CHAPTER 4

State-Owned Enterprises: Food Policy Implementers

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The planners of the Mexican Food System (SAM) looked at Mexico's food problem through the lens of an integrated food systems approach, as described in Chapter 3. Their diagnosis and policy recommendations were based on a theoretical foundation that saw the processes of access to agricultural inputs, food production, commercialization, processing, and distribution as part of a single system. They used this approach to determine where policy makers could and should have an impact on that system in order to change it. To implement these decisions, Mexico's food policy makers chose to use a wide range of powerful state-owned enterprises (SOEs) active at the different stages in that system. The rationale was that the SOEs were in place and could mobilize immediately to implement the strategy. SAM's producer incentives and consumer subsidies were policy decisions made at the macro level, and the SOEs could serve as the conduits. The effectiveness of the new food strategy would be significantly determined by the substance and form of the response of the SOEs as implementing agencies. Could they, and would they, respond as the SAM strategists planned?

In this chapter we describe and analyze the role of Mexico's SOEs as policy instruments in carrying out the 1980–1982 national strategy of self-sufficiency in basic grains. First food sector SOEs are described. Next we discuss the SOEs' possible responses to SAM and document and analyze the actual responses. In the final section we draw conclusions regarding the use of SOEs as food policy implementers.

SOEs in the Food Sector: Roles and Prevalence

The Mexican government has increasingly used SOEs in all of its economic sectors (Hill, 1981; Barenstein, 1982; SPP, 1982; Cohen and

Thirty, 1983). The number of federal- and state-level SOEs grew from 84 in 1970 to 966 in 1982, excluding banks, which were nationalized in that year (*Mercado de Valores,* 1982). Almost one-third of these SOEs are in the food sector.

Food Sector SOEs: Definition. The food sector can be usefully viewed as a system encompassing the broad range of productive activities and inputs needed to produce, transform, and transport food to the ultimate point of consumption. The literature on SOE's has generally divided them into narrower, more traditional sectoral categories, such as agriculture, manufacturing, or commerce. This segmented approach is inadequate for analyzing food policy implementation, which by its very nature requires actions across (and among) the segments. Using the traditional sectoral categories also tends to cloak the importance of SOEs to food policy. Estimates of the importance of SOEs in the economy frequently relate their value-added to the GDP. For example, Jones et al. (1982) state that SOEs make a small contribution to the agricultural sector compared to their role in other sectors; they cite figures of 1.8% for India and 0.2% for South Korea, versus about 15% in manufacturing in these countries. Similarly, SOEs in Mexico play a very minor role in actual on-farm production. This comparison is misleading, however, because it does not take into account the importance of the SOEs in providing manufactured inputs to agriculture, in commercializing and processing the agricultural outputs, in supplying key logistic and financial services, and in shaping market prices at each stage of the production and distribution process.

We define food sector SOEs, therefore, as those engaged in any of the following activities: production and supply of agricultural inputs, such as seeds, agrochemicals, equipment, technical assistance; agricultural production; purchasing, transport, storage, processing or distribution of agricultural raw materials or transformed food stuffs; and provision of financial resources, such as credit and insurance. Table 4.1 lists the SOEs that were involved in the implementation of the SAM program; it reveals that these enterprises were important actors in all stages of the food system except the direct production of basic grains (see the Glossary at end of book for English translation of SOE names).

SOEs are also heavily involved in other aspects of Mexican agriculture, such as the production, commercialization, and processing of coffee, sugar, fish, and fruit, but these foodstuffs fell outside SAM's primary focus on basic grains and, therefore, outside our analysis. We do not examine the important role played by the central government through the Ministry of Agriculture and Water Resources (SARH). SARH controls one key production input, water, through its construction and distribution of Mexico's irrigation resources. It also provides much research and technical assistance. General macro policies—exchange rates, wage levels, and price controls, for example, also affect food policy; these are addressed in Chapters 13 and 14.

Table 4.1. Grain market shares of SOEs as of 1979

Activity	SOE	Share
Inputs		
Credit	BANRURAL FIRA	SOE share of total value, 75.4%. BANRURAL share of total credit, 52%. FIRA share of private credit, 48.6%.[1] BANRURAL share of area harvested: 27.4%.[2] Maize share of BANRURAL area harvested: 43%.[3]
Agrochemicals	FERTIMEX	Share of fertilizer production, 100%. Share of international trade, 100%. Import share of national consumption, 20%.[4] Distribution through SOEs, 53%.[5] #1 national insecticide producer, #2 herbicide producer.
Seeds	PRONASE	Share of certified maize and bean seed production, 90%. Certified wheat, 43%. Certified sorghum, 10%.[6]
Tractors	SIDENA, FTA	SIDENA-Ford market share, 30%.[7]
Crop insurance	ANAGSA	Share of basic grain area insured, 49%.
Technical assistance	BANRURAL FIRA CONASUPO	Share of area sown with maize covered, 48%.[8]
Production Grains	PRONAGRA	Share of national rice production, 6%.[9]
Commercialization		
Procurement	CONASUPO	SOE share purchased of national maize production sold, 23.1%. SOE share of maize demand, 33.1%. SOE share of grain imports, 100%. Import share of national maize consumption, 9.8%.[10]
Warehousing	ANDSA, CONASUPO-BORUCONSA	CONASUPO share of national warehouse capacity, 40%.[11] ANDSA share of CONASUPO capacity, 68%.[12] BORUCONSA share of national CONASUPO maize purchases, 73%.[13] Share of BORUCONSA maize received with PACE transportation subsidy, 19.8% (1978–1979).[14]
Wholesaling	CONASUPO-IMPECSA	SOE coverage of national food retailers, 15.8%.[15]
Retailing	CONASUPO-DICONSA	SOE share of national retail market for basic consumer goods, 9%. Coverage: 7500 towns, 25 million consumers.[16] Rural share of number of DICONSA outlets, 71.7%.[17]

Table 4.1. (continued)

Activity	SOE	Share
Processing		
Grains, oilseeds	ICONSA	SOE share of national oilseed milling capacity, 10.5%. SOE share of vegetable fat production, 10%. SOE share of wheat milling, 7.4%.[18] ICONSA share of basic food product market (Alianza brand), 6%.[19]
Maize	MINSA	SOE share of maize flour production, 27%.[20]
Bread	TRICONSA	SOE share of Mexico City bread production, 40%.[21]
Milk	LICONSA	SOE share of national milk production, 17%. Share of imports, 100%. Import share of national consumption, 11.8%.[22]
Animal feed	ALBAMEX	SOE share of mixed feed market, 6% (4th largest producer).
Formulated foods	NUTRIMEX	No data

Source: [1]Patron Guerra and Fuentes Navarro, 1982. [2]SARH, Memo. 1982b. [3]FEP, 1981. [4]Based on FERTIMEX data. [5]FERTIMEX, 1980. [6]SARH, 1981. [7]*AMIA Boletín*, Jan. 1981. [8]FEP, 1981. [9]Cabrera Morales, 1982; FEP, 1982. [10]CONASUPO, May 1982. [11]CONASUPO, 1980. [12]SPP, 1981. [13]CONASUPO, 1982; FEP, 1981. [14]Rubio Canales, 1982. [15]CONASUPO, *Sistema C,* Nov.–Dec. 1981. [16]CONASUPO, 1980. [17]FEP, 1981. [18]CONASUPO, 1982a. [19]CONASUPO, *Sistema C,* May 1982. [20]CONASUPO, 1982a. [21]CONASUPO, *Sistema C,* March 1982. [22]Santoyo Meza and Urquiaga, 1982.

SOE–Central Government Organizational Ties. Food sector SOEs are little different from SOEs in other sectors in their wide variety of relations with the central government. Some appear highly autonomous, like FIRA; others seem closely linked to particular ministries, as is the case of PRONASE and BANRURAL to SARH. On closer examination, however, degree of autonomy may not be conditioned primarily by organizational structure; political alignments within the ruling coalition, complementary or conflicting policy orientations, and degree of SOE dependence on central-government financing may be more important factors.

FIRA, for example, may appear to operate highly autonomously compared to other SOEs in the food sector, but it should be recalled that it operates under the policy direction of another SOE, the Banco de México, which often shares the policy orientation of the finance ministry. In addition, FIRA has greater financial autonomy because of its international donors. Thus, while an SOE appears to operate independently of functionally related parts of the state apparatus, it may in fact be following a policy direction set elsewhere in the government.

SOEs may be managed highly efficiently, and their directors may be in political favor, but if their function is to deliver goods and services at subsidized prices, they must turn to the central government for funds to cover the resultant deficits. This necessarily increases the SOEs' dependence on the central government. Conversely, SOEs that generate large surpluses, such as the oil company PEMEX, may achieve substantial autonomy even without being run efficiently. The drive to increase the financial autonomy of the enterprise may be one reason why some of the more entrepreneurial SOEs in the food sector serve more affluent market segments in addition to those in need of subsidies (e.g., DICONSA, LICONSA, ALBAMEX). The issue of central government–SOE relations is dealt with below in the context of the discussion of SOE response to SAM.

Although President López Portillo began his administrative reform upon assuming office in 1976 (Bailey, 1980), SOEs were not reorganized into sectors under the new ministries until 1982. Most food sector SOEs then fell under the ministries of agriculture, (ALBAMEX, NUTRIMEX, PRONAGRA, PRONASE), finance (ANAGSA, BANRURAL), industrial development (FERTIMEX, SIDENA), and commerce (CONASUPO). (For a complete listing of SOEs by sector, see *Mercado de Valores,* Sept. 13 and 20, 1982.)

Food Sector SOEs: Economic Importance. Some of the available indicators of the economic importance of SOEs in the food sector include number, employment, trade, agroindustrial investment, and market shares.

1. *Number:* Approximately 30% of 1982's 966 SOEs were directly related to the food system.
2. *Employment:* SOEs in the food sector are large employers. CONASUPO and its affiliates employed approximately 24,000 people in 1979, making it one of the largest employers in Mexico (CONASUPO, 1980a). Some of SOEs are highly capital-intensive, however, because of the techniques of production chosen to manufacture, for example, fertilizer, animal feed, or bread.
3. *Trade:* CONASUPO controls all of Mexico's international grain trade, and other SOEs figure heavily in the commercialization and trade of key crops such as coffee and sugar.
4. *Investment in agroindustry:* Government ownership of the food-processing industry rose from 18.3% in 1970 to 21.7% in 1975. The SOE percentage of gross fixed investment in food processing, however, rose from 20.1% in 1970 to 88.6% in 1975. The SOE share of value-added, however, was only 6.7% in 1970 and 10.5% in 1975. This is partly because the food processing share within SOE value-added as a whole was 3.3% in 1970 and 3.4% in 1975 (SPP, 1982: 4.1.3.3.4; 4.2.1.6.8).
5. *Market shares:* To give a sense of the role of SOEs in the food system

before SAM, Table 4.1 presents some indicators of their relative importance within their particular activities. It is clear that SOEs are significant actors throughout the food system.

SOEs and SAM: The Implementation Experience

As pointed out in Chapter 3, the SAM strategy rejected the notion that it was in the national interest to continue its growing dependence on imported (largely U.S.) foodstuffs. Instead of following the dictates of the law of "comparative advantage" of exporting oil and importing grains, Mexico would sow oil revenues in the countryside. The stated goal was not only to revitalize food production, but to modernize and redistribute income, particularly to small farmers. This was to increase national autonomy while reinvigorating a state-peasant alliance that dated back to the revolution. In addition, increased access to subsidized food was to meet nutritional needs and to defuse the tensions deriving from rising but unmet expectations.

The implementation task raised the question, Would the SOEs have the capability and motivation to respond to the new strategy? As stated previously, we contend that the effectiveness of the new strategy was significantly determined by the substance and form of the response of the SOEs. Furthermore, full implementation of the strategy would require changes in the structures and administrative procedures of the SOEs whose actions were not previously in accordance with the SAM strategy (see Chandler, 1962; Ickis, 1978).

Three categories of factors could facilitate or inhibit policy implementation: temporal context, bureaucratic incentives, and economic resources. At a conceptual level these three categories imply a general institutional behavior model for SOEs. Their response will be shaped by the social and political situation out of which the new strategy arises, the set of political or other incentives that motivate the SOEs to support or resist implementation, and the level of economic resources available, which affects the capacity for implementation.

Temporal Context

Facilitating Factors. SAM emerged in the aftermath of, and partially in response to, the shortfalls in the 1979 grain crop. This may have created a "crisis-response context" that in turn created a greater sense of urgency and propensity to act on part of the SOEs.

Inhibiting Factors. This same "crisis-response context," which increased the need to act, also compressed the time frame for implementation. This sharply constrained the possibility of comprehensive implementation for three reasons: (1) It reduced the time available to the

SAM strategists to consult with, and elicit the cooperation of, the SOEs; (2) SAM was announced with less than three years remaining in the administration, limiting the ability of those SOEs that did try to implement SAM to make structural changes in their organizations; (3) The decision-making process and its short time frame prevented the active participation of peasant producers, SAM's state primary target group, in the strategic formulation or the implementation design of the policy.

Bureaucratic Incentives

Facilitating Factors. Although the SOEs function as autonomous legal entities, the political structure and patronage system make them highly responsive to the political priorities emanating from the presidency. Thus, by clearly manifesting that SAM was a top political priority of the president, the policy makers were able to create a strong incentive for SOE managers to implement the strategy vigorously. The SAM planners hoped that this would compensate for the time constraints. Furthermore, those SOEs that already had adopted, on their own, strategies similar to SAM's were probably able to accelerate their growth more than they would have otherwise.

Inhibiting Factors. The emergence of the SAM group within the office of the presidency gave rise to a potential competitor within the arena of bureaucratic politics. Some entities may have felt threatened by the existence of the SAM group and therefore tried to reduce its power, perhaps by resisting or diverting implementation of the strategy. The fact that the SAM group was a policy-formulating entity rather than an operating entity made it dependent on the existing ministries and SOEs for implementation. This gave leverage to the latter and thus raised the potential for bureaucratic competition impeding implementation. Outright opposition to SAM, however, was not expected to be politically viable because it would mean openly rejecting the president's decision. This was a particularly sensitive situation because of the upcoming candidate-selection process for the 1982 change in administration. This constraint, plus the inhibiting factors mentioned above in the context of timing, created an incentive for "window-dressing" behavior. The possibility existed that the SOEs would designate many of their activities as SAM, while in reality only relabelling existing activities rather than making any substantive changes to implement the strategy.

Availability of Economic Resources

Facilitating Factors. The SAM strategy called for heavy use of subsidies for both producers and consumers. This required a large outlay of resources. The willingness of the president to channel revenue to the implementers of SAM to cover these needs eased implementation by reducing SOE

resistance. The SAM strategists were able to co-opt many of the SOEs by (1) ensuring that their regular operations would not suffer from the subsidized prices by ensuring reimbursement of deficits, (2) allowing them to expand their operations and hence their sphere of influence, and (3) enabling them to add the SAM target group without necessarily abandoning their traditional clients and constituencies.

Inhibiting Factors. As economic resources became scarcer, the capacity and willingness of the SOEs to implement the strategy decreased. Thus the SOE performance for SAM was hindered when the 1982 austerity measures greatly reduced the resources available.

SOE Responses

To examine the possible SOE responses to SAM, we analyze the actions of the SOEs during the 1980–1982 period. The analysis is based on published and unpublished documents, as well as direct, structured interviews with SOE managers, SAM strategists, and industry experts.

Our analysis first documents the extent of the responses to SAM of each of the SOEs operating in the input, processing, and commercialization stages. In general, we find that the empirical evidence reveals a strong, positive, although varied response by the SOEs.

Inputs

PRONASE: Seeds. SAM's package of production inputs included 75% subsidies on the price of improved and selected grain and bean varieties, leading to a large jump in demand and a strong response by the SOE supplier. PRONASE output of certified seed shot up to 183,000 tons in 1980, 106% over 1979. Production continued to grow to 235,000 tons in 1981, and to 215,000 in 1982, an increase of 141% over 1979 (FEP, 1984:521).

In order to evaluate the PRONASE response to SAM, it is necessary to disaggregate the growth in seed production by crop. Certified maize seed production grew 559% between 1979 and 1980, from 8000 tons of certified seed to 53,000, fell slightly to 44,000 tons in 1981 and then to 17,000 tons in 1982. Bean seed production was very low before SAM, only 5300 tons in 1979. By 1981 PRONASE was producing 40,000 tons, an increase of 658%. Rice seed production rose to 23,000 tons in 1981, 86% over 1979. Wheat, because of its earlier importance, grew only 180%, from 45,000 to 126,000 tons between 1979 and 1982. Some crops not considered basic to SAM also experienced significant increases in PRONASE output, particularly barley, soybeans, and sorghum (FEP, 1981:521).

Most of this growth took place during three crop cycles. Special implementation actions to maintain quality control, as well as rapid expansion of PRONASE's network of reception, processing, and storage infrastructure, were required. Reception capacity, for example, was reported to increase from 4000 tons in 1979 to 91,195 tons in 1982 (PRONASE, 1982).

The *criollo* maize program tried to improve the productivity of local varieties; it was applied by an estimated one million peasants on 2.5 million hectares in 1982. The share of nonreproducing hybrids in relation to freely pollinating certified seed rose from 2% in 1979 to 45% in 1981 (PRONASE, 1982). This suggests an increased integration into the market for purchased inputs on the part of a substantial fraction of maize producers. The area sown with improved varieties grew about two and a half times between 1977 and 1981. PRONASE estimated that use of improved seed results in productivity increases of at least 15% (assuming the seed is appropriate to the zone and that quality control holds up). Some observers, however, have expressed concern about the possible loss of *criollo* genetic stock, as well as small producer autonomy, as a result of this process.

By 1981 the area sown with PRONASE seeds had risen to an estimated 3.0 million hectares, 150% over 1977 (PRONASE, 1982:114). PRONASE's growth is accounted for by the favorable convergence of SAM's production and input subsidies with PRONASE's increased investment in its reception, processing, and storage network. PRONASE's close identification with SARH may have accelerated its growth; PRONASE could be seen as having been one of SARH's principal implementing vehicles for SAM. Increased use of high-yield varieties was a central part of SARH's own policy agenda. As an indication of the priority SARH accorded PRONASE during SAM, the incoming 1982 administration made the former minister of agriculture the new director of PRONASE. In conclusion, PRONASE responded quantitatively in a major way, but with imperfections that may have serious long-run implications. For a more detailed analysis of the seed industry, see Chapter 6.

FERTIMEX: Agrochemicals. FERTIMEX's ability to respond quickly to SAM's increase in demand was limited, because FERTIMEX plants were already working at close to capacity, and new plant investments require both large capital outlays and long construction periods. One way FERTIMEX dealt with the announcement of SAM was to increase the truck fleet to speed delivery and to make procedural changes necessary to reduce inventory supplies from 30 days of demand to 15 days. As one high FERTIMEX official put it, "we learned of the existence of SAM precisely on the 18th day of March, 1980." FERTIMEX also quickly increased its import levels.

SAM's production input policies for basic grains cut FERTIMEX prices to about 20% below prevailing prices. An additional 10% transport subsidy was also given. This 10% extra was available to all rain-fed farmers and to irrigated farmers with 20 hectares or less. This second discount was the only significant SAM subsidy with access explicitly limited by size of pro-

ducer, but 20 irrigated hectares is relatively large. The discounts created a huge economic incentive to use more fertilizer. The challenge to FERTIMEX was to meet the increased demand.

The increases in imports during the SAM period were relatively costly. As one official recalled, "we had to enter the international market in desperation," that is, without bargaining power. However, a series of large investments in increased capacity begun in 1977 soon began to come onstream. In 1982 FERTIMEX had an annual installed capacity of 4.4 million tons, and the plants under construction in that year were to add 1.7 million more in the short term.

Although FERTIMEX is an autonomous state enterprise, the central government compensated it for the losses incurred by the pricing policies and the need to import. Fertilizer prices were estimated to have been 26% below production costs in late 1981. The government also financed FERTIMEX's capital spending and debt service charges. Fertilizer production increased 9.4% from 1979 to 1980, from 2.5 to 2.8 million tons. Volume continued to increase in 1981 to 3.4 million tons and in 1982 to 3.6 million tons, increases of 22.7 and 6%, respectively. The deficit in national production grew to 23% in 1980 and then fell to 16 and 18% in 1981 and 1982. Imports totaled 78,000 tons in 1982 (FERTIMEX, 1982:66, 95; 1982b). Sales volume, which includes imports as well, grew 22.3% in 1980 and another 14.8 and 11.9% in 1981 and 1982 (FEP, 1984:302).

SAM's impact on FERTIMEX is shown by the increase in sales of NPK, a fertilizer often used for rain-fed grain crops. Sales of NPK rose 8.2% in 1980, 13.7% in 1981, and 14% in 1982. By 1982 sales were 33% greater than had been projected for that year. The effect on the total area treated with fertilizer was more uneven, rising 9.5% in 1980, only 0.3% in 1981, and then 22.5% in 1982. This rate of change may be partly accounted for by the 1981 increase in the average amount of fertilizer applied per unit area, which probably went up due to favorable rainfall, and partly by 1982's inflation-induced drop in the real price (FERTIMEX, 1982b).

SAM coincided with the implementation of unrelated major changes in the system of national fertilizer distribution. In an attempt to increase efficiency, FERTIMEX shifted from reliance on commission agents to more direct and institutional sales. Between 1979 and 1980, sales through commission agents fell 42.8%, while sales to BANRURAL rose 36.8%, from 22.8 to 28.2% of total sales. A network of state-level enterprises was also created, and their share rose 47.8%, to 24% of the 1980 total (FERTIMEX, 1980). Limits on markups made provision of decentralized storage and trucking facilities less profitable for private entrepreneurs, which may have increased BANRURAL's importance as a supplier of fertilizer for small producers.

In conclusion, FERTIMEX came up against the technical constraint of bulky investments, was not consulted at the operational level, and was

pressured by time. FERTIMEX responded by changing procedures and by resorting to costly, last-minute imports.

One high official noted that "perhaps our participation would have been a bit more efficient if they had invited us in advance.... We were practically ignored, in spite of the fact that SAM, no doubt, wouldn't have gotten anywhere without fertilizers." According to a top SAM planner, the director of FERTIMEX had been consulted in advance, but word apparently did not filter down to the operational level in the form of preparations.

FERTIMEX did respond. Supply was not a constraint on implementation, although it was costly. Finally, there were procedural and some structural changes in distribution, but these may not have been sufficient to reach the smaller farms effectively.

SIDENA, FTA: Tractors. Total public and private tractor sales (excluding SIDENA) increased 12% from 14,000 to 15,700 between 1979 and 1980, and another 15.4% in 1981 to 18,000 units. In 1982, as SAM budget cuts tightened credit, reducing demand to 13,400 units, sales fell 25.9% (*AMIA Boletín* 205, Jan. 1983).

SIDENA, with the only small tractor on the market, experienced increased demand, but not as much as producers of medium and large tractors. In 1980, for example, production of small tractors (under 60 HP) increased 2.1%, while output of medium-sized tractors grew 25% and of large tractors 18% over 1979 (*Mercado de Valores,* 21 Dec. 1981).

SOE participation in tractors increased during SAM when the Agricultural Tractor Factory (FTA) was formed in 1981 as a joint venture between the state development bank NAFINSA (60%) and Ford Motor Company (40%). Ford entered this project as part of the Mexicanization process for transnational companies. Previously, SIDENA had manufactured for Ford on a subcontracting basis. Ford held a major share of the market. FTA's first factory was projected to produce 9000 units in 1983 (*Mexican-American Review,* Oct. 1982).

There was a definite increase in area using mechanized farming during SAM, particularly in the irrigated areas. The irrigated area that was totally mechanized in crop year 1980–1981 reached 2.9 million hectares, 37% over 1978–1979. The irrigated area partially mechanized increased 21% over 1978–1979 to 1.3 million hectares, while the small amount of non-mechanized area under irrigation increased 37% to 0.2 million hectares (FEP, I, 1982:41). This expansion was related more to SAM's indiscriminate increase in credit than to a particular state role in tractor production.

In conclusion, farm machinery SOE changes directly caused by SAM were modest, while the private sector response to the market stimuli was substantial (see Chapter 10).

BANRURAL: Credit. BANRURAL was one of the first SOEs con-

sulted by SAM, receiving what one SAM planner called "special attention." The planners wanted to see how much flexibility there was for a quick response to make credit available in time for the spring 1980 planting decisions. BANRURAL quickly carried out a pilot project to see how the packet of inputs and incentives worked. The response was encouraging, and the agency moved ahead.

For BANRURAL, the March 1980 announcement of SAM meant the immediate reduction of interest rates for any producer of maize or beans to 12%. Below-market rates were available for other crops as well. Given that there was no readjustment clause for inflation, which was running at over 20%, these interest rates were negative in real terms.

BANRURAL credits in 1981 were 62% over 1980 and 119% over 1979 (FEP, IV, 1981:203). Inflation was 28% in 1980 and 20% in 1979, so the increase in credit available was substantial in real terms.

The area receiving BANRURAL credits increased significantly during SAM. Area financed in 1980 was 49% more than in 1979, reaching 4.8 million hectares. In 1981 the area financed increased another 31.5%, to 6.3 million hectares, and in 1982 it hit a high of 7.2 million hectares. Area financed expanded more rapidly than the also-increasing area planted, leading to a higher BANRURAL share of area sown (FEP, 1984:528).

Within the crop sector, the attention to maize and bean producers increased. Area sown with maize and beans in 1980 was 68% greater than in 1979, rising from 1.8 million to 3.0 million hectares. This rose another 38% in 1981 to 4.2 million hectares, and a high of 4.4 million hectares was financed in 1982 (see Chapter 5).

BANRURAL also served a substantially larger number of producers during SAM. It financed 17% more producers in 1980 than in 1979, rising from 1.24 million to 1.45 million. In 1981 the number rose 33% to 1.65 million and in 1982 hit 1.7 million. Of these, 93% were *ejidatarios* (producers who work land that they have a legal right to exploit but cannot sell; see Chapter 2) (SARH, 1982b:468).

BANRURAL's pattern of credit allocation among types of loans also changed somewhat. The share of short-term crop loans, which had fallen to 70% in 1980, rose to 73% in 1981 and 79% in 1982. Agricultural investment loans, on the other hand, fell from 24% in 1980 to 19% in 1982. Long-term credit is dedicated to increasing capitalization, which is potentially the principal source of sustained increased productivity. Little goes to peasant producers, however. Whether long-term credit promotes basic grains is a function of what type of production is in fact capitalized. This involves examining credit use by type of loan.

The crop-livestock breakdown shows a pattern similar to the changing short-term–long-term shares. Within short-term credit, the crop share fell to 61.7% in 1980, rising to 64.5% in 1981. The livestock share, on the other hand, had risen from 16.3% in 1977 to 26.7% in 1980, falling to 23.4% in 1981. Within long-term credit, the crop share fell from 73.8% in 1977 to

58.2% in 1980, rising to only 60.3% in 1981. In real terms, long-term livestock credit grew from 1977 to 1981 at an annual rate of 35%, that for the agroindustry at 56.1%, and for crops at only 16.6% (Reyes, 1982:6, 7). Given that small producers tend to receive only short-term crop loans, a substantial proportion of lending apparently went to producers who had alternative sources of formal credit, and whose solvency reduced their need for subsidized rates of interest. During SAM, however, BANRURAL increasingly favored short-term crop loans, reversing the earlier trend.

In addition to providing subsidized credit, BANRURAL also administers nineteen trust funds. Two of them, the Shared-Risk Fund (FIRCO) and the Rural Promotion Fund (FIPROR), were created in 1980 and 1981 with the purpose of assisting in the implementation of SAM. The FIRCO was, in the words of a SAM strategist, "100% SAM." It attempted to induce traditional producers on rain-fed land to adopt new technological production methods by insuring their investment cost against crop failure. The insurance took into account the average value of the harvest, that is, the farmer's revenue risk, not just the cash value of the inputs applied. The goal was to assume the risks involved in adopting the new technologies in areas particularly vulnerable to weather variations. FIRCO participants received seeds and fertilizer inputs at discounts even greater than the regular SAM subsidies.

FIRCO played an important role in SAM's public relations, as an example of López Portillo's intended renovation of the historical state-peasant alliance. FIRCO coverage, however, was fairly limited, reaching a high point of 78,000 hectares in 1981. This was only 1.37% of the area covered by conventional crop insurance through ANAGSA, and it dropped almost 50% in 1982 to only 35,000 hectares (ANAGSA, 1982:43).

According to a former top ANAGSA official, BANRURAL had difficulty administering the shared-risk program and often encouraged producers to sign up with ANAGSA rather than set up another account with FIRCO. SAM created FIRCO through BANRURAL rather than through ANAGSA because planners saw ANAGSA as too inflexible. It appears, however, that SAM was unable to encourage BANRURAL to push FIRCO, leading at least one SAM planner to conclude that the shared-risk crop insurance program should have been carried out by ANAGSA rather than an entirely new agency.

The changes in credit allocation described above indicate that there was a major shift in the orientation of BANRURAL's activities when SAM became a national priority. Until that time, credit expansion primarily benefited luxury and industrial crops and livestock instead of basic grains. In 1980 the direction of expansion shifted toward rain-fed and grain-producing beneficiaries. The change was in the pattern of growth, however; it was not a redistribution away from the previously privileged sectors, which continued to receive real increases. While the data show increasing attention to maize and beans, Reyes's (1982) information shows

that, in financial terms, livestock still was more important relative to crops at the end of López Portillo's term than at the beginning. Future analyses of the pattern of post-1982 cutbacks will show the degree to which the SAM-induced changes were structural, as opposed to simply being a result of temporary access to large amounts of resources.

In terms of administrative procedures, BANRURAL made some changes to fit SAM's political and economic goal of increasing attention to the rain-fed grain producers. The goals were to increase the efficiency of resource use, to reduce bureaucratic limits to credit access, and to improve the timing and amount of credit provided. Implementation measures included (1) decentralizing authority to shift resources between different crops, activities, and areas, in accordance with SAM priorities, to the regional level, (2) systematically publicizing credit-application information in advance, (3) automatically renewing credit for proven clients, and (4) doing research at the regional level to improve long-term credit use. BANRURAL also announced an attempt to increase the degree to which peasant needs were taken into account. Peasant credit requirements, expressed through local branches, were to be passed up to the local Irrigated or Rain-fed District Committee, which was to increase coordination with other state agricultural agencies, as well as with peasant organizations. The branch operational plan was then passed up to be integrated into the regional and national credit allocation plans.

By the late 1970s, BANRURAL had acquired the reputation of being a massive bureaucracy, corrupt and insensitive to peasant needs. Its national network of 634 branches was one of the principal institutions through which the government related to the peasant population on a regular basis. BANRURAL's 1980–1982 broadening of access to crop loans must be viewed, not only in the context of SAM's economic goals, but also in terms of the attempted renewal of the state-peasant alliance.

BANRURAL responded to SAM by flooding the countryside with credit. The amounts of land and number of producers financed reached all-time highs. While the establishment of the SAM strategy led to important increases in agricultural credit, there were still major problems in policy coordination, for both formulation and implementation, between the different government agriculture agencies. According to one BANRURAL analyst, production did not reach its optimal level because of "deficiencies regarding the complementarity of use of credit, insurance, and inputs" (for a further analysis of BANRURAL lending, see Chapter 5).

FIRA: Credit. FIRA, like BANRURAL, offered interest rates of 12% to any maize and bean producer. Other rates were slightly differentiated according to types of producer and activity. Middle- and high-income producers paid between 26% and 29% for loans for crops other than maize and beans. These remained the rates in 1982, after 1981's 30% inflation rate

and 1982's 90–100% rate. The nominal scaling, then, was very gradual in real terms and negative interest rates prevailed.

Both FIRA's number of beneficiaries and amount of credit disbursed increased markedly during SAM. Between 1979 and 1980 the number of FIRA credit recipients shot up 79%, from 237,000 to 424,000. The share of producers considered to be of low income increased to 66.6%, but the number of higher-income producers still increased 44%. In 1981 the total number of recipients rose to 511,000, 116% over 1979, while the number of higher-income recipients fell for the first time. In 1981 FIRA created a new category of credit recipient, "other types of producers," which was essentially an admission that its hitherto middle-income category actually included a substantial number of quite high income producers. These high-income producers received almost 15% of 1981 credits (FIRA, 1982:50). During SAM, FIRA greatly increased both the amount and proportion of attention to smaller producers while still increasing attention to medium and large producers.

SAM affected FIRA's activity in terms of types of operations as well. Total FIRA credits increased 83% between the 1978–1979 and 1980–1981 crop years, with the proportion of credit going to annual crops growing from 42 to 50%. The share benefiting basic grains increased at the highest rate, 156.5%, from 21 to 30% of FIRA credit. Oilseeds and beef also increased their shares to 15 and 17%, respectively (Patron Guerra and Fuentes Navarro, 1982:6).

Implementation of SAM also involved nonfinancial operational changes. The medium-term maize and bean program was designed to increase technical as well as financial assistance. The program involved 67,000 producers in 1982, 86% of whom were considered to be of low income. They received 45% of the resources. The program as a whole covered 854,000 hectares of maize and 275,000 hectares of beans.

FIRA also introduced administrative changes to increase support services for low income rain-fed producers. New mechanisms for commercial credit were introduced to promote the new Agricultural Development Law (Ley de Fomento Agropecuario). Because of the rapid expansion of credit, however, only an estimated 25% of 1981 credits were actually supervised by FIRA. The rest were reportedly supervised either by BANRURAL or not at all.

In order to evaluate its maize and bean program, FIRA drew a representative sample from 97,000 clients during 1980–1981. All were considered to be of low or middle income. FIRA defined low income as an annual net income of under 1000 times the daily minimum wage of the region, while medium income was considered to be annual net earnings of between 1000 and 3000 times the local minimum wage. It should be noted that some observers consider this cutoff to be relatively high, since few rural wage workers are employed year-round and most do not receive the

minimum wage when they do work. The calculation of net income is another possible complication. Since it is in the producer's interest to undervalue the estimate of net income in order to receive discounted credit, the actual implementation of the income cutoffs is very sensitive to local relations between producers and branch bank officials.

The poll results indicate that 40% of the sample had not received credit during the previous year, and 75% of them were of low income. Of the total, 35% increased their area cultivated, and 64% of this group were of low income. In addition, 90% of the area incorporated into production belonged to producers with holdings of more than 10 hectares. In terms of productivity, 46% of the borrowers increased their crop yield, 61% of whom were of low income. The correspondence between long-term credit and yield was indicated by the finding that 92% of the long-term borrowers noted yield increases, which primarily came from irrigation and mechanization.

The FIRA study provides important data regarding access to inputs and commercialization. Of those producers who sold their production, only 46% had access to the guaranteed price or its equivalent. The great majority of these (70%) were not low-income producers. This group showed a large increase in prices received and share of harvest marketed in comparison to the previous year. In terms of inputs, a direct relation was found between access, degree of organization of the borrowers, and income. The producers without access tended to be unorganized and of low income.

FIRA, like BANRURAL, was able to use the large increase in financial resources to expand its loans to the new target group, as well as to its old clientele. As the FIRA poll and BANRURAL data indicate, the public credit institutions poured credit into the countryside; this enabled the politics of credit allocation to be a positive-sum game.

ANAGSA: Insurance. As part of SAM, ANAGSA reduced its premiums from 20 to 3% for rain-fed maize, beans, rice, and wheat, as well as for irrigated maize and beans on plots under 20 hectares. With the Ministry of Finance covering the cost, area covered and amount of coverage both shot up. All publicly financed crop loans must carry ANAGSA insurance; an expansion in credit thus means an expansion in insurance.

In 1980 ANAGSA insured 4.6 million hectares, 54.1% over 1979. Insured area increased another 48.4% in 1981 to 6.9 million hectares. The coverage in 1982 reached a record 7.6 million hectares, a 10.6% increase (FEP, 1983:454).

SAM's focus on basic grains changed ANAGSA's mix of crop coverage. In 1979, 48% of ANAGSA's insured area was in maize, beans, rice, and wheat, rising to 69.6% in 1981. This meant a 240% increase in area, from 1.4 million hectares in maize, beans, rice, and wheat in 1979 to 4.8 million hectares in 1981 (FEP, 1983:454). The share of insured maize area jumped from an average of 40% during the late 1970s to 69% in 1980 (FEP, I, 1981:322).

ANAGSA's expansion of crop coverage was accompanied by a rapid increase in livestock and head-of-household life insurance coverage as well. While the expansion of livestock insurance was not a SAM goal, expansion of access to life insurance was consistent with SAM's more political goals. A top ANAGSA official held that all categories of insurance went up because of the general increase in promotion.

In order to cope with the massive expansion in its coverage, ANAGSA carried out major changes in its structure and procedures, including regional decentralization and increases in personnel and supervision in the field. In part because of the newly increased coverage, ANAGSA needed to ascertain each stage of investment that might be claimed as a loss. An ANAGSA official held that supervision of credit use by both bank and insurance officials reduces the opportunities for corruption through false claims.

SAM created the political conditions that allowed ANAGSA to succeed with its decade-long effort to get the legislature to adopt a new agricultural insurance law, which went into effect in early 1981. Its provisions included the principle of "hectare lost, hectare paid," instead of the previous all-or-nothing loss principle. Coverage was also extended to the producer's entire outlay. Before, coverage began only if 75% of the seed germinated, and then it only insured 70% of the crop cost in irrigated zones and 50–60% in dry land. For the first time, BANRURAL loans could be paid back in full for crops that were lost. This dramatically increased its recovery rate. According to an ANAGSA source, the new law increased BANRURAL's recovery rates from 65% to over 90%. ANAGSA earned a financial surplus in 1980 and 1981 for the first time in ten years, but the implementation of the new law involved shifting BANRURAL's losses to ANAGSA's accounts, which were then covered by the central government.

Agricultural Production

PRONAGRA: Farming. While PRONAGRA's growth increased rapidly because of SAM's push for production of basic grains, it did not take on national significance. Area farmed in 1982 reached 127,000 hectares, a 236% increase over 1979. Production grew even more; 281,000 tons in 1982 was a 1300% increase over 1979, consisting overwhelmingly of rice, in addition to some maize and sorghum (Cabrera Morales, 1982).

Commercialization

CONASUPO: Crop Purchasing. One of the most important single measures in the SAM program was the increase in guaranteed prices for basic food crops. The support prices were set by a consensus of a commission of the Agricultural Cabinet, which was made up of top representatives from the ministries of Agriculture, Finance, and Internal Com-

merce, as well as CONASUPO, BANRURAL, and, informally between 1980 and 1982, the SAM leadership. The commission had generally discussed proposals for price increases coming from SARH, which reportedly often met resistance from the Ministry of Internal Commerce, since it would be responsible for having to increase tortilla subsidies. BANRURAL reportedly tended to support SARH, and CONASUPO fell in between. According to one member of the commission, SAM "arrived with a lot of political force," shifting the center of gravity of discussion greatly in favor of increased prices to stimulate production.

In 1980 nominal prices were raised 28% for maize, 55% for beans, 18% for wheat, and 24% for sorghum. Since inflation was 28% in 1980, this meant more of a halt in the decline of the prices than increases in constant terms. Adjusted for inflation, beans increased 20%, but maize only 1%, while wheat dropped 7% and sorghum 2%. In 1981, however, nominal prices were raised again, 47% for maize, 33% for beans, 31% for wheat, and 36% for sorghum. Increases in constant-price terms were 15% for maize, 4% for beans, 1% for wheat, and 6% for sorghum. By comparison, with the 1965–1969 price average as an index, the 1980 index of prices in real terms for maize was still 81, rising to 94 in 1981. It should be noted that while sorghum support prices tended to keep up, SAM strategists recognized that that policy did not slow sorghum's competition with maize. Increased maize production by commercially oriented producers depends to some degree on a favorable price relationship with the highly substitutable sorghum.

Mexico's inflation rate in 1982 was unexpectedly high, reaching 90–100%. Nevertheless, the support price for maize was raised only 35% at a time when inflation was expected to hit 50 to 60% that year, which meant a drop to an all-time low. Other nominal support-price increases followed the same pattern, leading to the lowest constant prices offered in decades. (SARH/DGEA, "La Determinación de los Precios de Garantía para los Productos del Campo," November 1982).

The earlier SAM price increases led to substantial increases in CONASUPO's share of national crop markets. In 1981 CONASUPO bought 19.7% of that year's bumper maize crop, 2.9 million tons. This was more than three times the amount purchased in 1980, which was only 7% of a much smaller crop. CONASUPO's share of beans was 13.6% in 1980 and 35.8% in 1981, wheat held to 40% in 1981, and the share of sorghum production shot up to 37.8% (CONASUPO, *Sistema C,* May 1982).

In 1980, the concentration of maize purchase in five states increased to 81.2%, as Chiapas increased in importance and Tamaulipas and México decreased. In 1981, however, the top five states' share decreased to 68.9%, while the total volume purchased tripled (CONASUPO, *Sistema C,* July 1982).

On the demand side, CONASUPO's share was substantially higher because of increased imports. Its share of the national maize supply was 26.2% in 1980 and 25.4% in 1981. In response to the poor harvest of the 1979–1980 crop, however, maize imports in 1980 tripled to 3.2 million tons, and almost 2.5 million tons more were imported in 1981. Because of the record crop of 1981, this led to the build-up of record maize reserves, 1.95 million tons (CONASUPO, *Sistema C,* May 1982). The total food import bill did fall, however, from over U.S. $3 billion in 1980 to $2 billion in 1981 and an estimated $1 billion in 1982 (*Business Week,* 20 Dec. 1982).

The extent of the import crisis of 1979–1980 was not only a major cause of the adoption of the SAM strategy, it also led to a change in the way Mexico imported grain. The magnitude of the imports gave Mexico's trade decisions increased influence in the world grain market. In 1980, CONASUPO created the Foreign Trade Coordinating Body, which studied and coordinated the use of futures markets in international grain trading. CONASUPO purchased approximately one-third of its grain imports on the futures market in 1981. After the unit thereby saved several million dollars, it was converted from an office to a full department.

The Foreign Trade Coordinating Body was formed in coordination with, but not as a response to, SAM. Its director had previously worked in the office of the presidency, the institutional location of the SAM planners. CONASUPO's formation of a unit to enter the grain futures market systematically was not inconsistent with the concurrent strategy aimed at self-sufficiency. Given the vagaries of the weather in Mexico, even a consistently applied self-sufficiency strategy could not achieve *total* freedom from the need to import, and the new unit better equipped CONASUPO for the management of import flows at any volume (Austin and Hoadley, 1987).

ANDSA (CONASUPO): Storage. The 1979–1980 import crunch strained ANDSA's capacity, as it did all of Mexico's storage and transportation infrastructure. There was an investment in additional capacity during SAM, increasing 3.4% between 1979 and 1981. In 1982 ANDSA's capacity grew another 10.1% to 4.4 million tons (Merino Castrejon, 1982:15).

BORUCONSA (CONASUPO): Storage. BORUCONSA's importance increased substantially because of SAM. Between 1979 and 1981, the number of rural warehouses increased 10.3%, from 1528 to 1686, while total capacity grew 31.3%, from 1.49 million to 1.96 million tons, aside from the reception centers. The actual tonnage of crops in storage rose 79.4% between 1979 and 1981, expanding the utilization of capacity from 29.6 to 40.4%. This increase reflects the combined effects of the massive 1981 production increase and CONASUPO's increased intervention in the market.

Through the Rural Commercialization Assistance Program (PACE), BORUCONSA subsidized producers' maize transportation costs in an attempt to broaden effective access to the official price. During 1979 and 1980, the PACE program underwent a change of orientation that led to an increase in its share of BORUCONSA purchases to 42.8% for the 1979–1980 crop year. The procedural changes included the extension of reimbursements to include initial processing services and access to the transportation subsidy for small private farmers in addition to *ejidal* producers, exclusively for producers of rain-fed maize and beans. There was no limit on the size of producer that could take advantage of the program, but since 1982, PACE covered only the first 50 tons of maize delivered. Between 1980 and 1981, the amount of maize purchased through the PACE program jumped more than 400%, from 198,000 to 807,000 tons. PACE then accounted for 27.7% of total national CONASUPO maize purchases. Maize purchases receiving PACE services increased another 110% in the 1981–1982 cycle to 1.7 million tons, about 80% of BORUCONSA's total purchases and almost as much as BORUCONSA's total pre-SAM high in 1978. The numbers of producers involved increased from 11,708 in 1980 to 339,000 in the 1981–1982 cycle, which largely accounts for the massive increase in amount of maize serviced (Rubio Canales, 1982).

During SAM, PACE grew from a small program extended to a limited number of states to one of national scope with the goal of providing a full range of commercialization services to rain-fed producers. PACE's growth was reinforced by the change in national strategy, which in turn facilitated PACE's procedural changes and increased orientation towards SAM's target group.

IMPECSA (CONASUPO): Wholesaling. IMPECSA's participation in wholesale marketing to private reatilers increased substantially during SAM. The number of establishments attended rose from 40,000 to 130,000 between 1979 and 1982, raising IMPECSA's share of total retailers served from 15.8% to an estimated 52.8%. The most rapid growth period was between 1979 and 1980, when sales quadrupled, but sales tripled from 1980 to 1982. IMPECSA's expansion was an important part of SAM's increased distribution of the subsidized basic market basket of food (CONASUPO, *Sistema C,* 1(3), Nov-Dec. 1981).

DICONSA (CONASUPO): Retailing. Before the institution of SAM, DICONSA, like IMPECSA, had begun (in conjunction with COPLAMAR, a government undertaking aimed at assisting rural low-income groups) a large expansion of its rural distribution network. It increased its rate of growth significantly in conjunction with SAM. To begin with, SAM defined its target population for consumption subsidies in terms very similar to DICONSA's. The DICONSA-COPLAMAR target group of those in extreme poverty was 20.8 million, while SAM considered 19 million Mexicans to be severely malnourished. In terms of geographic

distribution of this population, 96% of SAM's designated "critical population" was similarly designated by DICONSA-COPLAMAR.

SAM targeted all low-income rural communities for distribution coverage except those of less than 500 inhabitants or not accessible year-round. The rural expansion of DICONSA's network indicated increasing coverage of the estimated 13 million malnourished in the countryside. The total number of DICONSA outlets grew from 6660 in 1979 (71.7% rural) to 8369 in 1980 (76.4% rural). By the end of 1982, DICONSA had established 11,201 stores, 9049 of which were rural (81%). Rural sales increased from 17.7% of total sales in 1979 to 18.3% in 1980 and 21% in 1982 (FEP, 1983: 178). DICONSA estimated that its share of the rural food market increased from 11% in 1980 to 17% in 1982. The rural DICONSA price of the basic market basket of food was estimated at 30 to 35% below the rural open-market price (DICONSA, 1982).

As part of its expanded rural network, DICONSA changed its procedures to achieve greater community participation in its operations. The increased local input into solving problems and determining needs was to improve efficiency and control over the flow of goods. Peasant communities assembled and elected councils, which were to make operational decisions together with DICONSA. The CONASUPO-COPLAMAR program considered these Community Supply Councils to be a form of coresponsibility over the task of ensuring the delivery of subsidized food to the target groups. According to a DICONSA planner, the program was particularly successful in those areas where communities organized regionwide and took the initiative to deal with problems. Some elements of DICONSA's large administrative and operational apparatus, however, did not share the planners' orientation toward a program of such social character. In addition, necessary coordination with the ministries of Agriculture and Finance was difficult. As the DICONSA planner described the limitations to SAM in general, "this was the big problem—even the President could not break the inertia of the bureaucracy."

DICONSA responded massively to the change in national strategy, in particular where the SAM approach converged with its own. Since DICONSA did not require special funding through SAM, however, SAM's contribution to DICONSA's expansion was through political rather than economic resources. SAM and DICONSA shared a common view of the proper role of the state in the countryside, and of the need for a comprehensive approach to the food system, from production through consumption.

Processing

The processing activities were handled by four other CONASUPO subsidaries (ICONSA, MINSA, TRICONSA, and LICONSA) and three additional SOEs.

ICONSA: Food Processing. ICONSA produced significant shares of most of the processed products in the SAM basic market basket of food. Sales in 1980 were 51% over 1979, and in 1981 they were 26% over 1980. Volume of production increased 27% in 1980 and 13% in 1981, reaching 831,000 tons. Substantial investment increased ICONSA's share of national food-processing capacity during SAM. By 1981 its share of oilseed-milling capacity rose to 16.5%, oil refining to 21%, and vegetable fat to 14%. ICONSA's share of wheat flour production grew to 8.9% of the national market, and maize flour to 8.7%. By 1982 ICONSA estimated that its products reached 6 million largely low-income consumers, through IMPECSA and DICONSA channels (CONASUPO, *Sistema C,* May-June 1982).

MINSA: Maize Flour. Between 1980 and 1982, MINSA production grew at 5%, from 285,000 to 300,000 tons. This increased its share of the maize flour market from 27.9 to 28.5%. The share of MINSA production distributed through IMPECSA and DICONSA increased slightly to 23.5% of production in 1982 (CONASUPO, 1982a:46).

TRICONSA: Bread. Total bread production increased 14% between 1979 and 1982. After a 6% drop in TRICONSA production in 1980, which cut the market share from 7.7 to 7%, by 1981 production had increased 15%, bringing the market share to 7.8% (CONASUPO, 1982b: annex 22).

LICONSA: Milk. Milk consumption continued its rapid growth into the SAM period, during which LICONSA's share of the market increased substantially. While consumption of rehydrated and pasteurized milk increased at over 4% annually during SAM, LICONSA's share of sales rose to 17% in 1980 and 23% in 1981. In 1980 approximately 1.0 million liters per day were reconstituted from powdered milk, enriched, and sold to selected low-income families through 370 special stores in Mexico City at 29% of the price of commercial milk (CONASUPO, 1980). LICONSA production of concentrated milk increased 174% from 1979 to 1981, more than doubling its share of the market from 21% to 44% (CONASUPO, 1982b: annex 22). This rapid growth increased the deficit in national production. In 1980, for example, imports increased 148% over 1979 (Santoyo and Urquiaga, 1982).

Since milk was one of the basic products targeted for self-sufficiency, the SAM strategy considered LICONSA "an efficient mechanism . . . to stimulate primary production" (CONASUPO, *Sistema C,* Jan.-Feb. 1982). LICONSA promoted fresh-milk production within the context of SAM's encouragement of vertically integrated food systems; it expanded its network of refrigerated collection centers to forty and provided support prices and inputs to stimulate small- and medium-sized dairy producers. LICONSA's role within national production grew; the amount of fresh milk collected increased 140% in 1981 and another 80% in 1982 (CONASUPO, 1982b: annex 26).

ALBAMEX, FERMEX: Animal Feed. After a slight drop in 1981, ALBAMEX's production of balanced feed reached 420,000 tons in 1982, 20% over 1980. The increase in grain production during SAM led to an increase in ALBAMEX's capacity utilization. ALBAMEX's growth was constrained, however, by its inability to break into the most important market segment for feed—poultry. In order to compete with the transnationals' completely vertically integrated line of poultry stock and inputs, ALBAMEX planned to branch out into the provision of poultry stock through its new subsidiary, NUTRIMEX.

FERMEX was created in 1981 as a joint venture between ALBAMEX and Japanese capital (40%). It was designed to lessen Mexico's dependence on foreign technology in the livestock sector by producing two amino acids, primarily lycine, for the feed industry.

NUTRIMEX: Fortified Foods. NUTRIMEX considered itself "100% SAM"; it was created in direct response to SAM. Its goal was to improve the nutritional content of the Mexican diet. It began food-enrichment projects to target specific zones and commodities. Yucatán was the first state to receive sugar fortified with vitamins A and C and niacin. Since SOEs process most Mexican sugar, access was not a problem. The technology to produce fortified sugar, which is no different in color or flavor, was available and not overly complex. By 1982 NUTRIMEX had the production capacity to fortify 20% of national maize flour production with tryptophan, an amino acid that maize lacks. The fortified flour was sold through the DICONSA network. Unlike sugar processing, maize processing is highly decentralized and dominated by the private sector, making distribution of fortified maize flour more difficult. NUTRIMEX's other main food product was a rehydratedable powdered baby food made from soy protein concentrate, imported nonfat dry milk, and sugar.

NUTRIMEX also adopted a strategy to develop breeder stock in poultry and swine, but this was stalled by the 1982 budget cuts. The goal had been to supply, eventually through small producers, fresh milk and 10% of the national demand for meat, with an emphasis on the "low end" of the market. SAM planners hoped that if SOEs could offer a vertically integrated line of livestock inputs, then dependence on transnational corporations could be lessened.

NUTRIMEX distributed its food products through two channels. Low-income and rural consumers were reached through small stores supplied or operated by DICONSA and IMPECSA. NUTRIMEX also sold through private supermarket chains. Although intended to benefit low-income people, it tried to avoid the perception of its products as inferior goods. Nutrimex intended to show the viability of manufacturing and marketing nutritionally fortified foods, in the hope that if its products were competitive, fortification would be adopted by the private sector.

Patterns of SOE Responses

In this section we categorize SOE responses during the SAM period and discuss the determinants of these responses (see Table 4.2). These SOE actions were not always entirely due to SAM: sometimes they were responses to other pressures. Responses to SAM were both qualitative and quantitative. Qualitative change is here defined as the creation of a totally new SOE activity, a major change in the clientele served by the existing activity, or a major change in the way economic activity is carried out (i.e., administrative procedures). Quantitative change is defined as an increase in output, sales, market share, or other indicators of economic activity during the period 1980–1982.

A comparison of SOE actions before and after the adoption of the SAM policy shows that most food sector SOEs increased their level of activity, some quite substantially, but without changing their basic orientation. Others did change the nature of their activities quite fundamentally during the López Portillo administration, but several had changed their orientation well before SAM was adopted (e.g., IMPECSA, DICONSA). Others (e.g., BANRURAL, BORUCONSA-PACE) increased their scope of activity dramatically without neglecting their traditional clientele, but because this expansion increased attention substantially to new groups, it has to be considered both qualitative and quantitative.

The designation of qualitative change does not imply structural or permanent change. The degree to which structural change occurred is much more difficult to assess and would probably be made clearer with an analysis of the nature of the post-1982 cutbacks in both amount and nature of SOE activity. NUTRIMEX, for example, was unable to follow through with its planned expansion in direct livestock production because of budget cuts. BANRURAL, under pressure to lend only to "creditworthy" producers, cut back access to credit substantially in 1983. The degree of structural change could be measured by future examination into which of the qualitative SAM changes remained intact after 1982.

Table 4.2. Variation in SOE response to SAM

Quantitative change only	Quantitative and qualitative change
FERTIMEX	PRONASE
SIDENA	BANRURAL
PRONAGRA	FIRA
ANDSA	ANAGSA
IMPECSA	FTA
ICONSA	BORUCONSA
MINSA	DICONSA
TRICONSA	LICONSA
ALBAMEX	FERMEX
	NUTRIMEX

Our analysis of the SOE responses are based on a combination of recorded data on 1980–1982 SOE actions and structured interviews with direct participants in SAM's formulation and implementation. Among these participants are high-level managers of three-fourths of the principal SOEs active in the food sector. We evaluate the factors facilitating and inhibiting implementation in terms of the three categories used earlier: temporal context, bureaucratic and political incentives, and availability of economic resources. There are no precise boundaries between these categories; each feeds back into the others, as we see below.

Temporal Context. The 1979 grain shortfall, as important as it may have been at the level of policy making, did not create a "crisis-response context" that in turn spurred the SOEs' propensity to act. In the eyes of most SOE managers, 1979 was simply another bad crop year, natural to rain-fed agriculture.

On the inhibiting side, the timing of the decision to adopt the SAM strategy caused three kinds of problems. First, there were technical constraints that limited SOEs' ability to act. Fertilizer production capacity, for example, cannot be rapidly increased on short notice. Second, the short time frame limited the SAM strategists' ability to consult fully at the operational level of the SOEs. Where there was consultation before the March 1980 announcement, SOE response was facilitated. But there were missed opportunities and inefficiencies where consultation did not take place, as in the placement of the shared-risk crop insurance program in BANRURAL rather than ANAGSA, or in the financial cost of not planning ahead with FERTIMEX. Third, the adoption of the SAM strategy with only two and one-half years remaining in the administration limited the possibility of SOE structural changes. Furthermore, where fundamental changes were necessary to achieve SAM goals, the short time frame also reduced the incentive to make them, since most top personnel change with the change in administration.

Bureaucratic and Political Incentives. Regarding bureaucratic incentives, there was unanimity that the presidential priority SAM received was crucial. The presidential announcement of SAM in a strongly nationalist context helped to overcome some of the problems caused by the lack of consultation at the operational level. There was, as a result, a consensus around the desirability of national food self-sufficiency (although there was strong debate after 1982 about its feasibility and cost). This meant that the food sector SOEs all proclaimed their implementation of SAM. SAM's political life was prolonged well into the 1982 lame-duck period by the success of the 1981 harvest, but it ran into serious problems when the 1982 crop shortfall became apparent and a new round of massive grain imports was required. Since so much political and economic capital was invested

in pursuit of aggregate production increases, the program as a whole was judged in the context of unmet 1982 quantitative goals.

Because the presidential initiative did not extend to changes in the operations of particular SOEs whose orientations were not necessarily consistent with SAM, the SAM label was often put on activities associated with pre-SAM food policy. This brings us to the point at which the issue of the importance of the presidential blessing overlaps with the second major bureaucratic factor affecting SOE response: previous SOE policy orientation. SARH, for example, was concerned not only because SAM could be seen as a bureaucratic competitor, but also because SARH had its own definite policy agenda, one that differed in many important ways from SAM's. SARH's approach tended to emphasize production efficiency and commercial producers, while SAM planners tended to be more interested in improving income distribution. As a result of the way SAM was translated from the drawing board to the countryside, some SOE administrators and food system analysts considered SAM to have been, in effect, co-opted by SARH.

The SOEs that responded most strongly to SAM were those whose own orientation coincided with, or at least complemented, the SAM strategy. The growth of DICONSA, IMPECSA, and BORUCONSA-PACE reflected their increased political importance resulting from policy orientations that coincided closely with the SAM strategy. The most important SOE that responded strongly with a complementary but distinct orientation was ANAGSA. The increased emphasis on agriculture after 1980 permitted ANAGSA to get the legislature to approve the only law not initiated by the presidency. That law changed ANAGSA's procedures, increased insurance coverage, and shifted much of the financial burden of nonpayment of crop loans from the producers and BANRURAL to ANAGSA.

The third major political factor inhibiting implementation of SAM was the lack of participation by the target group. Organized pariticipation by small producers would have created political incentives for SOEs to give them increased attention, as well as disincentives for SOEs that neglected peasant needs. Had new peasant credit recipients received increased BANRURAL attention because of a basic change in SOE procedures that integrated them into allocation decisions, the target group's vulnerability to the post-1982 cutbacks would have been less. Instead, it appears that they received increased attention only because of a temporary availability of extra resources from the central government.

Economic Resources. SOEs with policy orientations different from SAM's, particularly those that served primarily producers other than peasants who sow grain, were not forced to abandon their more privileged constituencies, either politically or economically. The policy was to proclaim "We are all SAM" rather than to encourage divisiveness between small and large landowners, or between peasants and ranchers. FIRA and

BANRURAL, for example, were able to respond to SAM's change in priorities by changing the distribution of their growing budgets, not by reducing or substantially changing their credit-allocation process. BANRURAL's percentage of crop loans for grain producers by 1982 was not very different from what it had been at the beginning of the administration, but by increasing the amount and importance given to agricultural credit, SAM was able to influence the credit's priorities.

Central government transfers to food sector SOEs permitted the SAM policy makers to choose indiscriminate rather than targeted subsidies, which in turn created an important incentive for SOE implementation of SAM. Subsidies with access limited on the basis of need, however, would have reduced SAM's political acceptability to the beneficaries of previous agricultural policy, that is, wealthier commercial producers. Targeted subsidies would also have required fundamental changes in the structures and procedures of SOEs whose pre-SAM orientation was designed to benefit other types of producers. Whatever the combination of short-term political and economic pressures to choose indiscriminate subsidies as a policy tool, the choice left the SAM strategy extremely vulnerable to the budget cuts that began in 1981 and 1982. The data surveyed above show that almost all SOE activity grew less in 1982 than in 1981. The drop in real prices offered for basic grains was perhaps most striking, hurting those least able to switch to more profitable crops, the small peasant producers. Those qualitative changes that were carried out, such as the broadening of credit and insurance access to peasants, except for those embodied in law, were particularly vulnerable to budget cuts. This was precisely because of the implementation strategy of adding on new groups instead of changing the structures and procedures through which SOEs allocated goods and services in the food sector.

Conclusions and Implications for Policy Implementation

From our research and findings one can draw some general conclusions and implications regarding the use of SOEs as implementers of Mexican food policy.

Responsiveness. The Mexican food sector SOEs demonstrated a clear capacity to respond significantly to major shifts in food policy. They were able to greatly augment their levels of activity in terms of production and delivery of goods and services and the number of clients served. The SOEs also showed that they could respond relatively quickly.

The SOEs should not be viewed, however, as instruments that respond automatically, willingly, or even efficiently. Their responsiveness is shaped by the positive and negative incentives for change that they face. Each SOE has its own institutional agenda, and its managers have individual priorities. Any new policy thrust impinges on these institutional

and individual agendas and priorities, and the degree of congruence shapes the responsiveness. It should also be recognized that SOEs have a natural tendency to bend the policy in the implementation process toward their own inclinations, which may deviate from the original intentions of the policy makers. This implies that policy makers should attempt to assess the degree of congruence of the policy with the SOEs, shape a set of incentives to motivate adherence, and devise a control system that can monitor implementation.

Conclusions regarding the efficiency with which the SOEs can implement food policy cannot be derived from our research. Chapter 11, on production and costs of SAM, addresses the general issue. Anecdotal evidence points to examples of corruption and wastefulness in implementing SAM, although these may have been insignificant compared to the magnitude of the program. Nonetheless, they do point to the need for a strong audit and control system for the financial aspects of SOE operations.

Political Support. Within the Mexican political system a major shift in food policy strategy must have strong and visible presidential support if it is to elicit a positive response from the SOEs. Although SOEs operate to a significant degree as autonomous economic entities, they and their managers, who are political appointees rather than tenured civil servants, are quite responsive to presidential priorities. Food policy emanating, for example, from the secretary of agriculture, will simply not elicit the same degree of response from the SOEs as that coming from the presidency.

Economic Resources. The SOEs do have the capacity to transform increased economic resources into increased goods and services. Added financial resources allow SOEs to implement new policies less painfully. The SOEs can increase their services to the new priority group (small producers) without decreasing their services to a traditional clientele (larger farmers). This facilitates the SOE's task of managing its multiple constituencies and therefore its receptivity toward the new policy.

The negative side is the fiscal burden. When the subsidies that are channeled through SOEs are generalized rather than targeted, the government pays a heavy price. On grounds of social equity there is little justification for subsidizing higher-income producers or consumers. Politically it may be deemed necessary, but its costs can be severe. If the government decides to institute selective subsidies, then it should expect possible resistance from those SOEs that may be forced to reduce benefits to traditional clients.

Timing. The timing of policy shifts affects the SOE's efficiency and motivation. The shorter the lead time between the policy decision and its implementation, the greater the likelihood of inefficiency. Similarly, the greater the divergence of the new food policy from the old, the more chance for problems in the adjustment process. New strategies generally require new structures or administrative procedures in order to be implemented effectively and efficiently. The SOEs require time to make such organizational changes.

In addition to the lead-time effects on efficiency, there is the impact on SOE behavior due to the timing of the policy change in relation to the political cycle. The later the policy is announced during the six-year presidential term, the more uncertain is the SOE commitment to the change. There is a tendency to become more risk-averse or cautious as the change in administration moves closer. In part this is because of the traditional lack of continuity of policies across *sexenios,* and therefore the reluctance to be overly identified with a policy that might not be acceptable to the incoming president. Thus, in terms of SOE response, the earlier in the political cycle one can launch the new strategy, the better.

Participation. To help ensure the effectiveness and efficiency of the implementation of policy, SOEs should be involved in the process of formulating policy. As key implementers, SOEs have a clearer understanding of the realities in the field, and these realities should be considered in policy formation to ensure that the proposed actions are feasible. Macro policy must be fused with micro realities, and SOEs can help in the planning of the fusion.

Not only should the top managers of SOEs be consulted, but the operation-level officials as well. Participation by SOE personnel increases their commitment to the policy and thereby makes adherence more probable as well as more efficient.

Effective policy implementation also requires joint understanding and commitment between SOEs and clients. If the policy involves a shift in attention from one clientele to another, however, the mobilization and participation of the new beneficiaries in program decision making and operations may be essential to implementing the policy change. This may involve friction and conflict in the struggle to develop new modes of interaction, but if the clientele are to change, so too must the SOEs. In the end, it is the degree of commitment and consensus among policy makers, SOEs, and clients that significantly determines the effectiveness of food policy implementation.

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Preface

The seeds for this book were planted twelve years ago, when our paths crossed for the first time. We were riding similar currents of concern about rural development and food policy in Mexico and elsewhere. Over the years, as fellow observers, advisers, academics, and implementers as well as friends, we have struggled to understand the problems, processes, and possibilities of food systems. When the opportunity arose to mount a study of the recent experience of food policy formation and implementation in Mexico, particularly that of the Sistema Alimentario Mexicano (SAM—Mexican Food System), we accepted it with much enthusiasm, and with some trepidation: enthusiasm, because we perceived an opportunity to make a meaningful contribution to increased understanding of food policy, both in Mexico and elsewhere; trepidation, because of the difficulty of trying to shed additional light on the SAM experience, which had already been in the political and intellectual spotlight during the entire three years of its existence (1980–1982).

The undertaking was a major one, requiring strong institutional support and extensive intellectual collaboration from many colleagues inside and outside Mexico. A shared conviction that a scrutiny of the SAM experience was important to Mexico and to the international food community provided the cohesion and commitment essential to a collaborative effort.

Financial and material support was provided by Harvard University's Graduate School of Business Administration, the Sociedad Mexicana de Planificación (SMP—Mexican Planning Society), and El Comité Promotor de Investigaciones para el Desarrollo Rural (COPIDER—Committee to Promote Rural Development Research). The research was part of a global food policy project carried out in conjunction with the Harvard Business School's 75th Anniversary Research Colloquium Series. It also was part of the larger food and peasant research agendas of the SMP and