Report*, 1977.
46. Interviews with Augusto Cezar da Fonseca, chief of the IAA modernization department, Rio de Janeiro, 3 Apr. 1977; and with Sebastião Araújo, vice-director of the modernization department, Rio de Janeiro, 28 Mar. 1977.
47. Confúcio Pamplona, *Proálcool* (Rio de Janeiro, 1984), 9.
48. Instituto do Açúcar e Alcool, *Annual Report*, various years.
49. *Visão*, 19 Aug. 1974.
50. International Sugar Organization, *Sugar Year Book* (London, 1982). Just how badly the IAA had failed to predict future trends in the world market became clear by 1976. By November of that year, export earnings from sugar had plummeted a spectacular 77 percent. Although the institute had predicted that the price would not go below U.S. \$500 per ton, it dipped as low as \$150 per ton, and exports were reduced by 45 percent. See *O Estado de São Paulo*, 4 Nov. 1976, p. 21. Although world consumption did rise from 80.8 million tons in 1975 to 82.8 million tons in 1976, production increased enough to create a two-million-ton surplus on the world market by 1976–77. See *A Gazeta Mercantil*, 7 January 1977, p. 8. To make matters worse, Brazil could not fall back on any kind of protective trade agreement because no international sugar agreement guaranteeing a fair base price for sugar had ever been reached. Moreover, when the United States failed to renew its sugar legislation in 1974, Brazil was denied the assurance of an export quota at a preferential price.
51. Gustavo Máia Gomes, "Setor Açucareiro um Pouco Mais Vulnerável," *O Estado de São Paulo*, 22 Feb. 1977. Máia Gomes develops this argument further in "Caráter e Conseqüências."
52. Salomão Quadros da Silva, "O Crescimento da Lavoura Canavieira no Brasil na Década de 70," *Revista Brasileira de Economia* 37, no. 1 (1983):40.
53. Máia Gomes, "Setor Açucareiro."
54. Gustavo Máia Gomes would argue that the structural changes brought about by post-1964 state policies were less important than the continuities in paternalistic subsidies and credit that maintained the market inefficiencies and noncompetitive-ness of both the Northeast in relation to the Center-South and the entire Brazilian sugar industry in relation to international competitors on the world market. Indeed, he posits that northeastern producers particularly have been among the most significant losers as a result of IAA modernization programs. This state-directed modernization program promoted what DeJanvry would classify as Lenin's category of the junker road to capitalist development in agriculture, whereby the precapitalist, feudal landlord becomes a capitalist entrepreneur, dispossessing peasants who worked internally for the estate and rehiring them as wage labor. V. I. Lenin, "The Agrarian Programme of Social Democracy in the First Russian Revolution," in *Selected Works* 3, cited in DeJanvry, *Agrarian Question*, 107.
55. For the seminal piece on *panelinhas*, see Anthony Leeds, "Brazilian Careers and Social Structure," *American Anthropologist* 66 (Dec. 1964):1321–47.
56. The heads of these superdepartments were the three coordinators of planning and budgeting, of evaluation and auditing, and of regional units. See Instituto do Açúcar e do Alcool, *Regimento Interno* (Rio de Janeiro, 1975).
57. "Técnicos" or "technocrats" are often defined as administrators with specialized

training in their given fields of expertise. See Barry Ames, *Rhetoric and Reality in a Militarized Regime* (Beverly Hills, 1973). It is commonly argued that because of their training and socialization patterns, technocrats are more likely to base decisions on "rational," "universalistic" criteria than on ascriptive, particularistic ones. In Brazil technocrats came to be associated with the "modernizing" mentality of the military regime after 1964; at the same time, however, they were deemed to be above politics in setting policies on purely objective, scientific bases. Thus the assumption existed that technocrats would be less vulnerable to the impact of informal influence networks such as *panelinhas*. See Carlos Estevan Martins, *Tecnocracia e Capitalismo* (São Paulo, 1974); Jerald Arthur Johnson, "Brazilian Bureaucracy and Politics: The Rise of a New Professional Class," Ph.D. diss., University of Texas, 1977; Hans-Peter Dreitzek, "Ação Racional e Orientação Política," and Claus Offe, "O Dilema da Tecnocracia," both in *Tecnocracia e Ideologia* (Rio de Janeiro, 1975); and Jurgen Habermas, *Toward a Rational Society* (Boston, 1971).

58. This method of control was widely used by the military to imprint its "modernizing ethic" on important areas of the indirect administration. To a large extent, this practice was simply a continuation of the process by which the interlocking power elite was maintained.
59. According to informants, irregularities in the financing arrangements for modernization projects were commonplace. *Convênios* (deals) were allegedly made between IAA officials and *usineiros* that involved kickbacks, inflated loan packages, and loans awarded for technical improvements that were never carried out. It was reported that *usineiros* sometimes borrowed IAA cash at negative interest rates (12 percent per annum when the average annual inflation rate was 50 percent) to apply to other sectors where financing terms were less favorable. This behavior is predicted by the critical view of subsidized credit programs positing that when prices in the sector have not been "gotten right," capital obtained for one purpose that is less than adequately compensatory will flow naturally and inexorably toward other ends that are more profitable but for which inexpensive credit is not available.
60. This trend toward centralization of national economic policy-making should not be overstated or oversimplified, however. The power of the CMN, for example, increased only gradually and peaked in the late 1970s and early 1980s. Moreover, the strength of the CMN was largely derived from the power of individual ministries that constituted its board. Also, the trend toward centralized macroeconomic policy-making coincided with the continued proliferation of parastatal organs and state-owned enterprises, many of which had become extremely powerful actors in their own right.
61. These reforms were enacted by Decreto-Lei no. 200, 25 Feb. 1967. See *Reforma Administrativa* (Rio de Janeiro, 1976).
62. This trend may reflect bureaucratic phenomena occurring elsewhere in Brazil during this period. Sérgio Hudson de Abranches recently noted that the increasing centralization of decision making in most economic spheres in Brazil occurred simultaneously with a fragmentation of the apparatus of policy-making and implementation. This fragmentation produced a chaotic system in which agencies had overlapping jurisdictions, and policies were consequently uncoordinated. In the sugar sector, the surrendering of the IAAs myriad functions to other agencies reflected such fragmentation, and this lack of coordination prompted resourceful organizations such as producers cooperatives to step into the power vacuum. See Sérgio Hudson de Abranches, "The Divided Leviathan: State and Economic Policy in Authoritarian Brazil" (Ann Arbor: University Microfilms, 1978). Other recent works on public policy in Brazil also address the centralization issue. See Luciano Martins, *Pouvoir et développement économique: Formation et évolution des structures politiques au Brésil* (Paris, 1976); Renato Raul Boschi, *National Industrial Elites and the State in Post-1964 Brazil: Institutional Mediations and Political Change* (Ann Arbor: University Microfilms, 1978); Wanderley Guilherme dos Santos, "Centralização Burocrática e Renovação Governamental Administrativa, Voltado para o Processo do Desenvolvimento Nacional: O Caso Brasileiro," *Revista de Administração Pública* (Rio de Janeiro) 13, no. 2 (Apr.–June 1979):7–36.

63. Pamplona, *Proálcool*, 25. Whereas autonomous distilleries had produced only 9.5 percent of all alcohol in 1975–76, by 1983–84 they were already producing 35 percent.
64. *Ibid.*, 21.
65. The following forms of government support were given to automakers in exchange for large-scale manufacture of alcohol-fueled vehicles: first, a subsidized price for alcohol cars (as opposed to gasoline-fueled cars); second, continued pegging of the price of alcohol at 59 percent of the price of gasoline; third, guarantees of an uninterrupted supply of alcohol from national production; fourth, guaranteed purchase of alcohol cars for the government's own fleet; and fifth, a tax incentive system for alcohol cars purchased for the national taxi fleet. See *Visão*, "Empresário Rebatem Críticas ao Proálcool," 21 May 1984; and Comissão Executiva Nacional do Alcool, *Relatório Anual*, 1983 (Brasília, 1984), 34. By 1985, 90 percent of all passenger cars produced in Brazil were built to use alcohol.
66. Instituto do Açúcar e do Alcool, *Annual Report*, 1982.
67. Instituto do Açúcar e do Alcool, Departamento de Modernização, Proálcool report, 1984.
68. COPERSUCAR's change in leadership followed the fall of President Jorge Wolney Atalla. Financially overextended, Atalla had incurred debts exceeding U.S. \$305 million by 1979. The shining jewel of his financial empire, Hills Brothers Coffee, was virtually controlled by the Banco do Brasil and was later sold to pay off prior obligations. Atalla's personal insolvency threatened the financial soundness of COPERSUCAR as well, and twenty-five of its most influential associates (including the powerful Grupo Ometto) staged a walk-out in order to deny Atalla reelection as president. As the abertura progressed in the 1980s, Atalla's fate became an increasingly political issue, and it focused particularly on the 105.9 billion cruzeiros owed to the IAA, the Banco do Brasil, and various private banks by the Atalla-owned Usina Central in the state of Paraná. In arrears for months at a time on workers' salaries, the large usina faced strikes and social upheaval. By 1973 a Paraná representative of the increasingly active opposition party, the PMDB (Partido do Movimento Democrático Brasileiro), sought redress from Atalla by asking the special inquiry commission of Paraná's state assembly to seize Atalla's assets and pay workers from a special fund provided by INCRA (Instituto Nacional de Colonização e Reforma Agrária). Such protests went largely unheeded. Despite the specter of widespread social turmoil in the usina environs, funds continued to be released by the Banco do Brasil to the Atalla group. Although such funds were designated for paying workers' salaries, Atalla was widely reported to have spent the money on land acquisition for usina expansion elsewhere. See *Estado de São Paulo*, 12 Apr. 1983.
69. Pamplona, *Proálcool*, 33.
70. Fernando Homem de Melo and Eduardo Giannetti da Fonseca, *Proálcool, Energia, Transportes* (São Paulo, 1981), 28.
71. Comissão Executiva Nacional do Alcool, *Relatório Anual* (1984), p. 10. Even where new agricultural frontiers were being crossed, however, Center-South elites were clearly behind the scenes, investing in usina expansion, distillery construction, and sugarcane production in these virgin areas. For example, the family-owned Grupo Ometto, Brazil's largest sugar producer, mounted the enormous Jaiba project in a newly irrigated portion of Bahia by the São Francisco River, which is expected to produce 1.3 million liters of alcohol daily by 1988. The Usina Central in Paraná, that state's largest mill, was also controlled by the Atalla group from São Paulo.
72. *O Globo*, "Cana Continua Invadindo Area de Alimentos em São Paulo," 15 Dec. 1980.
73. Nelson Coutinho, "O Fornecedor de Cana em Face da Indústria Alcooleira," in *Boletim Canavieiro, FEPLANA* (Rio de Janeiro) 1, no. 4 (1983):10–11. Evidence supports a steady decline in the participation of fornecedores in production from 50 percent in 1964 to 35 percent in 1979. See Alceu de Arruda Veiga Filho, Elcio Umberto Gatti, and Nilda Tereza Cardoso de Melli, "O Programa Nacional do Alcool e Seus Empacotos na Agricultura Paulista," *Estudos Econômicos* (São Paulo) 11, special no. (1981):73. The shrinking number of independent suppliers was perhaps not a wholesale assault on fornecedores as a class, but it may have represented the decimation of one

- fraction. Evidence suggests that the smallest fornecedores were the ones who were being eliminated, while medium-sized and larger independent growers managed to survive. Between 1970 and 1975, the smallest area producers of sugarcane declined in all states. See Salomão L. Quadros da Silva, "O Crescimento da Lavoura Canavieira no Brasil na Década de 70," *Revista Brasileira de Economia* 37, no. 1 (1983):39–54.
74. Homem de Melo and Giannetti da Fonseca, *Proálcool, Energia, Transportes*, 16.
  75. *O Globo*, "Cana Continua Invadindo Área de Alimentos em São Paulo," 15 Dec. 1980.
  76. *Visão*, 28 May 1984, p. 59. Projections indicate that the conflict between food crop and sugarcane production is likely to be exacerbated in coming years. A conservative estimate suggests that meeting Proálcool's production target of 9.8 billion liters of alcohol in 1985 would require an additional 1,600,000 hectares of land. See World Bank, *Brazil: A Review of Agricultural Policies* (Washington, D.C., 1982), p. 99. Less cautious estimates project a need for an additional 2,410,000 hectares. The estimated opportunity costs for various crops are as follows: 1,000,000 tons of beans; 1,280,000 tons of rice; and 1,600,000 tons of corn. These foodstuffs were all imported after 1980. Fernando Homem de Melo, "A Agricultura de Exportação e o Problema da Produção de Alimentos," *Estudos Econômicos* 9, no. 3 (1979):101–22.
  77. *Visão*, 28 May 1984, pp. 53–59.
  78. Instituto de Planejamento Econômico e Social, "Estudo Nacional de Despesa Familiar," mimeo, Brasília, 1984. The food scarcity problem takes on extremely serious dimensions in a country where in 1983 nearly 24 million people suffered mild nutritional deficiency (up to 200 calories per day), 40 million had serious deficiencies (between 200 and 400 calories per day), and 23 million experienced total malnutrition (exceeding 400 calories per day).
  79. Pamplona, *Proálcool*, 51–55.
  80. The protest in Riberão Preto was triggered by a newly instituted system called *sete ruas* ("seven streets"), a method of planting cane in rows far enough apart to allow mechanized harvesters to pick up the cuttings more easily, but one that requires greater physical exertion from the cutter. In reality, this issue was only the last of a long list of grievances that included the need for higher pay, greater medical and social security benefits, and the removal of the hated "gato" (slang for the overseer), who acted as the middleman for usineiros in controlling the labor force. Protests also focused on rising water rates set by the state-controlled utility. See *Veja*, "Os Canaviais da Ira," 23 May 1984, 20–26; and *Isto É*, "O Amargo Nó da Cana," 23 May 1984.
  81. *Jornal do Brasil*, "IAA Perde As Suas Últimas Atribuições sobre Açúcar," 30 May 1978.
  82. The principal organs involved in alcohol policy after 1979 were the CNA (Comissão Nacional do Alcool), and its executive arm, CENAL (Comissão Executiva Nacional do Alcool); the Ministério de Indústria e Comércio; the Ministério de Minas e Energia; the Ministério de Fazenda; and Petrobras, the state oil company. As the program evolved, new entities such as Alcoolbras, a mixed venture for alcohol production, were incorporated into the policy arena. Also, private actors, including usineiros, distillery equipment manufacturers, and multinational companies trying to enter the sector, were all involved in policy struggles.
  83. *Jornal do Brasil*, 3 June 1980, p. 19.