4. Brazilian and Mexican Small-Scale Enterprises: A Case Study

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Introduction

In Asian NIEs, such as Korea and Taiwan, the relative economic share of small- and medium-scale enterprises (SMEs) declined during the import-substitution industrialization periods. With protection mainly benefiting large-scale enterprises (LEs), the development of SMEs was interrupted. However, the relative position of SMEs improved during the 1980s because of trade liberalization policies, as well as governmental emphasis on the development of SMEs, primarily through the formation of supply chains which integrated SMEs with LEs.

Currently the relative share of SMEs is shrinking in Latin America. If Asian NIEs prove anything, the shift of policies from import substitution to outward-oriented trade liberalization will lead to a more balanced industrial structure among LEs, medium-scale enterprises (MEs), and small-scale enterprises (SEs).

As liberalization processes continue, Latin American countries are beginning to emphasize quality and productivity which are directly related to in-house production methods, as well as institutional arrangements such as subcontracting. As a result, the size and structure of enterprises and industries becomes extremely important in the industrialization process.

Facing a rapid transition to an open economy, how do entrepreneurs respond in terms of production, procurement of raw materials, labor, finance, management, marketing, technology, and institutional structure? Little information is available about manufacturing industries, especially SEs, in Latin America. And without adequate information, policies lose their foundation.

This chapter examines the SEs of two countries—Brazil and Mexico—using information procured through a case study. Brazil and Mexico were chosen for this study because of the inherent contrast in their respective economic histories, development

strategies, and structures. Mexico is moving ahead with liberalization while Brazil is stagnating.

The evolution of SEs is examined first, followed by an exploration of governmental SE policy. Next, two surveys of SEs—one conducted in Mexico City, the other in São Paulo—are introduced and analyzed. Finally, with the findings of the surveys noted, policy suggestions, reflecting East Asia's experiences, will be discussed.

Aside from improving in-house production measures, institutional arrangements such as subcontracting appear to be the best methods to further economic development. The experience of the subcontracting exchange service (*bolsas de subcontratación*) in Brazil and Mexico is reemphasized.

1. Evolution of Small-Scale Enterprises in the Manufacturing Industry

Structural Changes

Historical position of SEs

Between 1970 and 1985, the relative importance of SEs[1] both in the Brazilian and Mexican manufacturing sectors declined. According to an industrial census of the two countries, the SE share of the sector decreased both in terms of employment and gross sales. For example, the percentage of SE employment to total employment in Brazil fell from 44 per cent in 1970 to 39 per cent in 1985. Likewise in Mexico, the

TABLE 4–1
STRUCTURAL EVOLUTION OF THE MANUFACTURING INDUSTRY: BRAZIL

(%)

	By Size	1970	1975	1980	1985
SEs	(5–99 persons)				
	Establishments	93.0	92.3	92.0	90.7
	Employment	44.4	44.4	43.4	38.8
	Gross sales	36.3	33.8	29.2	23.5
MEs	(100–249 persons)				
	Establishments	4.4	4.3	5.3	6.0
	Employment	18.5	15.4	20.7	21.5
	Gross sales	21.1	18.0	23.5	21.6
LEs	(250 and over)				
	Establishments	2.6	3.4	2.7	3.3
	Employment	37.1	40.2	35.9	39.7
	Gross sales	42.6	48.2	47.3	54.9
Total					
	Establishments	100.0	100.0	100.0	100.0
	Employment	100.0	100.0	100.0	100.0
	Gross sales	100.0	100.0	100.0	100.0

Sources: Fundação Instituto Brasileiro de Geografía e Estatística (IBGE), *Censos econômicos: Censo industrial*, 1970, 1975, 1980, and 1985 editions.

TABLE 4–2
STRUCTURAL EVOLUTION OF THE MANUFACTURING INDUSTRY: MEXICO

(%)

	By Size	1970	1975	1980	1985
SEs	(6–100 persons)				
	Establishments	87.9	86.9	85.1	87.9
	Employment	34.5	30.2	24.7	26.8
	Gross sales	24.7	21.6	16.0	16.5
MEs	(101–250 persons)				
	Establishments	7.6	7.9	8.5	7.1
	Employment	20.4	18.8	16.0	17.0
	Gross sales	20.5	19.4	13.6	16.8
LEs	(251 and over)				
	Establishments	4.5	5.2	6.4	5.0
	Employment	45.1	51.0	59.3	56.2
	Gross sales	54.8	59.0	70.4	66.7
Total					
	Establishments	100.0	100.0	100.0	100.0
	Employment	100.0	100.0	100.0	100.0
	Gross sales	100.0	100.0	100.0	100.0

Sources: Instituto Nacional de Estadística, Geografía e Informática (INEGI), *Censo industrial,* 1970, 1975, 1980, and 1985 editions.

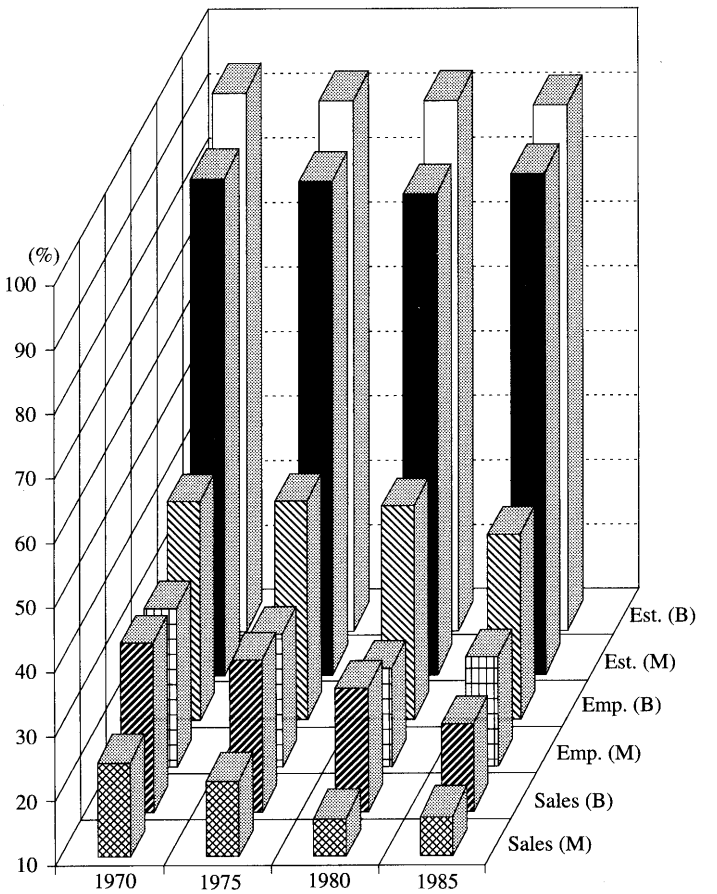
SE employment percentage fell from 35 per cent in 1970 to 25 per cent in 1980, and bounced back slightly to 27 per cent in 1985.

As for gross sales, the SE percentage of total sales dropped at an even faster rate, from 36 per cent to 24 per cent in Brazil, and from 25 per cent to 17 per cent in Mexico (see Tables 4–1 and 4–2; also Figure 4–1). Yet during this fifteen-year period (1970–85), the percentage of SE establishments, in terms of the total number of establishments, did not change, remaining in the 91–93 per cent range in Brazil and the 85–88 per cent range in Mexico.

While the influence of SEs waned, the significance of LEs[2] grew. In Brazil the LE percentage of total gross sales increased about 12 points, reaching 55 per cent in 1985. At the same time, however, the percentage of LE employment to total employment remained unchanged at around 38 per cent. Employment creation by LEs was limited due to the utilization of capital-intensive production technology, the use of which was influenced by capital-goods promotion policies. Capital-intensive patterns of development were especially pronounced during the 1970s (444 persons per establishment by LEs in 1975 as against 552 in 1985).

In Mexico the LE percentage for both employment and gross sales increased substantially between 1970 and 1980, from 45 per cent to 59 per cent for the former, and from 55 to 70 per cent for the latter. This reflected Mexico's economic policies concerning priority-sector development as well as the use of the country as a production base in the globalization strategies of multinational companies.

Fig. 4–1. Evolution of SEs: Establishments, Employment, and Sales: Brazil and Mexico



Source: Tables 4–1 and 4–2.
Note: (B)=Brazil, (M)=Mexico.

Turning to MEs in Brazil and Mexico, the percentage for MEs in all three categories (i.e., employment, gross sales, and establishments) are mixed. In Mexico, the percentage for MEs in employment and gross sales categories dropped between 1970 and 1980, while it increased slightly in the establishments category during the same period. In Brazil, the three categories did not show clear trends.

In sum, Brazilian data clearly shows that the relative importance of SEs decreased between 1970 and 1985, particularly in gross sales. Mexican SEs showed the same trend between 1970 and 1980. During the 1970s and early 1980s, both Brazil and Mexico were pursuing import-substitution programs. The decline of SEs and the concomitant rise of LEs reflected these policies which allowed LEs to invest through tax

and financing incentives. The development of SEs and/or MEs was neglected because existing measures were not adapted to these sectors. Small- and medium-scale enterprises themselves expected little help from their respective governments. Changes which took place in the Mexican SEs in 1985 reflected policy changes toward liberalization.

Sectoral distribution

According to the 1985 industrial census, SEs (1–99 persons) in Brazil accounted for 95 per cent of the total manufacturing establishments (188,183) surveyed (see Table 4–3). Small-scale enterprises were concentrated in light industries such as nonmetallic minerals (98.5 per cent); wood, cork, and furniture (98.2 per cent); food, beverages, tobacco (96.9 per cent); and paper, printing, and publishing (95.1 per cent).

In terms of employment, Brazil's manufacturing sector tallied 4,639,628 persons (average per month) in 1985. The machinery and equipment subsector was the heaviest contributor to employment (21.6 per cent), which supports the fact that the Brazilian government emphasized capital-goods industries. The traditional subsectors followed: textile, apparel, and leather (20.6 per cent); and food, beverages, and tobacco (15.2 per cent).

Brazilian SEs employed 1,915,160 persons in 1985, approximately 41 per cent of the total manufacturing employment. The percentage of SE employment was heaviest in wood, cork, and furniture (68.6 per cent); nonmetallic minerals (64.5 per cent); and food, beverages, and tobacco (48.4 per cent). The lowest employment percentage was in transport equipment (18.9 per cent). Generally, subsectors such as chemicals and basic metals, which enjoy the benefits of economies of scale, had few supporting industries or SEs.

Looking at total gross sales, Brazil's manufacturing industry sold goods worth 1,061.9 trillion cruzeiros (approximately U.S.$171.3 billion), of which SEs accounted for 24 per cent or 255.1 trillion cruzeiros (U.S.$41.1 billion). Large sales results were recorded by the chemical, petrochemical, and plastics subsector, followed by the machinery and equipment, and the food, beverages, and tobacco subsectors. The SE percentage was highest in wood, cork, and furniture (53.2 per cent); nonmetallic minerals (37.5 per cent); and food, beverages, and tobacco (34.6 per cent). The lowest recorded percentage was once again transport equipment (6.5 per cent).

In Mexico, SEs (0–100 persons) accounted for 96 per cent of the total manufacturing establishments (129,401) surveyed in 1985 (see Table 4–4). Small-scale enterprises were concentrated in subsectors such as wood, cork, and furniture (98.5 per cent); food, beverages, and tobacco (97.5 per cent); and nonmetallic minerals (96.3 per cent). The percentage of SE establishments was low in the chemical, petrochemical, and plastics subsector, and in the basic metals industries.

In terms of employment, Mexico's manufacturing industry employed 2,576,775 persons, of which SEs accounted for 38 per cent or 979,400 persons. The most important contributor to employment was the metals and machinery subsector (27.3 per

TABLE 4–3

MANUFACTURING INDUSTRY BY SUBSECTOR: BRAZIL (Results of the 1985 Industrial Census)

	Establishments			Employment			Total Gross Sales		
	No.	SEs	SEs' Share (%)	Persons (Average)	SEs	SEs' Share (%)	Amount (Cr$ Billion)	SEs	SEs' Share (%)
Manufacturing industry	188,183	178,768	95.0	4,639,628	1,915,160	41.3	1,061,884	255,102	24.0
Food, Beverages, Tobacco	42,766	41,460	96.9	704,679	341,187	48.4	186,114	64,417	34.6
Textiles, apparel, leather	28,556	26,468	92.7	952,415	325,706	34.2	114,271	32,689	28.6
Apparel	22,361	21,214	94.9	593,818	235,571	39.7	46,111	14,812	32.1
Wood, cork, furniture	29,888	29,364	98.2	367,092	251,999	68.6	26,071	13,866	53.2
Paper, printing, and publishing	9,860	9,380	95.1	236,030	112,767	47.8	43,724	11,610	26.6
Chemicals, petrochemicals, plastics	8,473	7,359	86.9	439,573	158,837	36.1	279,647	61,099	21.8
Plastic products	2,616	2,302	88.0	123,889	51,812	41.8	20,443	7,060	34.5
Nonmetalic mineral products	27,856	27,441	98.5	326,705	210,667	64.5	32,034	12,005	37.5
Basic metal, metal products	17,751	16,710	94.1	473,013	169,685	35.9	148,388	21,208	14.3
Machinery and equipment	17,387	15,218	87.5	999,012	276,185	27.6	213,153	31,731	14.9
Electrical & electronic apparatuses	3,707	3,108	83.8	250,621	63,196	25.2	60,721	9,169	15.1
Transport equipment	3,754	3,320	88.4	269,115	50,796	18.9	79,348	5,122	6.5
Other manufacturing industries	5,646	5,368	95.1	141,109	68,127	48.3	18,482	6,477	35.0

Source: IBGE, *Censos econômicos de 1985: Censo industrial* (Rio de Janeiro, 1991).

Notes: 1. Excluding those establishments that did not report the number of employees and those activities that indirectly assist production.

2. SEs: small-scale enterprises with 1–99 persons.

TABLE 4–4

MANUFACTURING INDUSTRY BY SUBSECTOR: MEXICO (Results of the 1985 Industrial Census)

	Establishments			Employment			Total Gross Sales		
	No.	SEs	SEs' Share (%)	Persons (Average)	SEs	SEs' Share (%)	Amount (Pesos Million)	SEs	SEs' Share (%)
Manufacturing industry	129,401	123,830	95.7	2,576,775	979,400	38.0	19,131,837	3,266,773	17.1
Food, beverages, tobacco	46,864	45,691	97.5	516,489	214,351	41.5	4,586,315	962,987	21.0
Textiles, apparel, leather	15,794	15,113	95.7	388,157	217,539	56.0	1,543,094	593,663	38.5
Apparel	8,368	8,308	99.3	106,509	88,124	82.7	257,622	190,036	73.8
Wood, cork, furniture	15,275	15,052	98.5	122,814	79,399	64.6	324,298	167,592	51.7
Paper, printing, and publishing	6,891	6,526	94.7	128,531	57,388	44.6	901,574	173,985	19.3
Chemicals, petrochemicals, plastics	4,666	3,594	77.0	438,791	84,672	19.3	4,419,641	470,522	10.6
Plastic products	1,791	1,479	82.6	81,501	36,318	44.6	453,551	128,221	28.3
Nonmetalic mineral products	9,319	8,970	96.3	136,330	53,945	39.6	952,804	123,265	12.9
Basic metal industries	1,025	790	77.1	118,856	14,529	12.2	1,461,910	54,939	3.8
Metal, Machinery	28,414	26,986	95.0	702,844	243,754	34.7	4,843,412	683,162	14.1
Electrical & electronic apparatuses	2,122	1,789	84.3	230,509	67,728	29.4	1,145,287	165,567	14.5
Automobile, parts	1,216	1,001	82.3	145,933	18,428	12.6	2,047,415	62,730	3.1
Other manufacturing industries	1,153	1,108	96.1	23,963	13,823	57.7	98,789	36,658	37.1

Source: INEGI, *XII censo industrial, 1986: Datos por rama de actividad y por entidad federativa, referentes a 1985* (Aguascalientes, 1991).

Note: SEs = small-scale enterprises with 0–100 persons.

cent), followed by food, beverages, and tobacco (20.0 per cent); and chemicals, petrochemicals, and plastics (17.0 per cent). This corresponded to Mexico's comparative advantage in petroleum. The percentage of SE employment was highest in subsectors such as wood, cork, and furniture (64.6 per cent) and textiles, apparel, and leather (56.0 per cent). The SE employment percentage in the apparel subsector was 82.7 per cent, the highest among all subsectors. (This was in sharp contrast to the 39.7 per cent of SE employment in Brazil's apparel subsector.) The lowest recorded SE employment percentages were in basic metals (12.2 per cent); automobiles and automotive parts (12.6 per cent); and chemicals, petrochemicals, and plastics (19.3 per cent), all primarily due to the economies of scale enjoyed by these subsectors.

In total gross sales, the Mexican manufacturing industry sold goods worth 19,131.8 billion pesos (approximately U.S.$74.5 billion), of which SEs accounted for 17.1 per cent or 3,266.8 billion pesos (U.S.$12.7 billion). The largest contributor to sales was the metals and machinery subsector (25.3 per cent), followed by food, beverages and tobacco (24.0 per cent); and chemicals, petrochemicals, and plastics (23.1 per cent). (This order, not unsurprisingly, corresponded to that of employment.) The highest SE percentage of gross sales was in apparel (73.8 per cent), while the lowest was in automobiles and automotive parts (3.1 per cent).

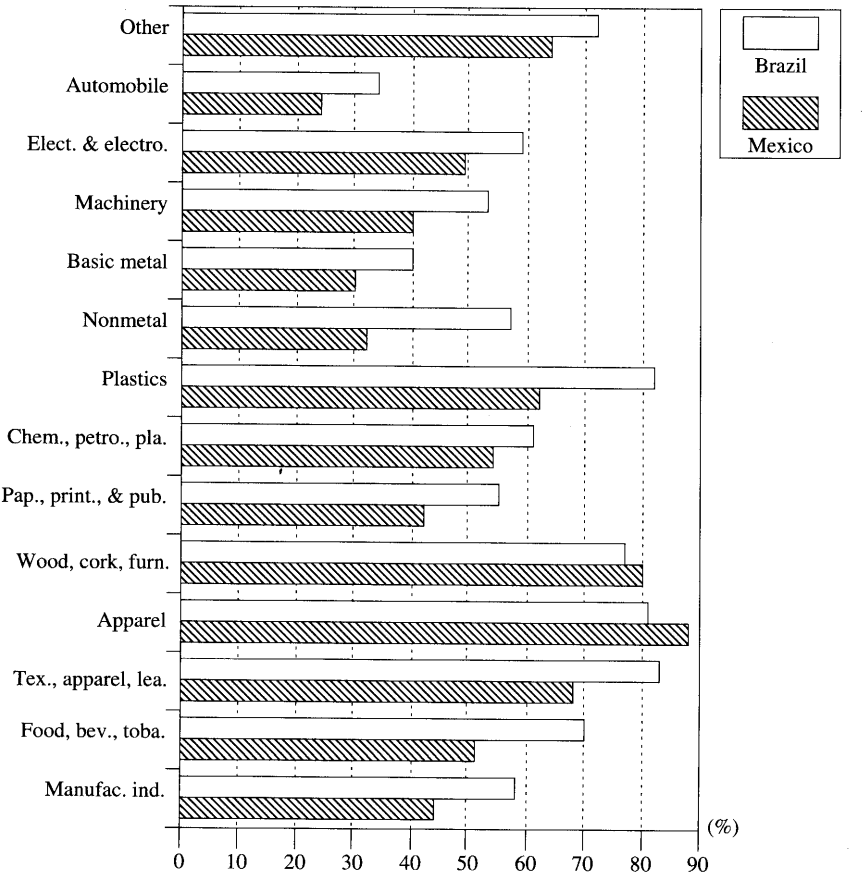
In both Brazil and Mexico, SEs participated primarily in the light, traditional subsectors such as textiles, food processing, wood products, and nonmetallic minerals. Participation by SEs remained low in subsectors which required economies of scale. In this context, supporting industries (or supply chains) of capital goods and consumer durable goods have yet to develop and mature in Brazil and Mexico.

In 1985, for example, the Japanese automobile subsector, including automotive parts and components, had 15,614 establishments employing 774,200 persons. Subsector sales totaled U.S.$132.2 billion according to the *Kōgyō tōkei hyō*, 1985 [Census of manufactures, 1985].[3] Approximately 80 per cent of the subsector SMEs were involved in subcontracting systems.

Sales productivity

In both Brazil and Mexico, the productivity[4] of SEs in all subsectors was lower than each subsector's average productivity (see Figure 4–2). Looking at the manufacturing sector, Brazil's productivity (58.2 per cent) was higher than Mexico's (44.9 per cent). Brazil had high productivity ratios in textiles, apparel, and leather (83.7 per cent); plastics (82.6 per cent); and apparel (81.0 per cent), while Mexico enjoyed high ratios in apparel (89.2 per cent) and wood, cork, and furniture (79.9 per cent), the only two categories in which it had higher ratios than Brazil. Brazil recorded low ratios in the transport equipment subsector (34.2 per cent), and in basic metals and metal products (39.8 per cent), while Mexico had low ratios in the automobile and automotive parts subsector (24.3 per cent), and basic metals (30.7 per cent). These statistics once again demonstrate that the productivity gap of SEs was wide in those subsectors in which economies of scale are important, and where subcontracting systems are immature.

Fig. 4–2. SEs' Share in Sales Productiviry (Gross Sales / Employment)



Sources: Table 4–3 and 4–4.

2. Policies for Small-Scale Enterprises

Mexico

Incentives for the promotion of small-scale enterprises

During Mexico's period of import-substitution industrialization, the size of an industry was usually not taken into account when policy was formulated. Large-scale industries were implicitly encouraged through fiscal and financial incentives.

It was only in the late 1970s, with the national plan for industrial development, 1978–82, that a program was targeted at sectoral development and emphasized the importance of SEs. Under this framework, the integral assistance program for small- and medium-scale industries (Programa de Apoyo Integral para la Industria Pequeña y Mediana, PAI) was launched in 1978. It aimed at coordinating different credit lines already in existence and promoting interrelationships with institutions involved in

technology. The objective was to offer an integrated package of assistance to SMEs, support that had previously been provided separately.

The PAI program also promoted a subcontracting program called the *bolsas de subcontratación* (subcontracting exchange service). Collaborating with the National Chamber of the Manufacturing Industry (CANACINTRA, Cámara Nacional de la Industria de Transformación), the service provided information about SMEs which wanted to initiate subcontracting relationships with larger enterprises. The first *bolsas* were established in 1982 with SMEs involved with metalworking and machinery in the two cities: Irapuato and Guadalajara. The *bolsas* also acted as an information exchange, particularly on technological issues.

In 1985 a program called the integral development program for small- and medium-scale industries was announced. Its intention was to increase SME efficiency and to improve access to intermediate inputs, machinery and equipment, as well as financial resources. In 1988 the federal law for promotion of micro-enterprises was promulgated to help nascent micro-enterprises by creating a register of these enterprises, and by assisting the interaction between research institutions and micro-enterprises.

Under the Salinas government, the modernization and development program for micro-, small-, and medium-scale industries 1991–94 was announced in 1991 [45]. Since the liberalization of trade and investment was being actively pursued, the program was intended to modernize micro-enterprises and SMEs. Emphasis was placed on productivity and quality improvement as well as on the internationalization of these industries. The main features of the program can be summarized as follows:

(a) the formation of consortiums to: improve access to financial resources; better acquire raw materials, intermediate inputs, and technology; improve access to domestic as well as international markets;
(b) the strengthening of the subcontracting exchange services network (*bolsa* system);
(c) the improvement of credit systems to finance SMEs, particularly through credits provided by NAFIN (Nacional Financiera S.N.C.) and Bancomext (Banco Nacional de Comercio Exterior) (The creation and extensive use of credit unions was given special attention.); and
(d) the increased absorption of technology by these industries through the national laboratory for industrial promotion (Laboratorios Nacionales de Fomento Industrial) under CONACYT (Consejo Nacional de Ciencia y Tecnología—National Science and Technology Council), INFOTEC (Fondo de Información y Documentación para la Industria—Information and Documentation Fund for Industry), as well as private, public and educational research institutions. Quality control, particularly total quality control (TQC), is to be introduced along with the establishment of a national prize for quality (Premio Nacional de Calidad).

Financial measures

Nacional Finaciera is the most important financial institution for Mexican micro-

enterprises and SMEs. Until 1989, NAFIN, Bancomext, and Banco de México administered several trust funds that channeled funds to these industries. Under a financial restructuring, however, NAFIN became less of a direct-credit operation, and more a second-tier institution (i.e., a discount operation providing two-step loans through commercial banks and credit unions). In its new form, NAFIN integrated various trust funds into one, and its financing allocations were directed to the private sector and away from the para-state sector.

Emerging from its 1989 restructuring, NAFIN operated six programs: the micro and SE program (PROMYP, Programa para la Micro y Pequeña Empresa), the modernization program (to purchase machinery and equipment), the technology development program (to support research), the infrastructure program (to promote a decentralization process), the environmental program, and the investment study and consulting program. The PROMYP program was and is the most important, providing credit to micro- and small-scale enterprises:[5] for the purchase and installation of machinery and equipment, for working capital, and for debt restructuring. An entrepreneurial credit card system was introduced in 1990 to channel resources through PROMYP to solve the needs of working capital and the purchase of new fixed assets.[6]

Nacional Financiera uses financial intermediaries with first-tier institutions such as commercial banks, development corporations, credit unions, leasing companies, and factoring companies. It emphasizes the establishment of credit unions because commercial banks rarely reach micro-enterprises to provide assistance, particularly those enterprises in the informal sector.

Nacional Financiera also provides loan guarantee programs that facilitate access to financing for projects that do not satisfy bank requirements, or are deemed high-risk.

Brazil

Incentives for the promotion of small-scale enterprises

Brazil's industrial policies did not place much emphasis on SEs. Its developmental strategies were based on a big-three rivalry or tripod-type development plan: foreign capital, state enterprises, and local oligopolies. Nevertheless, there were still several policies that supported SEs in Brazil's industrialization efforts.

First, the development of basic industries (steel, petrochemicals, and mining), as well as infrastructure, was pushed by the Target Plan 1956–61. At the same time, the import substitution of capital goods and consumer durables was promoted, particularly the initiation of the automobile industry which greatly influenced Brazil's industrial structure. With the introduction of the auto industry, a new type of SE was born in Brazil, one that supported the auto assemblers as suppliers of parts and components.

Brazil's first significant approach to SEs was in 1961 with the establishment of GEAMPE (Grupo Executivo de Assistência à Pequena e Média Empresa [Executive group of assistance for SMEs]) under the CDI (Conselho de Desenvolvimento Industrial—Industrial Development Council) [58]. Although this plan never materialized, the working papers included ideas such as a study of SMEs, the diffusion of modern

management methods, and the training of diagnostic experts.

In an effort to promote regional development, SUDENE (Superintendência de Desenvolvimento do Nordeste—Superintendency for the Development of the Northeast), in collaboration with the BNB (Banco do Nordeste do Brasil—Bank of the Northeast of Brazil), set up a network of NAIs (Núcleos de Assistência Industrial [National nuclei for industrial assistance]) in the mid-1960s to diffuse management technology throughout northeast Brazil.

The 1970s in Brazil were a golden age for SMEs as far as SME policies are concerned. In 1972, CEBRAE (Centro Brasileiro de Assistência Gerencial à Pequena e Média Empresa—Brazilian Management Support Center for SMEs) was established.[7] The center offered SMEs management training and consulting; its branches were gradually extended to other areas of the country as it became more popular.

Under the Geisel administration, the second national development plan (II Plano Nacional de Desenvolvimento—II PND), 1975–79, was launched. The plan explicitly outlined the development of SMEs through the strengthening of CEBRAE and the expansion of BNDE financing. Two important organizations were formed when CEBRAE was reinforced: (1) subcontracting exchange services (*bolsa* system) between SMEs and LEs, and (2) export consortium designed to assist SMEs with exports. In financing, a resolution of the Central Bank (No.388, 1976) forced the Banco do Brasil to lend at least 12 per cent of its demand deposits to SMEs.

In the 1980s most of Brazil's industrialization plans were either abandoned or dropped due to apathy. The second oil shock, the external debt crisis, plus succeeding heterodox-type stabilization policies created a vulnerable Brazilian economy. Small- and medium-scale enterprises, in particular, were seriously affected by the credit crunch and recession. Facing increases in informal sector activity, the government announced the micro-enterprise statute (Estatuto da Microempresa) by presidential decree (No. 7256, 1984). The paternalistic nature of the statute, however, was criticized, and in the same context, the 1988 constitution included two articles on micro-enterprises, mainly for political reasons.[8]

The first national development plan of the new republic (I Plano Nacional de Desenvolvimento da Nova República) in 1985 stated that the role of SMEs was to be as follows: (a) complementary to LEs, (b) for strengthening Brazilian firms, and (c) contributing to regional development. The emphasis on the complementary role of SMEs was new. Unfortunately the weak foundation of the Sarney administration, coupled with a scarcity of funds, caused the plan to gather dust.

The Collor team (as has been explained) stressed international competitiveness and quality/productivity in its industrialization policies. To fulfill the planned goals, the role of SMEs as supporting or complementary industries was once again accentuated.

Financial measures

Like Mexico's NAFIN, Brazil's BNDE (BNDES after 1982) is a national development bank whose main purpose is to provide long-term credits for development. The first loans designated specifically for SMEs were made available by BNDE in 1965.

Called FIPEME (Financiamento à Pequenas e Médias Empresas [The fund for SME credit]), they provided funds for fixed assets purchases. A special fund for the purchase of domestic machinery and equipment, FINAME, established by BNDE in 1964, helped SMEs as well as LEs to finance fixed capital expenditures [8, pp.17–18).

The development bank, BNDE, also channeled financial resources for regional development through federal and state savings banks. In 1977 a plan called PROGIRO (Programa Especial de Apoio à Empresa Brasileira de Pequeno e Médio Porte [The special program of support to Brazilian SMEs]), initiated by the Federal Savings Bank (Caixa Econômica Federal, CEF), was approved. More than 50 per cent of the funds provided in this plan were allocated to SMEs; over 20 per cent went to Brazil's northeast region.

Between 1984 and 1989, BNDES was substantially restructured to reflect the new policy directions emphasizing private sector initiative. Under the Collor administration, the privatization of state enterprises was directed by BNDES.

Currently BNDES has command over eleven programs involving economic development. These include a general support program for industries, a technology program, an enterprise restructuring program, an infrastructure program, an agriculture and livestock program, a commerce and service program, an internal trade of machinery and equipment program, an external trade of machinery and equipment program, an importation of machinery and equipment program, an environmental conservation program, and a capital support program for privatized national companies.[9] The technology program, with its three subprograms—technology training, quality and productivity, and capitalization—is of particular importance because Brazil has a dire need to improve its competitiveness, a need that had been exacerbated by the ongoing economic liberalization effort.

Under the national economic plan, BNDES' quality and productivity subprogram offers a line of credit to improve quality and productivity. Other programs and institutions offering lines of credit include: FINEP (Fundo de Financiamento de Estado de Projetos e Programas de Desenvolvimento—Finance Companies for Studies and Projects), the Banco do Brasil, and SEBRAE.

Recognizing the importance of supporting industries, Brazil has finally made a commitment to assist SMEs (support which was delayed for many years) through an integrated scheme. This new policy reflects the recognition that past SME policies were ineffective and produced enormous bureaucracy.[10] The current emphasis is on quality and productivity with collaboration from all related institutions, particularly the new SEBRAE and the restructured BNDES system. The policy direction was established in such a fashion that a sudden change in the Brazilian presidency, or a similar major event, will not alter its course.

3. Case Study of Small-Scale Enterprises: Brazil and Mexico

With liberalization and policy shifts toward a market-driven economy, production competitiveness has come to be recognized as the most crucial factor in Latin Ameri-

can development. As explained earlier, both Brazil and Mexico consider quality and productivity as their top priorities.

To gain more information about the present situation concerning in-house production technology and institutional arrangements, such as subcontracting, a survey (Kagami/Ruiz/Schwartz or K-R-S survey) of SEs (establishments with 0–100 persons) was undertaken in each country (July/August 1992 in Brazil, February/March 1992 in Mexico) [33] [32]. The sample included 196 establishments in the São Paulo area and 129 establishments in the Mexico City area. Three subsectors were covered: metalworking, plastics, and apparel. These subsectors were chosen because they use molds, dies, and patterns, each a key to quality and design in modern industrial products. (Information about survey methodology as well as information about the area distribution of establishments are provided in Appendix 4–1.)

Overview of the Sample Small-Scale Enterprises

In Brazil the combined total sales of the 196 surveyed establishments in 1991 amounted to U.S.$125.7 million (U.S.$1.1 million per establishment). The establish-

TABLE 4–5
PRIMARY CHARACTERISTICS of SAMPLE ESTABLISHMENTS, 1991: BRAZIL

	Metalworking	Apparel	Plastics	Total
Capital				
Amount (U.S.$ million)	27.6	10.4	18.0	57. 7
No. of establishments	(45)	(33)	(25)	(103)
Av. per establishment (U.S.$1,000)	613.8	314.0	718.7	548.8
Total sales				
Amount (U.S.$ million)	77.9	16.7	31.1	125.7
No. of establishments	(48)	(37)	(29)	(114)
Av. per establishment (U.S.$1,000)	1,623.6	451.3	1,072.5	1,102.9
Employment (persons)				
Total employees (A)	2,379	1,327	1,190	4,896
Permanent employees	2,332	1,289	1,190	4,811
Temporary employees	47	38	0	85
No. of establishments (B)	(69)	(52)	(37)	(158)
Av. per establishment (A)/(B)	34.5	25.5	32.2	31.0
Monthly wages per worker[a] (U.S.$)				
Office workers	306	228	241	273
No. of establishments	(60)	(26)	(25)	(111)
Production workers	260	176	176	234
No. of establishments	(68)	(39)	(33)	(140)
Managers, administrators	676	377	670	631
No. of establishments	(31)	(6)	(13)	(50)
Total no. of establishments	83	74	39	196

Source: [33].

[a] Official minimum wage for the São Paulo region in 1991 was approximately U.S.$65 per month.

TABLE 4–6
PRIMARY CHARACTERISTICS OF SAMPLE ESTABLISHMENTS, 1991: MEXICO

	Metalworking	Apparel	Plastics	Total
Capital				
Amount (U.S.$ million)	1.4	8.7	3.8	13.9
No. of establishments	(26)	(42)	(26)	(94)
Av. per establishment (U.S.$1,000)	54.8	207.4	146.5	148.3
Total sales				
Amount (U.S.$ million)	3.2	35.1	15.6	53.9
No. of establishments	(24)	(47)	(31)	(102)
Av. per establishment (U.S.$1,000)	135.1	746.6	502.2	528.4
Employment (persons)				
Total employees (A)	233	1,743	1,163	3,139
Permanent employees	186	1,630	977	2,793
Temporary employees	47	113	186	346
No. of establishments (B)	(33)	(58)	(38)	(129)
Av. per establishment (A)/(B)	7.1	30.1	30.6	24.3
Monthly wages per worker[a] (U.S.$)				
Office workers	156	364	306	296
No. of establishments	(24)	(44)	(32)	(100)
Production workers	320	277	223	270
No. of establishments	(24)	(44)	(32)	(100)
Managers, administrators	358	761	683	641
No. of establishments	(23)	(43)	(32)	(98)
Total no. of establishments	33	58	38	129

Source: [32].
[a] The minimum wage for the Mexico City area in 1991 was around U.S.$130 per month.

ments employed 4,896 persons (31 persons per establishment).

In Mexico the combined total sales of the 129 surveyed establishments in 1991 amounted to U.S.$53.9 million (U.S.$528,000 per establishment). Total employment was 3,139 persons (24 persons per establishment) (see Tables 4–5 and 4–6). Of the establishments that replied, approximately 45 per cent of the Brazilian establishments were engaged in exports, while 5 per cent of the Mexican firms were likewise engaged. The size of the surveyed Mexican firms were smaller than those in Brazil in terms of sales and employment. Moreover, fewer firms exported despite the early opening up of the Mexican economy.

Entrepreneurs: The average age of a surveyed entrepreneur was 45 in Brazil, 46 in Mexico. They were city-born, well-educated (college graduates), independent (many financed their projects through their own resources); and they were risk-takers—in Brazil 24 per cent established themselves after 1985 when a civilian government was returned to power; in Mexico 38 per cent did so after 1982 which was the height of the debt crisis.

The number of entrepreneurs who were highly educated is impressive. In Brazil 48 per cent had obtained college- and graduate-level education, while in Mexico 52 per

TABLE 4–7
EDUCATIONAL LEVEL OF ENTREPRENEURS

(%)

Level of Education	Brazil				Mexico			
	Total	Metal-working	Apparel	Plastics	Total	Metal-working	Apparel	Plastics
Primary	8.9	12.5	8.3	2.6	9.4	21.2	3.5	7.9
Secondary	23.5	21.2	31.6	15.7	11.7	15.2	14.0	5.3
Preparatory	—	—	—	—	12.5	12.1	15.8	7.9
Vocational/technical	19.1	26.2	16.6	7.8	14.1	24.2	10.5	10.5
University	44.9	36.2	43.3	65.7	49.2	24.2	54.4	63.2
Graduate school	2.8	2.5	0.0	7.8	3.1	3.0	1.8	5.3
Others	0.5	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. who answered	178	80	60	38	128	33	57	38

Source: [32] [33].

TABLE 4–8
EDUCATION OF ENTREPRENEURS IN INDIA: PERCENTAGE DISTRIBUTION BY EDUCATIONAL LEVEL

(%)

Industry (No. of Sample)	Below Primary	Primary	Middle and High School	Inter-mediate	Bachelor's Degree	Above Bachelor's Degree
Machine tools (78)	5.6	15.7	43.8	7.9	9.0	18.0
Printing (71)	1.4	1.4	23.9	19.7	42.3	11.3
Powerlooms (37)	64.9	0.0	16.2	5.4	10.8	2.7
Shoes (92)	30.9	27.7	28.7	2.1	2.1	7.4
Soap (50)	4.0	12.0	44.0	10.0	16.0	14.0
Metal casting (51)	22.0	8.0	20.0	12.0	16.0	22.0

Source: [43, Table 12–4, p. 206].

cent had done so (see Table 4–7). Considering the three subsectors, the entrepreneurs in the plastics industry were better educated in both countries. As a reference, an Indian study [43, p. 206] discloses more variance on education levels depending on the subsector. For example, in the printing subsector, 54 per cent obtained bachelor's degrees or higher while in the shoe subsector it was only 10 per cent (see Table 4–8).

Initial funding: In the area of initial funding, the entrepreneurs in both countries obtained most of their funds from their own resources for both fixed assets and working capital. In Brazil 92 per cent generated their own funds for machinery and equipment, 97 per cent for working capital (see Table 4–9). In Mexico entrepreneurs accounted for 90 per cent of both fixed assets and working capital. Neither government credits nor commercial banks loans played a significant role in the initial funding of an entrepreneur's business. These figures suggest that the lack of collateral and the high-risk involved in starting up a small business may have hindered borrowing from established financial institutions. Later, after a firm's establishment, financing from

TABLE 4–9
FUNDING FOR INITIAL INVESTMENT (Sources of Funds)

(%)

	Brazil				Mexico			
	Total	Metal-working	Apparel	Plastics	Total	Metal-working	Apparel	Plastics
Own funds								
Fixed capital	91.9	93.1	90.8	90.7	89.8	87.5	93.3	86.6
Working capital	96.6	97.7	94.5	97.5	89.6	91.8	88.5	89.5
Parents, relatives, and friends								
Fixed capital	1.8	0.0	1.2	4.6	3.0	5.3	2.1	2.2
Working capital	0.5	0.0	1.7	0.0	1.7	2.1	2.7	0.0
Gov. financial institutions								
Fixed capital	3.4	4.5	0.0	6.4	0.0	0.0	0.0	0.0
Working capital	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Commercial banks								
Fixed capital	1.9	1.1	2.5	2.9	4.8	0.9	4.6	8.5
Working capital	2.3	2.3	2.1	2.5	3.1	3.0	1.7	5.3
Non-bank institutions								
Fixed capital	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Working capital	0.5	0.0	1.7	0.0	0.0	0.0	0.0	0.0
Others								
Fixed capital	0.9	1.3	0.8	0.0	2.4	6.3	0.0	2.7
Working capital	0.0	0.0	0.0	0.0	1.6	3.0	0.0	2.6
Total								
Fixed capital	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Working capital	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number who answered								
Fixed capital	77	39	24	14	125	32	56	37
Working capital	92	43	29	20	127	33	56	38

Source: The same as Table 4–7.

commercial banks increased slightly, particularly for working capital (5 per cent in 1991 in Brazil, 14 per cent in 1991 in Mexico).

A Colombian study [21, p. 170] showed similar results. It stated: "Their enterprises are generally quite small at first, with respect to capital, which comes mainly from their own funds (savings and severance pay) and from family loans; official credit institutions play little part in the early capitalization of SMI firms" (see Table 4–10).[11]

Competitive Edge

In-house production technology

The quality of products depends on several variables including, among others, materials, intermediate goods, molds/dies/patterns, machinery, tools, and workers. Uniformity of quality depends on the uniformity of the production process, the consistency of the supply chains, and the cooperation between workers and management. These issues were explored in the K-R-S survey.

TABLE 4–10
MAIN SOURCES OF INITIAL INVESTMENT FOR SMALL AND MEDIUM METALWORKING FIRMS: COLOMBIA

Main Sources	(%)
Previous business:	
Sale of business	13.2
Inheritance	8.8
Savings and transfer of assets	2.9
Own resources:	
Savings and family loans	29.4
Severance and savings	29.4
Other resources and credit:	
Suppliers, savings, and severance	11.8
Institutional credit, savings, and severance	4.4
Total	100.0
No. of firms	(68)

Source: [21].

TABLE 4–11
MAJOR MACHINE AND MOLDS/PATTERNS

(%)

	Brazil				Mexico			
	Total	Metal-working	Apparel	Plastics	Total	Metal-working	Apparel	Plastics
(1) Nationality of the major machine								
National	81.9	89.4	61.8	97.4	23.4	3.2	21.7	44.1
Foreign	18.1	10.6	38.2	2.6	76.6	96.8	78.3	55.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. who answered	160	66	55	39	111	31	46	34
(2) Average years of the machine (years)	9.5	10.2	10.2	8.2	14.7	25.7	10.2	10.6
No. who answered	163	67	60	36	91	27	35	29
(3) Where do molds/patterns come from?	(Multiple answers)				(Single answer)			
In-house	77.6	83.3	86.8	60.6	81.6	85.7	92.7	61.8
Imported	7.0	1.7	7.9	9.1	3.9	0.0	1.8	8.8
Purchased from pattern shops	7.7	3.3	0.0	9.1	1.9	7.1	1.8	0.0
Supplied by clients:	15.4	11.7	0.0	24.2	2.9	0.0	0.0	8.8
Others	26.6	23.3	10.5	33.3	9.7	7.1	3.6	20.6
Total	121.4	123.3	105.2	136.4	100.0	100.0	100.0	100.0
No. who answered	131	60	38	33	103	14	55	34

Source: The same as Table 4–7.

Major machinery: The principal machines used for production in the three subsectors were the lathe for metalworking, the sewing machine for apparel, and the injector for plastics. In Brazil 82 per cent of the surveyed SEs bought national machines, while in Mexico only 23 per cent did so. This was particularly true in metalworking, which depended heavily on foreign machines in Mexico (97 per cent). (See Table 4–11.) Because of Brazil's strong import-substitution policies concerning capital goods, it is notable that Brazil established an industrial machinery base (regardless of its quality). Moreover, the average age of major machines in Brazil (9.5 years) was less than that in Mexico (14.7 years).[12]

In Brazil the most popular imported machines were most likely to have been produced by Japan, Germany, and Italy in that order, while in Mexico, U.S., Japanese, and German machines was the order of preference. If an additional machine was to be purchased, the Brazilian preference was (in descending order): Japan, Germany, and Italy; while the Mexican preference was: Japan, Germany, and the United States.

Molds, dies, and patterns: Of the 196 surveyed Brazilian establishments, 131 were using molds or dies (or patterns), while 103 of the 129 surveyed Mexican establishments were doing so. In both countries, the molds and dies were mainly fabricated in-house, which was contrary to what was initially thought. In the case of Brazil (multiple answers), 78 per cent were produced in-house, 15 per cent were supplied by clients, and 7 per cent were imported. The corresponding figures for Mexico (single answer) were 82 per cent, 3 per cent, and 4 per cent respectively (see again Table 4–11). The "supplied by clients" statistic suggests that subcontracting is more frequently practiced than was initially believed.

Since molds, dies, and patterns are a crucial factor in product quality, export-related industries usually import these products, or rely on the designs generated by multinational companies. This low dependency on foreign molds might be related to the fact that the surveyed SEs were mainly selling their products domestically.

Quality control: In both countries, more than half of the surveyed establishments replied "yes" when asked about the application of quality control methods. The average of the three subsectors surveyed was 55.2 per cent in Brazil, 51.2 per cent in Mexico (see Table 4–12). The highest application level recorded in either country was in Mexico's apparel industry (64.3 per cent); the lowest was in Mexico's metalworking industry (30.3 per cent). Regarding total quality control (TQC)—quality control measures and quality control circles which are practiced not only for production processes but also for every aspect of business activity such as administration, operations, marketing, and distribution—contrasting results were obtained. Seventy-six per cent of the Mexican establishments intended to apply TQC at some time, while only 10 per cent of the Brazilian establishments were planning to do so. The degree of urgency to increase quality seemed higher for the Mexican entrepreneurs than for the Brazilians, and this is likely due to the accelerating pace of liberalization in Mexico when compared with Brazil.

Defect ratio: The average product defect ratio decreased in both countries between December 1989 and December 1991. In Brazil the average decreased 2.5 per cent, from 6.8 per cent in 1989 to 4.3 per cent in 1991. The figures for Mexico

TABLE 4–12
QUALITY CONTROL (%)

	Brazil				Mexico			
	Total	Metal-working	Apparel	Plastics	Total	Metal-working	Apparel	Plastics
Did you apply any method of quality control?								
Yes	55.2	54.9	57.7	52.6	51.2	30.3	64.3	50.0
No	44.8	45.1	42.3	47.4	48.8	69.7	35.7	50.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. who answered	172	82	52	38	127	33	56	38
If "yes", have you intended to apply total quality control?								
Yes	9.5	6.7	16.7	5.0	75.5	60.0	77.1	78.9
No	90.5	93.3	83.3	95.0	25.0	40.0	22.9	21.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. who answered	95	45	30	20	64	10	35	19

Source: The same as Table 4–7.

showed slightly less improvement, decreasing 1.5 per cent, from 7.0 per cent to 5.5 per cent (see Table 4–13).

A cross tabulation of the Mexican data showed a tendency that the smaller the establishment size, the higher the defect ratio; likewise, the younger the entrepreneur, the higher the ratio. The defect ratio data according to size of establishment showed the following: 5.2 per cent for establishments with 0–5 persons; 6.5 per cent for those with 6–15 persons; 5.6 per cent with 16–29 persons; 5.7 per cent with 30–59 persons; 3.2 per cent with 60–79 persons; and 3.5 per cent with 80–100 persons. Taking the age of the surveyed entrepreneurs into account, the defect ratio was: 8.0 per cent for entrepreneurs less than twenty-nine years old; 7.5 per cent for those thirty to thirty-nine years old; 5.0 per cent for those forty to forty-nine years old; and 4.0 per cent for those more than fifty years old.

The reduction of the defect ratio was mainly attributable to on-the-job training (43 per cent in Brazil, 67 per cent in Mexico). With plans to export goods, this ratio is expected to decline even further to less than one per cent as is now the case in Asian NIEs.

Subcontracting

As explained earlier, efficient supply chains reduce cost and save time. It was generally believed that subcontracting[13] was uncommon in Latin America for three reasons: (a) the processing of primary products did not require many processes; (b) individualism and independence are part of the intrinsic nature of the Latin people; and (c) modern assembly firms, such as automobiles and electronics, are a recent phenomena, except in a few countries. However, as the K-R-S survey demonstrated, even SEs which sell their products mainly in the domestic market are actively involved in subcontracting activities.

TABLE 4–13
DEFECT RATIO OF PRODUCTS

(%)

	Brazil				Mexico			
	Total	Metal-working	Apparel	Plastics	Total	Metal-working	Apparel	Plastics
December 1991	4.3	4.9	4.7	3.0	5.5	4.5	4.9	7.1
December 1990	5.2	5.9	6.0	3.8	6.1	3.4	5.8	8.3
December 1989	6.8	7.8	6.4	5.5	7.0	4.7	6.6	9.2

Source: The sames as Table 4–7.

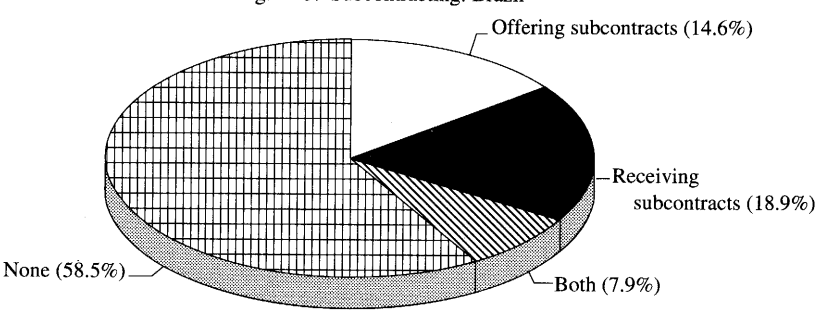
TABLE 4–14
SUBCONTRACTING

(%)

	Brazil				Mexico			
	Total	Metal-working	Apparel	Plastics	Total	Metal-working	Apparel	Plastics
Offering subcontracts	14.6	12.1	21.8	8.6	20.3	6.1	37.9	5.4
Receiving subcontracts	18.9	14.9	16.4	31.4	24.2	60.6	5.2	21.6
Both	7.9	12.2	3.6	5.7	5.5	3.0	1.7	13.5
None	58.5	60.8	58.1	54.3	50.0	30.3	55.2	59.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. who answered	164	74	55	35	128	33	58	37
No. of samples	196	83	74	39	129	33	58	38

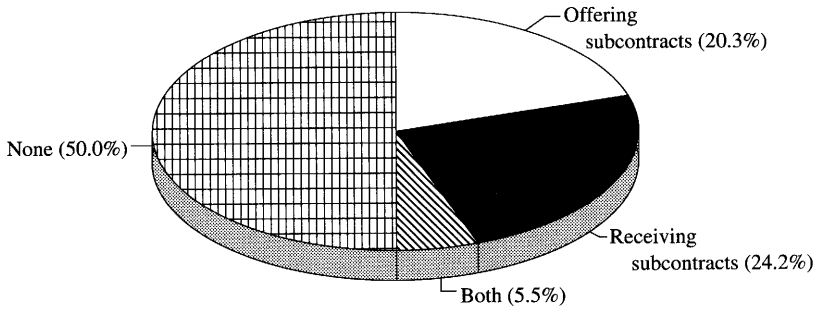
Source: The same as Table 4–7.

Fig. 4–3. Subcontracting: Brazil



Source: Table 4–14.

Fig. 4–4. Subcontracting: Mexico



Source: Table 4–14.

TABLE 4–15
SUBCONTRACTING: KOREA AND THAILAND

	Korea		Thailand	
	No. of Establishments	(%)	No. of Establishments	(%)
Offering subcontracts	38	13.5	23	11.5
Receiving subcontracts	107	37.9	39	19.5
Both	43	15.2	33	16.5
None	94	33.3	105	52.5
Total	282	100.0	200	100.0
No. of samples	283		200	

Sources: [18, Table B-23a, p. 110] [57, Table 4.1, p. 47].

Extent of subcontracting: In Brazil 42 per cent of the surveyed establishments were engaged in subcontracting in one form or another, either outsourcing or producing or both. In Mexico the figure was 50 per cent (see Table 4–14 and Figures 4–3 and 4– 4). It is interesting to note that a rather substantial segment of the apparel industry was offering subcontracting work to other firms: 37.9 per cent in Mexico, 21.8 per cent in Brazil. The extremely high ratio of firms in Mexico's metalworking industry which are working as subcontractors (60.6 per cent) may indicate the effective diffusion of subcontracting through the *bolsa* system.

An interview study of Mexican affiliates of multinational corporations [68, pp. 42–43] indicated that sixty-three firms or 58.7 per cent were subcontracted nationally. The study found that: (a) enterprises with technology-intensive production processes made better use of national subcontracting possibilities and (b) industries dominated by subsidiaries with high levels of exports have the highest propensity to subcontract.

TABLE 4–16
SHARE OF SUBCONTRACTED PRODUCTS IN SALES OF SUBCONTRACTORS (Subcontractor's Response)

(%)

	Brazil				Mexico			
	Total	Metal-working	Apparel	Plastics	Total	Metal-working	Apparel	Plastics
100%	47.2	40.0	62.5	46.2	64.9	81.0	60.0	36.4
80–99%	0.0	0.0	0.0	0.0	8.1	0.0	0.0	27.3
60–79%	2.7	0.0	0.0	7.7	5.4	0.0	0.0	18.2
40–59%	13.9	13.3	0.0	23.0	5.4	4.8	0.0	9.1
20–39%	25.0	26.6	25.0	23.0	10.8	9.5	20.0	9.1
0–19%	11.1	20.0	12.5	0.0	5.4	4.8	20.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. who answered	36	15	8	13	37	21	5	11

Source: The same as Table 4–7.

TABLE 4–17
INCOME EFFECTS OF SUBCONTRACTING (Subcontractor's Response)

(%)

	Brazil				Mexico			
	Total	Metal-working	Apparel	Plastics	Total	Metal-working	Apparel	Plastics
Have subcontracts helped to improve your income?								
Yes	78.0	88.8	45.4	91.6	87.2	90.5	100.0	76.9
No	22.0	11.1	54.6	8.3	12.8	9.5	0.0	23.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. who answered	41	18	11	12	39	21	5	13

Source: The same as Table 4–7.

TABLE 4–18
ASSISTANCE FROM THE PRIME FIRMS (Multiple Responses of Subcontractors)

(%)

	Brazil				Mexico			
	Total	Metal-working	Apparel	Plastics	Total	Metal-working	Apparel	Plastics
Supply of raw materials	57.5	56.2	81.8	38.5	41.0	42.9	60.0	30.8
Technical assistance	27.5	31.2	27.2	23.1	15.4	19.0	0.0	15.4
Managerial assistance	20.0	12.5	45.4	7.7	0.0	0.0	0.0	0.0
Financial assistance	12.5	6.2	27.2	7.7	7.7	4.8	0.0	15.4
Supply of equipment	15.0	6.2	36.4	7.7	0.0	0.0	0.0	0.0
Others	32.5	18.7	27.2	53.8	48.7	42.8	40.0	38.4
Total	165.0	131.2	245.4	138.5	112.8	109.5	100.0	100.0
No. who answered	40	16	11	13	39	21	5	13

Source: The same as Table 4–7.

TABLE 4–19
FUTURE PERSPECTIVES (Subcontractor's Response)

(%)

	Brazil				Mexico			
	Total	Metal-working	Apparel	Plastics	Total	Metal-working	Apparel	Plastics
Future perspectives for your subcontracting?								
Good	55.0	70.6	18.2	66.6	28.2	23.8	20.0	38.5
Moderate	10.0	5.9	9.1	16.6	61.5	66.7	80.0	46.2
Not good	10.0	23.5	0.0	0.0	7.7	4.8	0.0	15.4
Uncertain	25.0	0.0	72.7	16.7	2.6	4.8	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. who answered	40	17	11	12	39	21	5	13

Source: The same as Table 4–7.

Examples from Asia show similar results. A Thailand study [59, p. 47] verified that 47.5 per cent of Thai establishments had participated in subcontracting, while a Korean study [18, p. 110] showed that 66.7 per cent of Korean firms practiced subcontracting (see Table 4–15). The Korean ratio corresponds to its export-oriented industrialization patterns.

Share of subcontracted products: Of the thirty-six Brazilian establishments involved in subcontracting, 47 per cent were subcontracting 100 per cent of their total sales; 25 per cent were doing likewise for 20–39 per cent of total sales; and 14 per cent were doing so 40–59 per cent of total sales (see Table 4–16). Of the thirty-seven Mexican establishments, 65 per cent were subcontracting out 100 per cent of their total sales; 11 per cent were doing so for 20–39 per cent of sales; 8 per cent were doing 80–99 per cent; and it was 5.4 per cent for each of the remaining three levels. In both countries, the apparel industry relied heavily on subcontracting. In Mexico the metalworking industry's high dependency on subcontracting was again pronounced (with 81 per cent subcontracting 100 per cent of sales value).

Income effects of subcontracting: It is usually believed that subcontracting increases income through a stable give-and-take relationship. The surveyed establishments confirmed this to be true. In Brazil 78 per cent of the establishments replied that their income had improved, while in Mexico 87 per cent likewise responded in the affirmative (see Table 4–17).

Assistance from prime firms: It is well recognized that prime firms offer various forms of assistance to subcontractors to keep the subcontracting relationship running smoothly. Upgrading the subcontractor's quality level is critical to the overall quality of final goods, which the prime firms produce. This proffered assistance includes the supplying of raw materials, technical assistance (production techniques, mold design, quality control, etc.), managerial expertise, tools and equipment, as well as financial support. The main concern of both the prime and the subcontracting firms was the supply of raw materials (58 per cent in Brazil, 41 per cent in Mexico) (see

Table 4–18). Technical assistance was the second most frequently mentioned concern (28 per cent and 15 per cent respectively). In Mexico concerns involving managerial assistance and the supply of equipment were not traced. Brazilian subcontractors, on the other hand, were receiving an assortment of assistance from prime firms.

It is worth mentioning that subcontractors in Brazil benefit by receiving raw material supplies from prime firms which enables them to sidestep the extremely high inflation rate. With hyperinflation—running 20 per cent per month during the study period—the consistent availability of raw materials and their procurement at reasonable prices was impossible. Consequently the supply of raw materials from prime firms greatly aids many subcontractors.

As corroboration, the study on Mexico by the United Nations Commission on

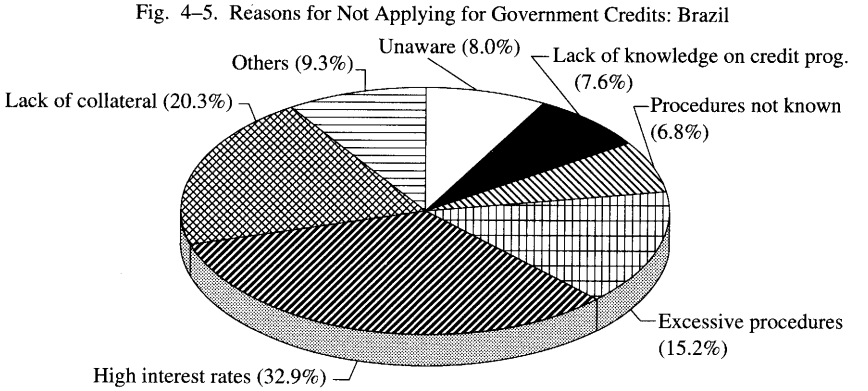
TABLE 4–20
PROFIT RATIO (Gross Profits / Gross Sales)

(%)

	Brazil				Mexico			
	Total	Metal-working	Apparel	Plastics	Total	Metal-working	Apparel	Plastics
1991	15.2	11.4	17.2	19.2	20.9	24.0	17.3	23.3
1986	19.4	31.7	18.6	17.3	23.3	26.2	21.5	23.2
No. who answered								
1991	113	49	36	28	89	24	38	27
1986	94	48	26	20	66	18	28	20

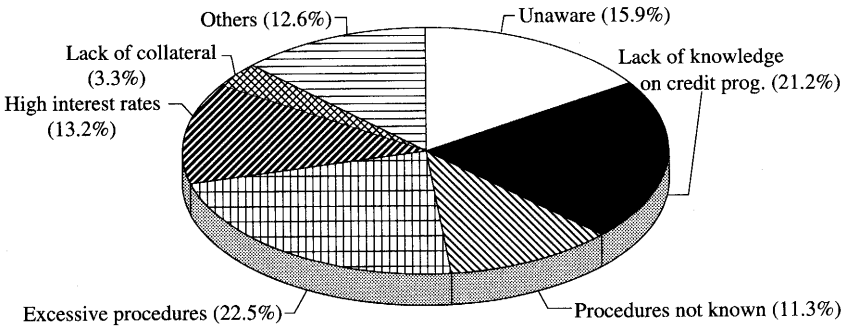
Source: The same as Table 4–7.

Fig. 4–5. Reasons for Not Applying for Government Credits: Brazil



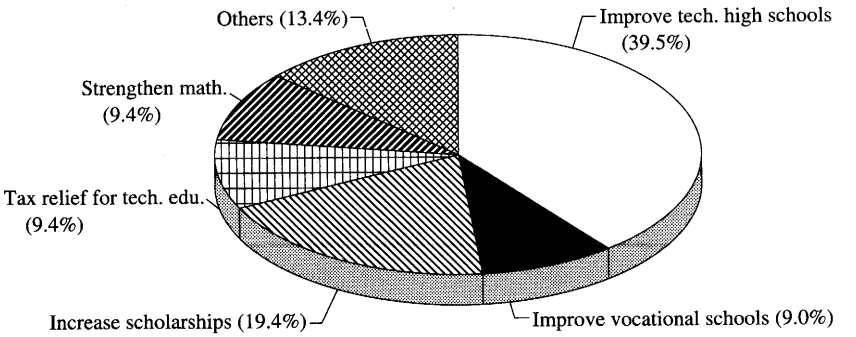
Source: [33].

Fig. 4–6. Reasons for Not Applying for Government Credits: Mexico



Source: [32].

Fig. 4–7. To Raise the Level of Technical Education: Brazil



Source: [33].

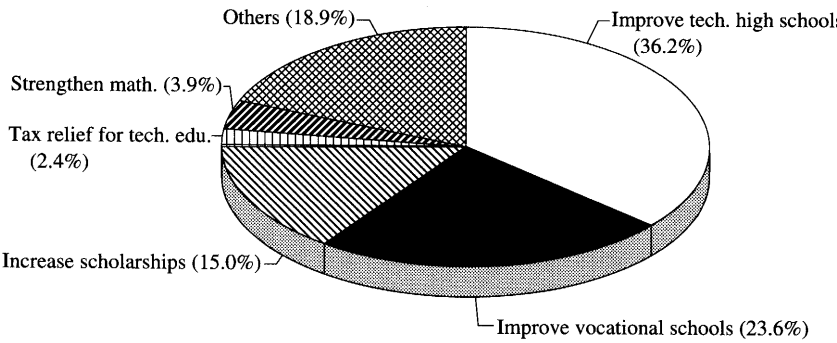
Transnational Corporation disclosed that "87 per cent of the affiliates involved with subcontracting provided training in quality control, 68 per cent supplied some kind of technical assistance, and 22 per cent offered financial assistance to their subcontractors" [68, p. 44].

Future perspectives: Approximately 90 per cent of the Mexican SEs surveyed believed that future subcontracting prospects were "good" or "moderate," while 65 per cent of the Brazilian SEs thought likewise. However, a sizable number of Brazilian respondents—35 per cent—answered "not good" or "uncertain." (See Table 4 – 19.) Significantly, the unstable macroeconomic climate in Brazil seems to be producing shaky times for all businesses, but perhaps even more so for small enterprises.

Other Interesting Findings

Profit ratio: The profit ratio (gross profits/gross sales) of SEs was high in both countries, although a downward trend was evident between 1986 and 1991. Brazil

Fig. 4–8. To Raise the Level of Technical Education: Mexico



Source: [32].

experienced a 4 per cent decline, from 19 per cent to 15 per cent, while Mexico's ratio fell 2 per cent, from 23 per cent to 21 per cent (see Table 4–20). This was closely related to cost structure. In Mexico the three largest cost items were raw materials, labor, and taxes, while in Brazil the heaviest cost burdens were interest rates, labor, and raw materials.

In Japan, for instance, the profit ratio (gross profits/net sales) was approximately 22 per cent in 1987 [29]. The high profit ratios, especially in Mexico, were comparable and suggest that small businesses in Latin America may do well indeed, earning owners and investors handsome returns.

Government loans: Government programs that provided assistance for SEs were unpopular in both countries. There were several reasons why businesses waived government aid, including a lack of knowledge about the programs, an unawareness of government facilities, and inexperience with procedures. In Mexico excessive procedures were mentioned specifically by some as a hindrance to participating. In Brazil high interest rates were most often mentioned as an obstacle, followed by a lack of knowledge, and a lack of collateral (see Figures 4–5 and 4–6). These results suggest that governments need further promotional efforts to reach small businesses with information about available assistance.

Better form of technical training: SEs in both countries considered the improvement of technical high schools a top priority in the provision of critical technical training (see Figures 4–7 and 4–8). In the training of their own workers, and workers in general, both emphasized the importance of on-the-job training (82.1 per cent in Brazil, 82.8 per cent in Mexico).

Different macroeconomic situations: The different macroeconomic conditions present in the surveyed countries made for an interesting contrast of results. Mexico, which is eagerly expecting NAFTA, has been accelerating its economic opening up, while Brazil has been suffering through a profound period of hyperinflation and uncertainty. For instance, in response to questions concerning the future business outlook, 62 per cent of the Mexican SEs surveyed answered "excellent" or "good," while only 32 per cent of the Brazilian SEs responded likewise. For questions on new

investment, 64 per cent of the Mexican SEs surveyed had new investment plans, and of these, 85 per cent intended to implement their plans within the coming three years. The same query, when put to Brazilian SEs, received only a moderately positive response, with 51 per cent planning investment, 77 per cent of these expecting to do so in the next three years. Brazilian SEs also cited uncertainty about market behavior as the main reason for slowing or suspending new investment plans, primarily since the end of the Cruzado plan in 1986.

4. Possible Policy Directions

There is an ongoing development debate in which it is often argued that latecomers to economic development should foster LEs in order to earn foreign currency through exports. Only LEs, it is maintained, have a competitive edge against foreign multinational corporations, and because of this, the creation of monopolies and oligopolies is admissible.

Korea is representative of this strategy. Its enormous private LEs did contribute to export earnings,[14] but a key factor often overlooked was the keen competitiveness among themselves. Korean oligopolies fiercely competed against each other, first in the domestic market, then in the world marketplace. But with cozy protection arrangements, the LEs soon neglected this competitive spirit and began to look inward. As a result, the Korean government in the 1980s began not only to liberalize its economy, but also to foster supporting industries. Its aim, among others, was the formation of a more balanced industrial structure.

Taiwan provides a contrasting example. The country's exports have been supported by SMEs; they contributed almost 57 per cent of total exports in 1990.[15] Like Brazil, the Taiwanese economy has a three-pronged foundation: state enterprises, SMEs, and domestic LEs [62, p. 2]. By subcontracting with foreign large retailers, Taiwan's SMEs are well-known and respected as the world's miscellaneous-goods producers. Moreover, Chinese groups, located overseas, formed a strong commercial network that has helped market Taiwanese products.

It is interesting to note that both Korea and Taiwan experienced a decline in SMEs during the import-substitution phase, but when each country opened its economy, SMEs rebounded, and in fact, became more influential than before (V-shaped development of SMEs). This bodes well for Brazil and Mexico, both of which are just now attempting to create industrial structures that are more balanced.

In creating this balance, the utilization of Korean and Taiwanese measures, which have been tried and tested, may be of some help. Government initiatives to promote supporting industries through the establishment of links between SMEs and LEs are of growing importance. For instance, Korea initiated the strengthening of subcontracting arrangements in the mid-1970s, while Taiwan in the early 1980s promoted the center-satellite scheme to establish a bridge between SMEs and LEs.

In this context, the efforts to promote the *bolsa* subcontracting system in Brazil and Mexico are highly significant. The survey results prove that subcontracting in Latin America is practiced to a greater degree than what was earlier believed. It was

surprising to find, however, SMEs which were not specialized in exports but which were practicing subcontracting arrangements. Mexico's success with the formation of a subcontracting system through the *bolsa* system in its metalworking industry is an auspicious sign. In Latin America's economic climate, governments must support SMEs indirectly, either through systems like the *bolsa* or through chambers of commerce and industry. Initiative through private means as well as through industrial associations is essential.

The subcontracting system, which is primarily thought of as involving outsourcing in assembler-supplier relationships, also encompasses relationships between large traders or foreign retailers and exporters of goods produced by SMEs. The lack of knowledge of SMEs about foreign markets is counterbalance by these large, global trading networks. This means that SMEs, which are engaged in light processing of primary goods, are able to utilize the subcontracting system to sell their products in the global marketplace.

The creation of SMEs (supporting industries) and their integration with LEs—i.e., the formation of industrial networks—is essential for goods to be efficiently produced in our modern industrial society. To reach this goal, a social consensus emphasizing the cooperation and collaboration between different interest groups is needed. Even though product improvements will be enhanced through in-house measures made possible by government aid, the entrepreneur working at the small-shop level will need to have his say too.

Regarding governmental assistance, institutions must embark on serious and continuous efforts to promote their programs. This is crucial because SMEs usually have little knowledge of these facilities. The lack of information flows between the private and public sectors must be addressed. Since the profit ratio of SMEs is higher than expected, it may be best to limit government credit for SMEs to the initial investment stage.

Regarding technical education, the training and education of middle-level technicians is required. This can be accomplished by strengthening technical high schools and vocational training courses through funds provided by both the central and local governments.

Finally, macroeconomic stability is absolutely necessary for economic activity to flourish. Hyperinflation, high interest rates, and volatile exchange rates are barriers to the development of healthy industries, particularly the development of SMEs. What it all comes down to is governmental policies. Some work and others fail. It is of vital importance that governments choose the right path.

Notes

1 Due to differences in the available data, in this study Brazilian SEs are defined as establishments with 5–99 persons while Mexican SEs are classified as having 6–100 persons.
2 Establishments with more than 250 persons in the case of Brazil and 251 persons in the case of Mexico.

3 Ministry of International Trade and Industry, Minister's Secretariat, Research and Statistics Department, *Kōgyō tōkei hyō, 1985: sangyō-hen* [Census of manufactures, 1985: report by industries] (Tokyo, 1987).

4 Sales productivity is defined as total gross sales/employment. All enterprises, including SEs, of each subsector were analyzed. Then the percentage of SEs—the ratio between the productivity of SEs and all enterprises—was calculated.

5 The definition of micro-enterprises and SEs is as follows: micro—1–15 persons or annual net sales up to 110 times the minimum wage of "A" zone (approximately U.S.$177,000); SEs—16–100 persons or annual net sales up to 1,115 times the minimum wage (U.S.$1.7 million).

6 In 1991, NAFIN channeled 12.2 trillion pesos (U.S.$4.1 billion) through its discount programs, supporting 54,364 enterprises, of which 52 per cent were micro, 46 per cent SEs, and 2 per cent MEs and LEs [48].

7 Under the Collor administration, this entity was privatized and renamed Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (Brazilian Support Service to Micro and Small Businesses). It has ninety-six offices in all the states covering sixty-six cities. Its fund mainly comes from 0.03 per cent of each payroll registered to the National Institute of Social Security (Instituto Nacional do Seguro Social, INSS). According to SEBRAE, the definition of enterprises is as follows: micro—1–9 persons or sales up to 140 million cruzeiros (approximately U.S.$344,000); SEs—10–99 persons or 1.4 billion cruzeiros (U.S.$3.4 million) in 1991.

8 For a further review, see [13].

9 Compared to NAFIN, BNDES seems not yet to have a special interest in providing credits for SMEs. The definition of enterprise size by BNDES also seems comparatively large. For example, the 1991 definition was as follows: micro and SEs, annual net sales up to 1.4 billion cruzeiros (approximately U.S.$3.4 million); MEs, from 1.4 to 4.2 billion cruzeiros (U.S.$10.3 million); and LEs, more than 4.2 billion cruzeiros. In 1991 the BNDES system (BNDES and its subsidiaries like FINAME and BNDESPAR—BNDES Participações S.A.) disbursed 2.7 trillion cruzeiros (approximately U.S.$6.6 billion), of which the manufacturing industry accounted for 66.3 per cent. The disbursement reached its peak in 1983 at around U.S.$15.4 billion, and since then it has declined [10].

10 The case of India is another example of an ineffective and bloated bureaucracy, according to an Indian survey [22]. They pointed out that "the system built up by the government to assist small firms seems to help the wrong firms, benefiting them at the expense of the consumer, and create a bureaucracy with no essential function" [22, p. 252].

11 These figures should be carefully interpreted because entrepreneurs might hide the fact that they borrow some funds from non-banking entities such as usurers, pawn-brokers, and informal moneylenders, particularly for working capital. *El Financiero* (Mexican newspaper, March 6, 1993) reported that approximately 80 per cent of small entrepreneurs are borrowing money from these kinds of shops which are known as *agiotistas* in Mexico.

12 According to cross tabulation by size of employment, the average age of a machine in Mexico (14.7 years) shows that the smaller the establishment size, the older the machines: 22.8 years for establishments with 0–5 persons; 15.3 years for those with 6–15 persons; 11.1 years with 16–29 persons; 7.3 years with 30–59 persons; 9.0 years with 60–79 persons; 4.5 years with 80–100 persons.

13 In this study, subcontracting is used to denote the contractual relationship between a firm (the prime) which places an order, and a firm (the subcontractor) which receives the order to produce the parts, components, or repairs for the prime firm.

14 Korea's industrial structure has changed dramatically during the last thirty years. LEs increased rapidly during the 1960s, but their relative position declined from the middle of the 1970s to the end of the 1980s. For example, their relative employment share was 34 per cent in 1963, 61 per cent in 1973, 50 per cent in 1980, and 38 per cent in 1990. Their value-added share in the same years was 47 per cent, 73 per cent, 65 per cent, and 56 per cent [6, p.6]. This means that, the share provided by SMEs declined during the 1960s and 1970s, but later grew, reaching 62 per cent in terms of employment, and 44 per cent in terms of value added in 1990. This shift was attributable to a government policy shift toward promoting SMEs during the 1980s. The government realized that too much protection for LEs no longer produced balanced industrial growth without the additional development of supporting industries such as parts and components industries.

15 According to Chen [17, Table 1, p. 19], the SMEs share of employment in Taiwan had a similar pattern in Korea: 43 per cent in 1966, 36 per cent in 1971, 62 per cent in 1981, and 71 per cent in 1990, a pattern of decline followed by growth. It is interesting that the trough period corresponded to the Lewis-type turning point in Taiwan around 1970 and in Korea around 1975.

Appendix 4-1: Kagami/Ruiz/Schwartz Survey (K-R-S Survey) of 1992

Brazilian Industrial Survey of Small-Scale Enterprises

An industrial survey of small-scale enterprises (SEs) was undertaken in the City of São Paulo and its vicinity in July and August 1992 with the collaboration of Professor Gilson Schwartz, Institute of Economics, Campinas University. It covered more than 200 business establishments. Of these, information was obtained from 196: 107 micro-enterprises and 89 SEs (see Appendix Table 4–1–1). The establishments were concentrated in three industrial subsectors: metalworking (83), apparel (74), and plastics (39). Business factors such as production, capital, employment, finance, technology, and organization were examined. Of particular importance were productivity and competitiveness factors. These were examined through questions about shop-floor production processes and organizational aspects, such as subcontracting.

The questionnaire, which was comprised of 114 questions, was conducted orally at the place of business. The interviewers first telephoned entrepreneurs who were listed in association directories or the yellow pages, and those who agreed to be surveyed were visited directly. The survey area covered the greater São Paulo and Campinas area (see Appendix Table 4–1–2).

The surveyed establishments had an average capitalization of U.S.$549,000 per establishment. Each establishment sold on average goods worth U.S.$1,103,000 per year and had thirty-one persons employed in 1991.

A report of the interview results [33] is under negotiation with SEBRAE for publication. As reference, readers are recommended to consult a study on micro-enterprises which was carried out by IBGE (Instituto Brasileiro de Geografía e Estatística) in 1985 (IBGE, *Microempresas: Censos econômicos, 1985* [Rio de Janeiro, 1989]).

Mexican Industrial Survey of Small-Scale Enterprises

An industrial survey of SEs was undertaken in the Federal District of Mexico and

APPENDIX TABLE 4–1–1
SIZE AND TYPE OF SURVEYED ESTABLISHMENTS: BRAZIL, 1991
(No. of Establishments)

Distribution by the Number of Permanent Employees	Metal-working	Apparel	Plastics	Total
Micro-enterprises				
0 to 20 employees	36	55	16	107
Small-scale enterprises				
21 to 100 employees	47	19	23	89
Total	83	74	39	196

Source: [33].

APPENDIX TABLE 4–1–2
REGIONAL DISTRIBUTION OF SURVEYED ESTABLISHMENTS:
SÃO PAULO AND ITS VICINITY

County	Metal-working		Apparel		Plastics		Total	
	No.	%	No.	%	No.	%	No.	%
1. Americana	0	0.0	14	18.9	3	7.7	17	8.7
2. Aracatuba	0	0.0	0	0.0	1	2.6	1	0.5
3. Birigui	18	21.7	7	9.5	2	5.1	27	13.8
4. Campinas	17	20.5	21	28.4	15	38.5	53	27.0
5. Cerqueira Cesar	0	0.0	0	0.0	1	2.6	1	0.5
6. Diadema	0	0.0	1	1.4	0	0.0	1	0.5
7. Guarulhos	2	2.4	1	1.4	0	0.0	3	1.5
8. Nazare Paulista	0	0.0	0	0.0	1	2.6	1	0.5
9. Nova Odessa	1	1.2	1	1.4	1	2.6	3	1.5
10. Osasco	1	1.2	0	0.0	1	2.6	2	1.0
11. Pirassununga	1	1.2	0	0.0	0	0.0	1	0.5
12. Santa Barbara d'Oeste	0	0.0	0	0.0	1	2.6	1	0.5
13. Santo Andre	2	2.4	0	0.0	2	5.1	4	2.0
14. São Bernardo	0	0.0	1	1.4	0	0.0	1	0.5
15. São Paulo	39	47.0	27	36.5	12	30.8	78	39.8
16. Sumare	2	2.4	0	0.0	0	0.0	2	1.0
Total	83	100.0	74	100.0	39	100.0	196	100.0

Source: [33].

the state of Mexico in February and March 1992 with the collaboration of Professor Clemente Ruiz Durán, Faculty of Economics, National Autonomous University of Mexico (UNAM). It covered more than 200 business establishments. Of these, information was obtained from 129: 65 micro-enterprises and 64 small-scale enterprises (see Appendix Table 4 –2–1). The enterprises were concentrated in three industrial sectors: metalworking (33), apparel (58), and plastics (38). Business factors including production, capital, employment, finance, technology and organization were examined. Productivity and competitiveness were of particular interest and were exam-

APPENDIX TABLE 4–2–1
SIZE AND TYPE OF SURVEYED ESTABLISHMENTS: MEXICO, 1991
(No. of Establishments)

Distribution by the Number of Permanent Employees	Metal-working	Apparel	Plastics	Total
Micro-enterprises				
0 to 15 employees	29	21	15	65
Small-scale enterprises				
16 to 100 employees	4	37	23	64
Total	33	58	38	129

Source: [32].

APPENDIX TABLE 4–2–2
REGIONAL DISTRIBUTION OF SURVEYED ENTERPRISES:
MEXICO CITY AND ITS VICINITY

County	Metal-working		Apparel		Plastics		Total	
	No.	%	No.	%	No.	%	No.	%
1. Alvaro Obregon	0	0.0	2	3.4	0	0.0	2	1.6
2. Azcapotzalco	1	3.0	1	1.7	1	2.6	3	2.3
3. Benito Juarez	1	3.0	9	15.5	4	10.5	14	10.9
4. Coyoacan	0	0.0	2	3.4	0	0.0	2	1.6
5. Cuauhtemoc	16	48.5	27	46.6	8	21.1	51	39.5
6. Gustavo A. Made	1	3.0	1	1.7	1	2.6	3	2.3
7. Iztacalco	3	9.1	9	15.5	12	31.6	24	18.6
8. Iztapalapa	0	0.0	2	3.4	1	2.6	3	2.3
9. Miguel Hidalgo	1	3.0	2	3.4	2	5.3	5	3.9
10. Milpa Alta	1	3.0	0	0.0	0	0.0	1	0.8
11. V. Carranza	9	27.3	3	5.2	6	15.8	18	14.8
12. Ecatepec	0	0.0	0	0.0	1	2.6	1	0.8
13. Naucalpan	0	0.0	0	0.0	1	2.6	1	0.8
14. Netzahualcoyotl	0	0.0	0	0.0	1	2.6	1	0.8
Total	33	100.0	58	100.0	38	100.0	129	100.0

Source: [32].

ined through questions about shop-floor production processes and organizational aspects, such as subcontracting. The questionnaire included 108 questions and was administered orally at the place of business. Interviewers first telephoned entrepreneurs who were listed in association directories or the yellow pages, and those who agreed to be surveyed were visited directly. The survey area covered Mexico City and its vicinity (see Appendix Table 4–2–2).

The surveyed establishments had an average capitalization of U.S.$148,000 per establishment. Each sold on average goods worth U.S.$528,000 per year, and had twenty-four persons employed in 1991. Compared with those in Brazil, the Mexican

SEs surveyed were, on average, smaller particularly in the metalworking industry.

A report of the inverview results [32] is also partly cited in Ruiz Durán and Kagami, *Potencial tecnológico de la micro y pequeña empresa en México,* published by NAFIN, Mexico in 1993 [55]. As reference, readers are recommended to consult studies on SMEs, including a NAFIN study (*Encuesta de la industria mediana y pequeña, 1985* [NAFIN, 1988]), and one conducted by Ruiz Durán and Zubirán (*Cambio en la estructura industrial y el papel de las micro, pequeña y mediana empresas en México* [NAFIN, 1992]).