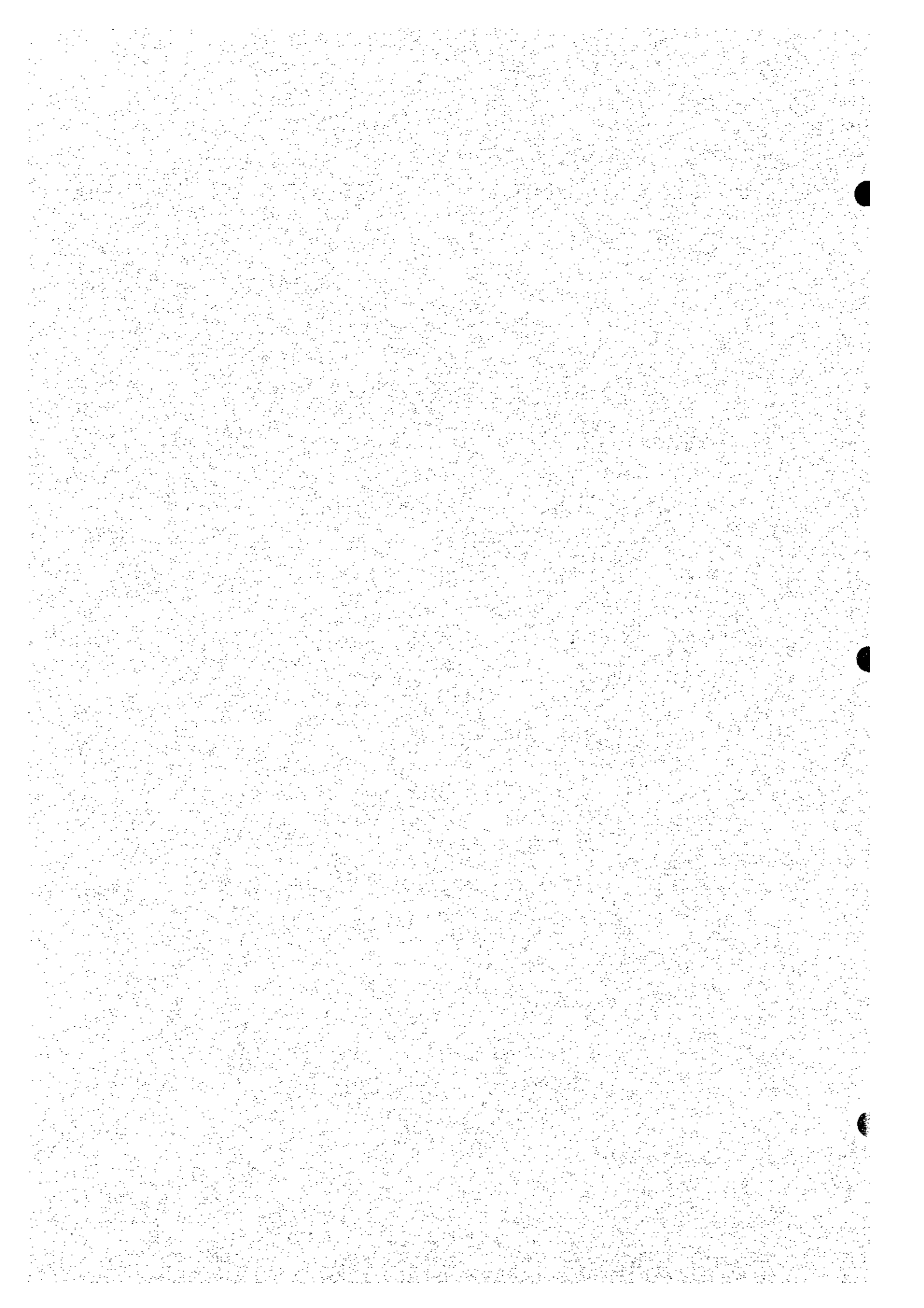


Chapter 1

Mexican Economy and Automotive and Electrical/Electronic Industries



Chapter 1 Mexican Economy and Automotive and Electrical/Electronic Industries

1.1 Mexican Economy and Manufacturing Industry

1.1.1 GDP Share of the Manufacturing Industry

Table 1.1-1 shows changes in GDP and sectoral share between 1990 and 1995. The manufacturing industry was the second largest sector measured by a percentage share of real GDP, next to the tertiary sector consisting of sales and service. Although the industry's share fell from 22.92% to 22.48% between 1991 and 1994, it has picked up to 22.61% in 1995. According to data during the decade up to 1991, the share maintained a 21% level since 21.65% in 1981, except for 1983 and 1984 when it dropped to a 20% level, then rose to a 22% level on and after 1989. Generally, a country with its manufacturing sector's share exceeding 30% is considered to be an industrialized country, and the share peaks out at a nearly 40% level. This represents the emergence of the tertiary industry to replace the secondary industry.

The government has announced that the growth rate of real GDP was minus 6.9% in 1995, following the economic crisis triggered by the marked devaluation of the peso at the end of 1994.

1.1.2 Employment in the Manufacturing Industry

Changes in Mexico's working population between 1986 through 1994 and sectoral breakdown are shown in Table 1.1-2. Yearly changes in the manufacturing industry's share during the same period are shown below. It has been relatively stable at a 10%-11% range with some declining trend.

Table 1.1-3 Employment Share of Manufacturing Industry

(Unit : %)									
1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
11.1	11.1	11.0	11.2	11.1	10.8	10.5	10.0	9.8	

Source : Table 1.1-2

Table 1.1-1 Gross Domestic Product by Sector

(Unit : Thousand Pesos at 1980 Price)

	1990		1991		1992		1993		1994		1995	
	Value	% of Total	Value	% of Total	Value	% of Total	Value	% of Total	Value	% of Total	Value	% of Total
I Agriculture, Livestock, Forestry, and Fishing	408,807	7.75	412,742	7.56	408,643	7.28	414,417	7.34	431,713	7.37	415,500	7.62
II Mining	188,028	3.57	189,491	3.47	192,898	3.43	194,613	3.44	197,745	3.38	196,300	3.60
III Manufacturing Industry	1,203,924	22.84	1,252,246	22.92	1,280,655	22.80	1,270,979	22.50	1,317,035	22.48	1,232,500	22.61
IV Construction	267,834	5.08	274,308	5.02	295,720	5.27	303,982	5.38	323,573	5.52	252,500	4.63
V Electricity, Gas, and Water	78,713	1.49	80,817	1.48	83,246	1.48	86,733	1.54	93,409	1.59	96,300	1.77
VI Commerce, Restaurants, and Hotels	1,355,138	25.71	1,413,622	25.88	1,464,321	26.07	1,444,698	25.57	1,485,441	25.36	1,271,700	23.33
VII Transportation and Communications	346,699	6.58	366,949	6.72	394,872	7.03	407,968	7.22	439,885	7.51	431,500	7.92
VIII Financial Services, Insurance and Real Estate Renting	568,570	10.79	590,417	10.81	612,411	10.90	641,034	11.35	674,150	11.51	676,600	12.41
IX Social and Community Services	927,787	17.60	962,024	17.61	968,189	17.24	979,770	17.34	998,581	17.05	974,900	17.88
Imputed Banking Services	-73,961	-1.40	-79,887	-1.46	-85,000	-1.51	-94,520	-1.67	-104,054	-1.78	-96,200	-1.76
Total	5,271,539	100.00	5,462,729	100.00	5,615,955	100.00	5,649,674	100.00	5,857,478	100.00	5,451,600	100.00

Source : Banco de México

Table 1.1-2 Employment by Sector

(Unit : Thousand Employment, Annual Average)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
	I Agriculture, Livestock, Forestry, and Fishing	5,946	6,036	6,188	6,047	5,732	5,959	5,866	5,921	5,903
II Mining	257	270	276	272	280	279	267	255	256	-
III Manufacturing Industry	2,405	2,430	2,433	2,493	2,510	2,500	2,447	2,325	2,303	-
IV Construction	1,891	1,898	1,904	2,129	2,411	2,489	2,630	2,709	2,810	-
V Electricity, Gas, and Water	101	104	107	109	113	112	111	107	108	-
VI Commerce, Restaurants, and Hotels	3,108	3,152	3,200	3,290	3,390	3,467	3,524	3,469	3,508	-
VII Transportation and Communications	1,035	1,055	1,029	1,025	1,074	1,114	1,132	1,128	1,148	-
VIII Financial Services, Insurance and Real Estate Renting	471	479	487	490	495	503	507	512	522	-
IX Social and Community Services	6,427	6,440	6,427	6,476	6,531	6,699	6,734	6,825	6,895	-
Total	21,641	21,864	22,051	22,331	22,536	23,122	23,218	23,251	23,453	-

Note : Data for 1994 is estimated.

Source : INEGI, "Sistema de Cuentas Nacionales de México"

1.1.3 Exports and Imports by the Manufacturing Industry

According to trade statistics during the past decade (Table 1.1-4), the country's total trade balance turned into a deficit in 1990, which continuously increased to 18.5 billion US\$ in 1994. Then, the drastic devaluation of the peso at the end of the year spurred exports and diminished imports, resulting in a surplus of 7.3 billion US\$ in 1995. Changes in the total trade balance shown in Table 1.1-4 are plotted on a graph in Figure 1.1-1. Detailed export and import data during the four years after 1992 are shown in Attachment 1-1. From these data, trade balance of the manufacturing sector was estimated as shown in Figure 1.1-2.

Table 1.1-5 shows the contribution of the manufacturing sector to the overall trade balance. Clearly, the manufacturing sector's continuous deficit (except for 1995) has been offset by a surplus in the mining sector including petroleum.

**Table 1.1-5 Foreign Trade Balance
Manufacturing Industry - Total**

	(Unit : Million US\$)			
	1992	1993	1994	1995
Balance of Manufacturing Industry	-22,066.4	-19,067.7	-23,349.6	111.9
Total Balance	-15,933.6	-13,480.6	-18,463.7	7,347.5

Source : Attachment-1, Table 1.1-4

Finally, Maquiladora has gradually been increasing its share in the country's exports and imports, as shown in Figure 1.1-3 and 1.1-4 for 10-years. For instance, Maquiladora's share in export was 43.1% in 1994 and 39.2% in 1995, and that in import 25.8% and 36.1% respectively.

Table 1.1-4 Foreign Trade Balance

(Unit : Million US\$)

	Year										
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
Export (FOB)	21,803.5	27,599.5	30,691.5	35,171.1	40,711.0	42,687.6	46,195.7	51,886.0	60,882.2	79,823.5	
Maquiladora	5,645.9	7,105.0	10,145.7	12,328.9	13,872.5	15,833.1	18,680.1	21,853.0	26,269.2	31,311.1	
Others	16,157.6	20,494.5	20,545.8	22,842.2	26,838.5	26,854.5	27,515.6	30,032.9	34,613.0	48,512.4	
<i>Petroleum</i>	6,307.2	8,629.8	6,711.2	7,876.0	10,103.7	8,166.4	8,305.6	7,418.4	7,445.0	8,452.5	
Crude oil	-	-	-	-	-	-	-	6,485.3	6,624.1	7,449.5	
Others	-	-	-	-	-	-	-	933.1	820.9	1,003.0	
<i>Non Petroleum</i>	15,496.3	18,969.7	23,980.3	27,295.1	30,607.3	34,521.2	37,889.1	44,467.5	53,437.1	71,371.1	
Agriculture	2,098.4	1,543.0	1,670.3	1,753.9	2,162.4	2,372.5	2,112.4	2,504.2	2,678.4	4,016.2	
Mining	509.7	576.0	660.3	604.8	616.9	546.8	356.2	278.2	356.7	545.0	
Manufacturing	12,888.2	16,850.7	21,649.7	24,936.4	27,828.0	31,601.9	35,420.5	41,685.1	50,402.0	66,809.9	
Maquiladora	5,645.9	7,105.0	10,145.7	12,328.9	13,872.5	15,833.1	18,680.1	21,853.0	26,269.2	31,311.1	
Others	7,242.3	9,745.7	11,504.0	12,607.5	13,955.5	15,768.8	16,740.4	19,832.1	24,132.8	35,498.8	
Import (FOB)	16,783.8	18,812.4	28,082.0	34,766.1	41,593.4	49,966.5	62,129.3	65,366.5	79,345.9	72,475.9	
Maquiladora	4,351.3	5,507.0	7,808.3	9,328.1	10,321.4	11,782.4	13,936.7	16,443.0	20,466.2	26,178.8	
Others	12,432.5	13,305.4	20,273.7	25,438.0	31,272.0	38,184.1	48,192.6	48,923.6	58,879.7	46,297.1	
Consumer Goods	846.4	767.6	1,921.6	3,498.6	5,098.6	5,834.3	7,744.1	7,842.4	9,510.4	5,334.7	
Intermediate Goods	12,983.3	15,414.2	22,133.6	26,498.8	29,705.2	35,544.7	42,829.5	46,468.3	56,513.7	58,443.9	
Maquiladora	4,351.3	5,507.0	7,808.3	9,328.1	10,321.4	11,782.4	13,936.7	16,443.0	20,466.2	26,178.8	
Others	8,632.0	9,907.2	14,325.3	17,170.7	19,383.8	23,762.3	28,892.8	30,025.3	36,047.6	32,265.1	
Capital Goods	2,954.1	2,630.6	4,026.8	4,768.7	6,789.6	8,587.5	11,555.7	11,055.9	13,321.7	8,697.3	
Trade Balance	5,019.7	8,787.1	2,609.5	405.0	-882.4	-7,278.9	-15,933.6	-13,480.6	-18,463.7	7,347.5	
Maquiladora	1,294.6	1,598.0	2,337.4	3,000.8	3,551.1	4,050.7	4,743.4	5,410.1	5,803.1	5,132.3	
Others	3,725.1	7,189.1	272.1	-2,595.8	-4,433.5	-11,329.6	-20,677.0	-18,890.6	-24,266.8	2,215.2	

Source : Banco de México, "Indicadores del Sector Externo (Diciembre 1995)"
SECOFI, "Dirección General de Industrias"

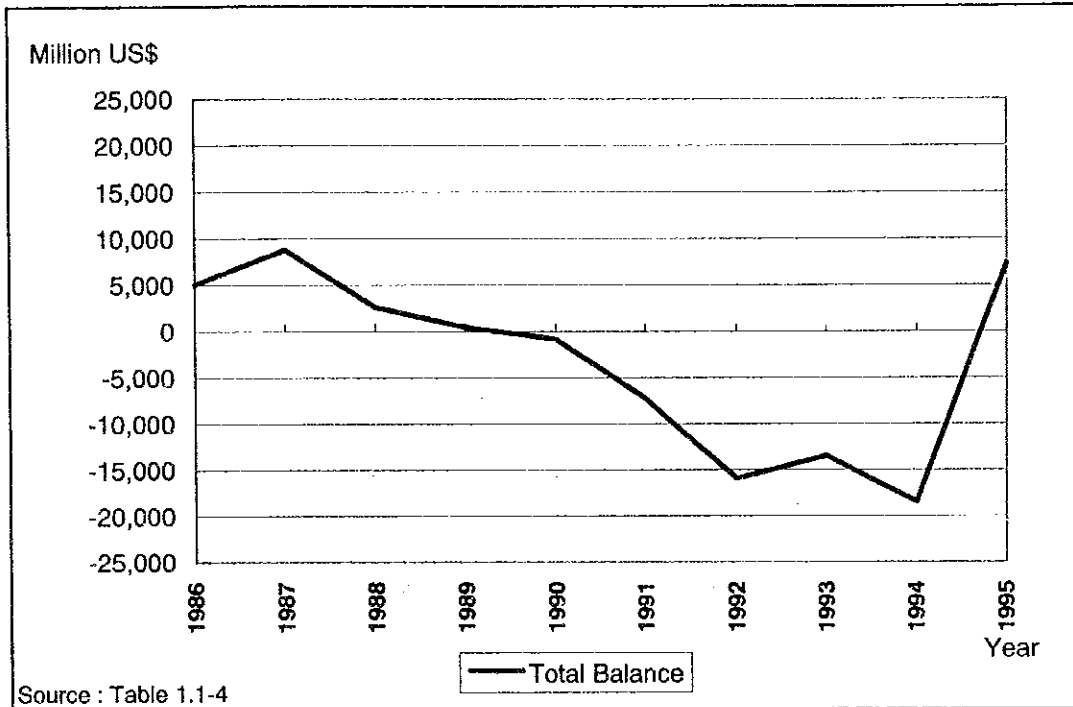
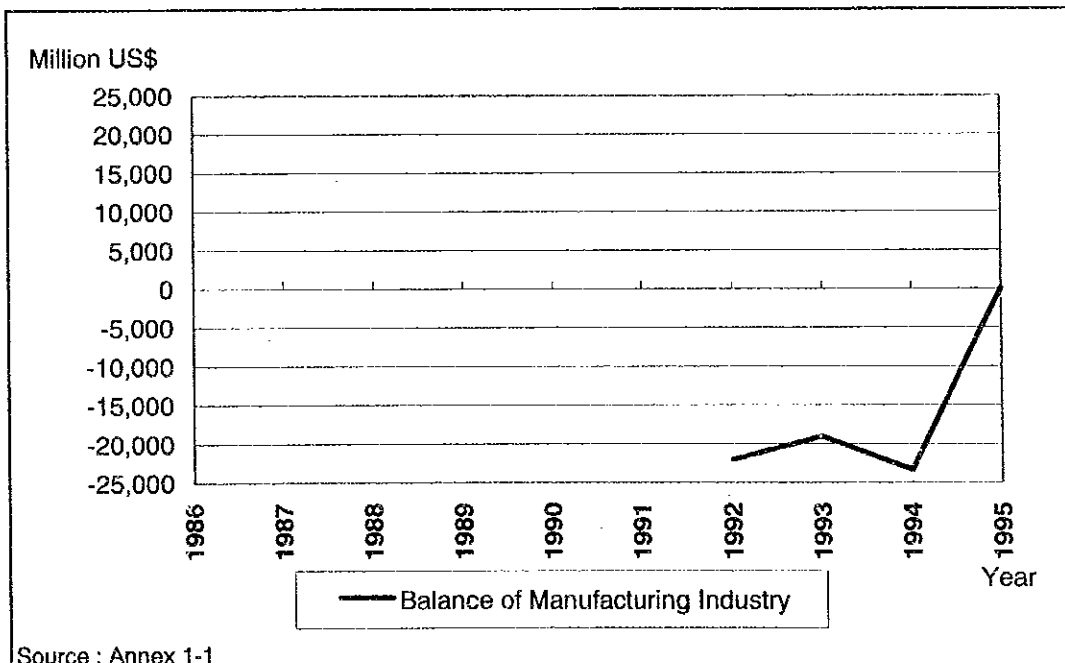
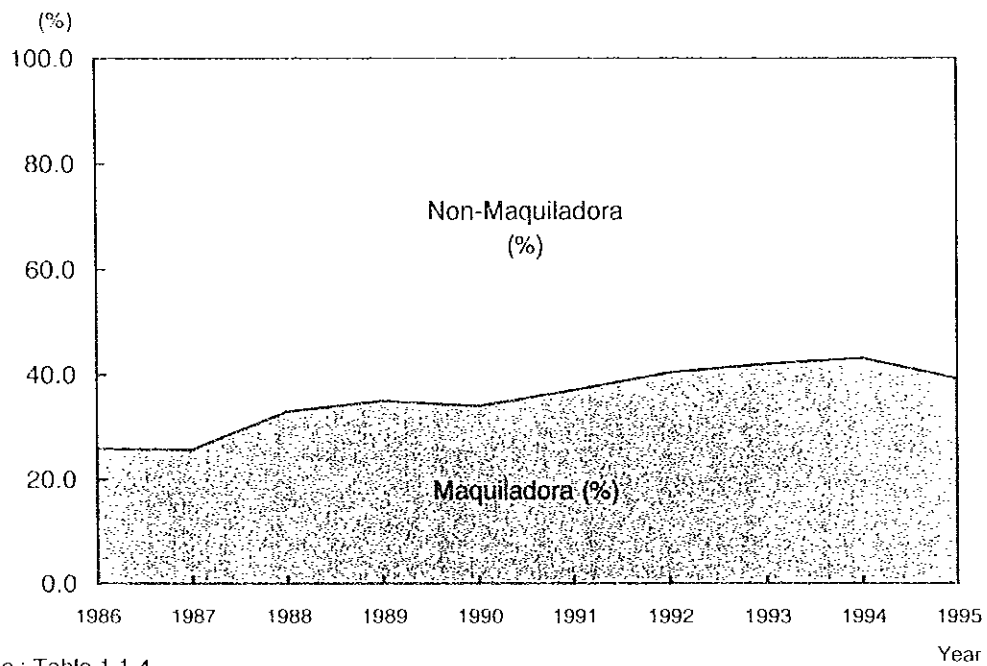


Figure 1.1-1 Foreign Trade Balance (Total)



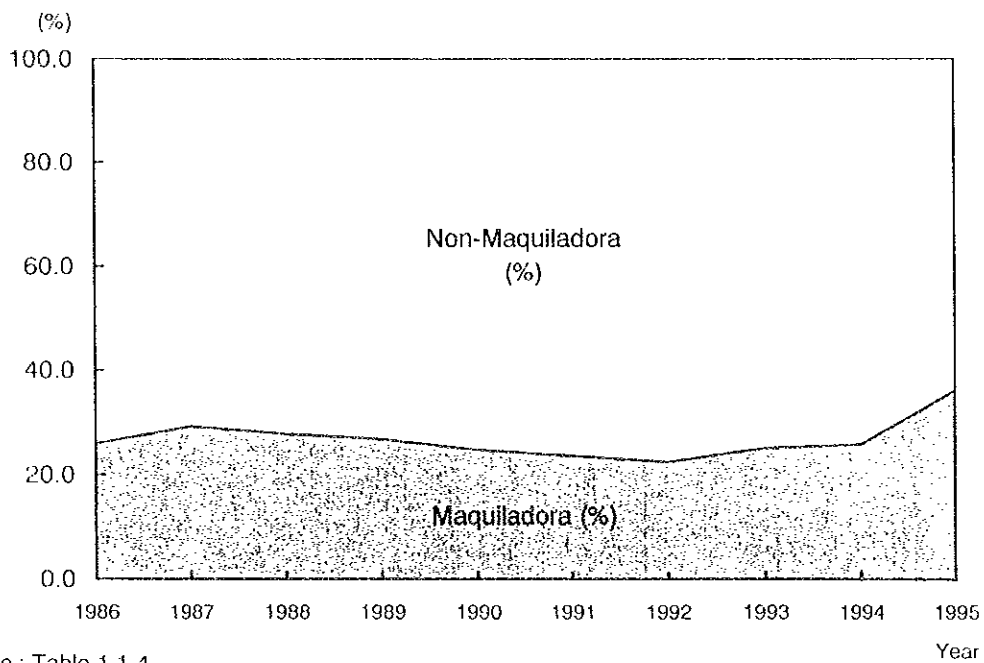
Year	1992	1993	1994	1995
Export	36,169	42,500	51,075	67,635
Import	58,235	61,568	74,425	67,523
Balance	-22,066	-19,068	-23,350	112

Figure 1.1-2 Foreign Trade Balance (Manufacturing Industry)



Source : Table 1.1-4

Figure 1.1-3 Share of Maquiladora in Total Export



Source : Table 1.1-4

Figure 1.1-4 Share of Maquiladora in Total Import

1.1.4 Manufacturing Trade Organizations

1) Outline of trade organizations

All the enterprises in Mexico are required to register with any of national chamber (Cámara) under the law, "Ley de las Cámaras de Comercio y de las de Industria." In the manufacturing sector, there are 67 industrial chambers organized for each industry, under the United Federation of Industrial Chambers (Confederación de Cámaras Industriales de los Estados Unidos Mexicanos: CONCAMIN). In addition to CONCAMIN, there are two other federations, COPARMEX and CONCANACO. CCE (Consejo Coordinador Empresarial) coordinates the three federations. Legally, Cámaras are private organizations, and those related to the automobile and electric/electronics industries are listed as follows:

National Chamber of Manufacturing Industry

(CANACINTRA: Cámara Nacional de la Industria de Transformación)

Chamber of Manufacturing Industry in the State of Nuevo Leon

(CAINTRA: Cámara de la Industria de Transformación del Estado de Nuevo León)

Chamber of Manufacturing Industry in the State of Jalisco

(CAREINTRA: Cámara Regional de la Industria de Transformación del Estado de Jalisco)

National Chamber of Electric Manufacturers

(CANAME: Cámara Nacional de Manufacturas Eléctricas)

National Chamber of Electronics and Telecommunications Industries

(CANIECE: Cámara Nacional de la Industria Electrónica y de Comunicaciones Eléctricas)

In addition to legally authorized Cámara, there are 30 trade associations (Asociación) that are purely private in nature and which enterprises join on a voluntary basis. The following are the five trade associations which are related to the automotive and electric/electronic industries:

AMIA	Asociación Mexicana de la Industria Automotriz, A.C.
ANPACT	Asociación Nacional de Productores de Autobuses, Camiones y Tractocamiones, A.C.
INA	Industria Nacional de Autopartes, A.C.
ANFAD	Asociación Nacional de Fabricantes de Aparatos Domésticos, A.C.

ANIPCO Asociación Nacional de la Industria de Programas de Cómputo,
A.C.

Figure 1.1-5 shows an organizational structure of the above trade organizations.

2) Problems of trade organizations

In principal, it is desirable for all the enterprises to participate in any trade organization. And the trade organizations, regardless of whether they are divided into several factions, should be ready to cooperate in dealing with issues on a nationwide scale. There are several reasons for this. Firstly, trade organizations can be used as a channel of communication for private enterprises to exchange opinions and to convey their view or request to the government or other organizations. Secondly, if the majority of enterprises do not belong to any trade organization, it would be difficult to grasp the real situation they are in.

According to the survey by the Team, however, there are not a few enterprises which do not register with any Cámara. Furthermore, Cámara does not have a complete, and updated list of registering companies, nor statistical data of the industry. This makes it difficult to offer nationwide services such as subcontract intermediary and data base services.

"Ley de las Cámaras" has recently been revised (December 1996 - January 1997). Before the revision, as mentioned above, even though the registration with any Cámara was obligatory to all the enterprises, there were some enterprises who did not comply with this, especially among micro- and small-sized enterprises. And those enterprises registered with any Cámara,

automatically, were affiliated to it. The revised law separates the obligatory "Registration" and the voluntary "Affiliation" to Cámara. The new law has the penalty clause for not-registering enterprises. On the other hand, the registration fee to be incurred by all the enterprises is reasonably low to avoid that it may excuse nonfulfillment of registration. All the "Cámaras" are to submit the registration list to SECOFI, which will serve as base data of "Sistema de Información Empresarial Mexicano". It is expected that the complete nationwide list of enterprises to be available under this scheme will facilitate the grasp the real situation of each industry.

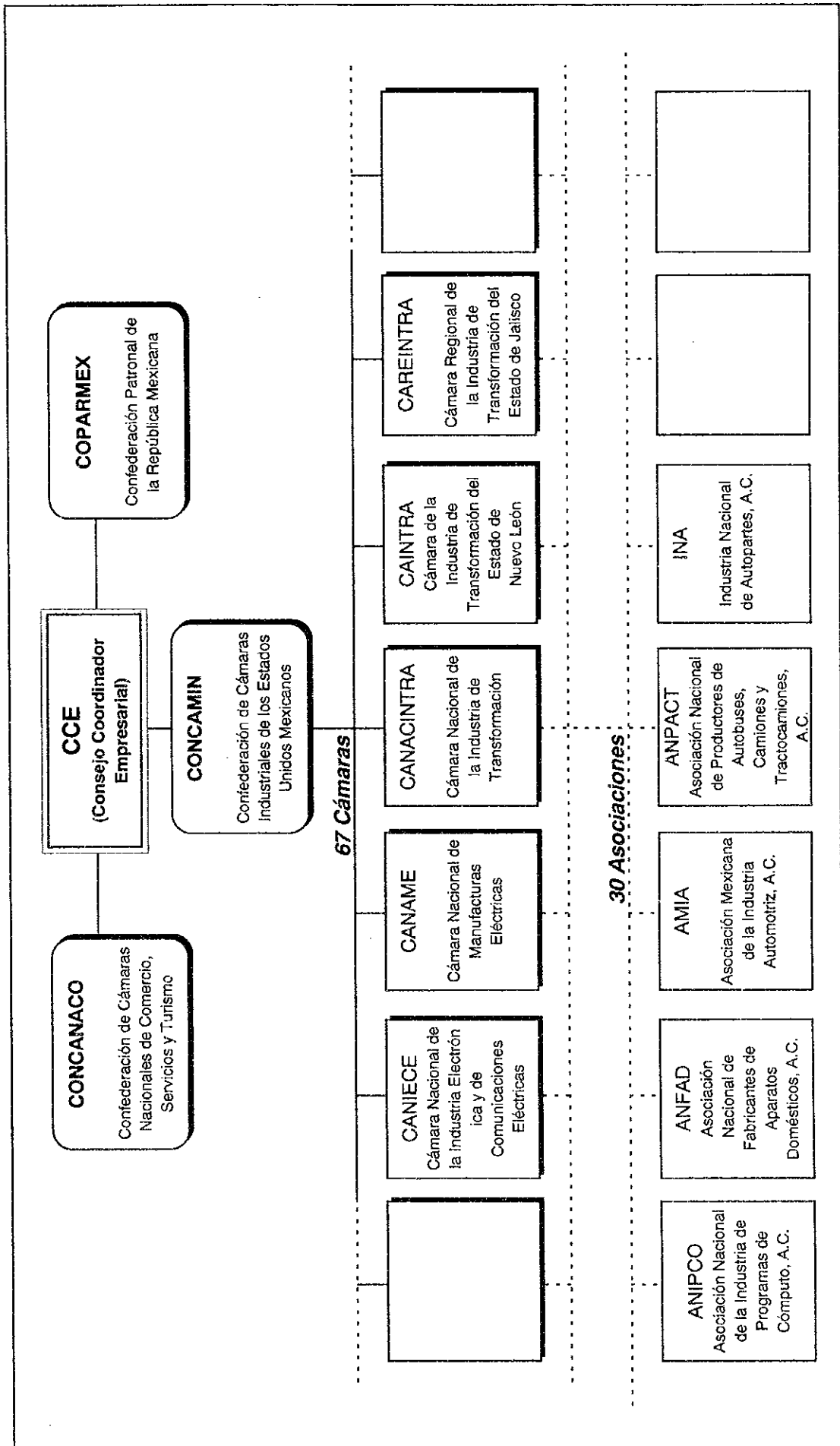
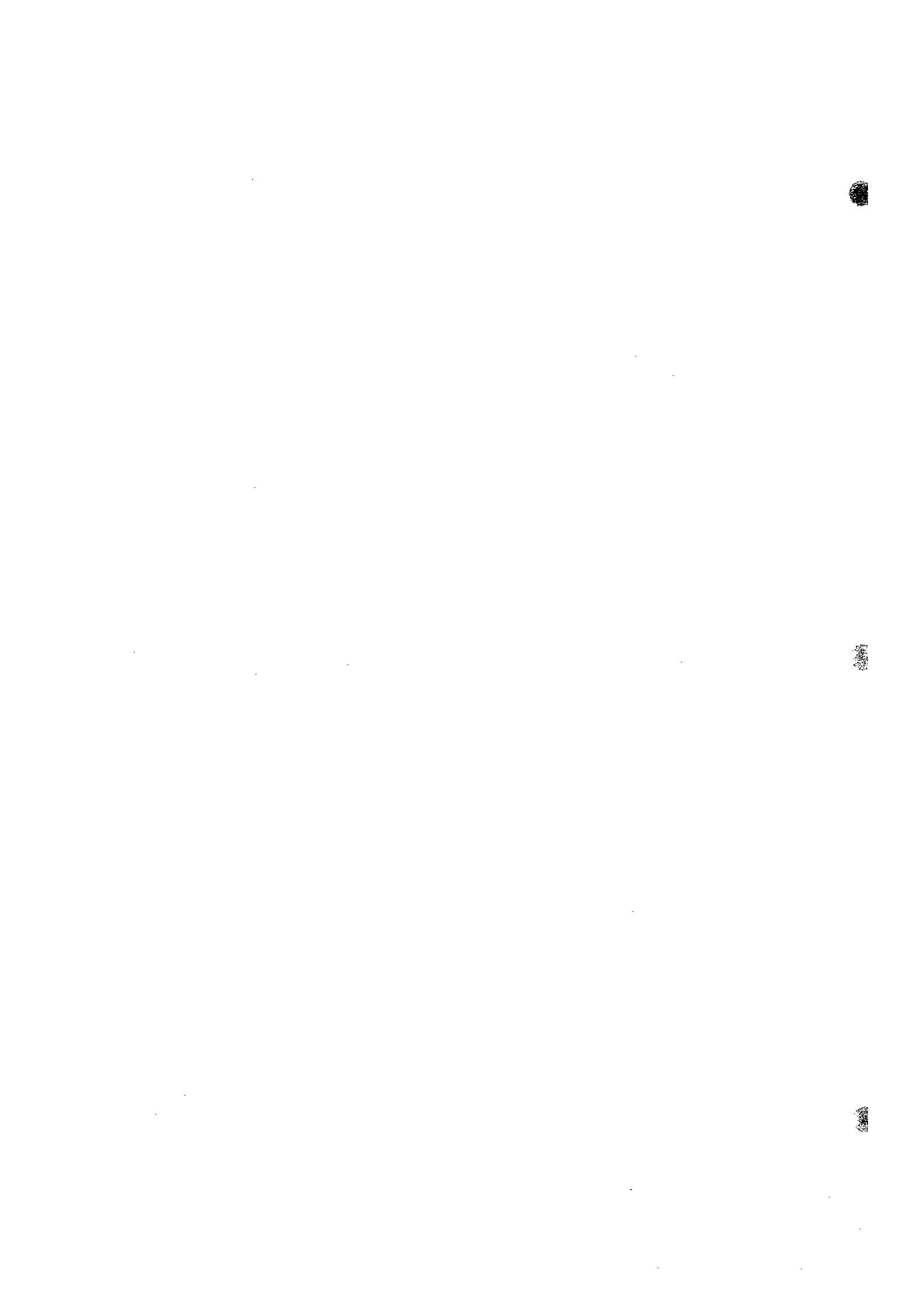


Figure 1.1-5 Organization of Manufacturing Industry



1.2 Mexican Manufacturers and the Automotive and Electrical/Electronic Industries

1.2.1 GDP and Employment

Real GDP and employment of the manufacturing sector by industry are shown in Tables 1.2-1 and 1.2-2. Note that both automobile and electrical/electronic industries, including final products and parts, are included in Item VIII of the macro-economics statistics. Item VIII is divided into 11 sections (Rama), out of which the following 4 sections are covered by this study .

53	Electrical
54	Electronic
56	Automotive assemblers
57	Autoparts

Tables 1.2-3 and 1.2-4 illustrates the GDP and employment by aforementioned classification(Rama).

Measured by the four-year average after 1990, the automotive industry (including both finished products and parts) accounted for 10.0% of the manufacturing sector's share of real GDP (2.3% of total GDP). As for employment, it accounted for 6.2% of the manufacturing sector's share and 0.7% of total employment. In comparison, the electrical/electronic sector amounted to 2.6% of the manufacturing sector's share in terms of real GDP (0.6% of total GDP), and 3.0% in terms of employment (0.6% of total employment).

INEGI's data were used for employment among various statistical data available.

1.2.2 Trade Balance

Table 1.2-5 and 1.2-6 shows the share of the entire manufacturing sector in total exports and imports, in addition to the respective shares of the automobile and electrical/electronics industries. Note that the figures include parts exports and imports, and that both household- and industrial-electrical equipment are taken into account with regard to electrical/electronic industries. Figure 1.2-1 illustrates breakdown in 1995.

Table 1.2-1 GDP Share of Manufacturing Industries

(Unit : Thousand Pesos at 1980 Price)

	1990		1991		1992		1993		1994		1995	
	Value	% of Total	Value	% of Total	Value	% of Total	Value	% of Total	Value	% of Total	Value	% of Total
I Food Beverages, and Tobacco	307,500	25.54	323,000	25.79	334,000	26.08	336,600	26.49	338,000	25.66	330,552	26.82
II Clothing and footwear	130,100	10.81	125,300	10.01	120,800	9.43	114,900	9.04	113,400	8.61	100,530	8.16
III Wood products	39,200	3.26	39,500	3.15	39,300	3.07	37,700	2.97	38,600	2.93	33,126	2.69
IV Printing	69,700	5.79	68,800	5.49	69,600	5.43	67,300	5.30	66,400	5.04	67,873	5.51
V Chemical, Petroleum Products, Rubber and Plastics	220,000	18.28	226,600	18.10	231,300	18.06	225,900	17.78	237,300	18.02	229,784	18.64
VI Non-metallic Minerals, except Oil	81,800	6.80	84,400	6.74	89,000	6.95	90,100	7.09	93,600	7.11	79,930	6.49
VII Basic Metal Industries	73,900	6.14	71,200	5.69	71,200	5.56	74,800	5.89	81,100	6.16	89,337	7.25
VIII Metal Products, Machinery, and Equipment	252,100	20.94	283,300	22.62	293,200	22.89	291,500	22.94	316,600	24.04	281,725	22.86
IX Other Industries	29,500	2.45	30,100	2.40	32,300	2.52	32,000	2.52	32,100	2.44	19,615	1.59
Total	1,203,800	100.00	1,252,200	100.00	1,280,700	100.00	1,270,800	100.00	1,317,100	100.00	1,232,472	100.00

Source : SCN, INEGI.

Table 1.2-2 Employment of Manufacturing Industries

(Unit : Thousand Employment, Annual Average)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
	I. Food Beverages, and Tobacco	666	664	662	676	673	686	692	688	681
II Clothing and footwear	418	412	401	404	399	385	368	346	343	-
III Wood products	115	122	119	116	115	114	114	105	104	-
IV Printing	121	121	122	125	126	124	123	116	115	-
V Chemical, Petroleum Products, Rubber and Plastics	318	327	333	335	342	339	322	299	296	-
VI Non-metallic Minerals, except Oil	159	170	165	176	176	169	166	158	157	-
VII Basic Metal Industries	93	88	89	89	83	79	69	59	58	-
VIII Metal Products, Machinery, and Equipment	461	467	479	500	519	522	509	470	466	-
IX Other Industries	54	59	63	71	76	82	85	84	83	-
Total	2,405	2,430	2,433	2,493	2,510	2,500	2,447	2,325	2,303	-

Note : Data for 1994 is estimated.

Source : INEGI, "Sistema de Cuentas Nacionales de México"

Table 1.2-3 GDP Share of Electrical/Electronic and Automotive Industries

	(Unit : Thousand Pesos at 1980 Price)					
	1990	1991	1992	1993	1994	1995
Total GDP	5,271,539	5,462,729	5,615,955	5,649,674	5,857,478	5,451,600
Gran-Division III Manufacturing Industry	1,203,800	1,252,200	1,280,700	1,270,800	1,317,100	1,232,472
Division VIII Metal Products, Machinery and Equipment	252,100	283,300	293,200	291,500	316,600	281,725
53 Electrical domestic appliances	7,206	8,229	8,789	8,229		
54 Electronic appliances	22,604	22,733	25,128	24,658		
Total (53+54)	29,810	30,962	33,917	32,887		
% of Total GDP	0.57	0.57	0.60	0.58		
% of Manufacturing Industry	2.48	2.47	2.65	2.59		
56 Automotive - Assemblers	67,434	85,563	95,771	93,965		
57 Automotive - Parts and components	36,773	42,296	42,222	39,764		
Total (56+57)	104,207	127,859	137,993	133,729		
% of Total GDP	1.98	2.34	2.46	2.37		
% of Manufacturing industry	8.66	10.21	10.77	10.52		

Source : INEGI

Table 1.2-4 Employment of Electrical/Electronic and Automotive Industries

(Unit : Thousand Employment, Annual Average)

	1990	1991	1992	1993	1994	1995
Total	22,536	23,112	23,218	23,251	23,453	
Ran-Division III Manufacturing Industry	2,510	2,500	2,447	2,325	2,303	
Division VIII Metal Products, Machinery and Equipment	519	522	509	470	466	
53 Electrical domestic appliances	18	18	18	15		
54 Electronic appliances	55	53	56	56		
Total (53+54)	73	71	74	71		
% of Total	0.32	0.31	0.32	0.31		
% of Manufacturing Industry	2.91	2.84	3.02	3.05		
56 Automotive - Assemblers	60	63	63	57		
57 Automotive - Parts and components	88	93	90	82		
Total (56+57)	148	156	153	139		
% of Total	0.66	0.67	0.66	0.60		
% of Manufacturing Industry	5.90	6.24	6.25	5.98		

Source : INEGI

Table 1.2-5 Export Share of Manufacturing Industry

	(Unit : %)				
	1992	1993	1994	1995	
Export Total	100.0	100.0	100.0	100.0	100.0
Manufacturing	78.3	81.9	83.9	84.7	
Automotive Industry	15.8	17.2	17.7	19.1	
Electric/Electronics	25.4	27.0	28.4	26.2	
Others	37.1	37.7	37.8	39.4	
Others	21.7	18.1	16.1	15.3	
Export - Maquiladora	100.0	100.0	100.0	100.0	
Manufacturing	99.9	100.0	100.0	100.0	
Automotive Industry	6.7	7.6	7.7	7.3	2.9
Electric/Electronics	56.1	56.4	56.5	57.8	22.7
Others	37.1	36.1	35.7	34.9	
Others	0.1	0.0	0.0	0.0	
Export - Excluding Maquiladora	100.0	100.0	100.0	100.0	
Manufacturing	63.6	68.8	71.7	74.9	
Automotive Industry	22.0	24.1	25.3	26.8	16.3
Electric/Electronics	4.6	5.7	7.0	5.8	3.5
Others	37.1	38.9	39.3	42.4	
Others	36.4	31.2	28.3	25.1	

Note : Shaded numbers are percentage against Export Total.

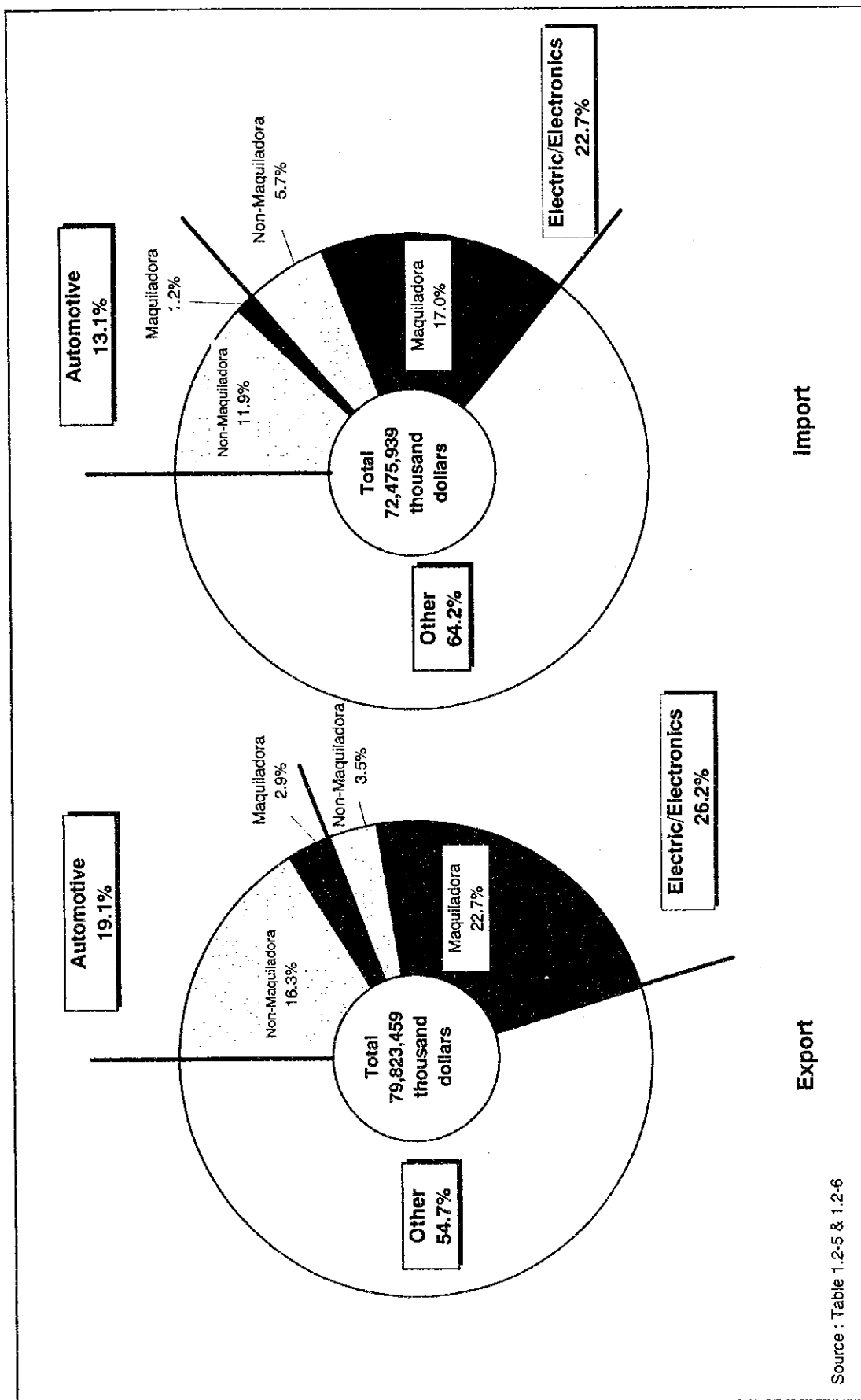
Source : Banco de México, "Indicadores del Sector Externo" (Attachment-1)

Table 1.2-6 Import Share of Manufacturing Industry
(Unit : %)

	1992	1993	1994	1995
Import Total	100.0	100.0	100.0	100.0
Manufacturing	93.7	94.2	93.8	93.2
Automotive Industry	14.7	14.5	14.5	13.1
Electric/Electronics	17.7	19.1	19.3	22.7
Others	61.3	60.6	60.0	57.3
Others	6.3	5.8	6.2	6.8
Import - Maquiladora	100.0	100.0	100.0	100.0
Manufacturing	97.6	96.4	95.7	94.7
Automotive Industry	3.4	2.8	2.8	3.4
Electric/Electronics	42.9	44.6	45.4	47.0
Others	51.3	49.1	47.4	44.3
Others	2.4	3.6	4.3	5.3
Import - Excluding Maquiladora	100.0	100.0	100.0	100.0
Manufacturing	92.6	93.4	93.1	92.3
Automotive Industry	18.0	18.4	18.5	18.7
Electric/Electronics	10.4	10.6	10.2	8.9
Others	64.2	64.4	64.4	64.7
Others	7.4	6.6	6.9	7.7

Note : Shaded numbers are percentage against Import Total.

Source : Banco de México, "Indicadores del Sector Externo" (Attachment-1)



Source : Table 1.2-5 & 1.2-6

Figure 1.2-1 Trade Share of Automotive and Electric/Electronic Industries in 1995

The average share of the manufacturing sector in total exports was approximately 84% during the 2-year period between 1994 and 1995, or 73% if Maquiladora's contribution is excluded. The average share for 1992 and 1993 was 80.1% and 66.2%, respectively, indicating the steady growth of the manufacturing sector's weight in exports.

In 1995, automobiles and electrical/electronic products in total accounted for nearly half (45.3%) of all exports, serving as major foreign-currency earners. While both industries play a crucial role in Mexico's exports, their relations with Maquiladora differ significantly. Comparing Maquiladora firms' contribution to total exports with that of non-Maquiladora companies, as far as the automotive industry is concerned, the former accounted for 2.9% and the latter 16.3%, indicating that exports of completed cars and automotive parts by non-Maquiladora sources represent a much larger share. On the other hand, exports of electrical/electronic products by Maquiladora companies accounted for 22.7% of total exports, and non-Maquiladora 3.5%, the former outstripping the latter.

1.3 Automotive Industry in Mexico

1.3.1 Historical Background of the Automotive Industry and Government Policy

(1) 1920s - 1980s

The history of the automotive industry in Mexico dates back to 1926 when Ford started knockdown production, which was followed by GM in 1937 and Chrysler in 1938. In 1961, the number of manufacturers grew to 12 and total annual production reached 60,000 units.

In 1962, a decree was issued to accelerate import substitution in the automotive industry and promote integrated production within the country. Major targets of the decree are as follows:

- 1) Import ban on engines and mechanical parts, and designation of some local parts as mandatory contents.
- 2) Prior approval of imported parts
- 3) To raise the share of local contents regarding finished cars to 60% or more of direct production cost.
- 4) Ban on parts production by assemblers, except for engines
- 5) Mandatory participation of 60% or more local capital in parts manufacturers

The decree controlled the import of automotive parts by assemblers and raised the minimum ratio of local contents to 60% in an attempt to foster local parts manufacturers. In response, assemblers started to build assembly as well as engine plants in 1962, mainly in Mexico City and its surrounding areas, to meet import substitution requirements. At the same time, a large number of local parts manufacturers and factories were established. Among them were manufacturers of key components such as transmissions and crank-shafts under technical assistance of U.S. leading suppliers.

(2) 1970s

In the 1960s, the industry recorded a threefold increase in production volume. Increased parts imports for car assembly, however, deteriorated the country's overall trade balance. In 1972, a decree required assemblers to offset a

certain percentage of imports by exports. In particular, the decree required the export/import ratio of each manufacturer, which was 30% in 1973, to increase by 10 percentage point annually. In addition, the following incentives were introduced to encourage exports by assemblers:

- 1) Requiring each assembler to export parts made by local suppliers in which local capital holds a majority of share, at least 40% of total exports.
- 2) An assembler who maintains a trade surplus can increase its production quota.
- 3) An assembler who exports 60% or more of total production can additionally manufacture new type engines.

At the same time, a policy was taken to encourage local contents and save foreign currency, including: (a) to mandate parts manufacturers to comply with the 60% local-contents rate, and (b) to grant an additional production quota by 1% in excess of the 60% level.

In response, assemblers made new investment plans for increased exports. However, the first oil crisis in 1973 drove the world economy into recession, which brought about lower automobile demand, making it difficult for the automotive industry to reduce trade deficits through export growth.

In 1977, the government issued a decree requiring assemblers to establish a foreign currency balancing rule in an attempt to encourage the automotive industry to reduce the trade deficit. The decree, at the same time, intended to boost exports of automobiles and related products by developing Mexico into a world-class automobile production base. The following matters were enforced under the decree:

- 1) To introduce a foreign currency balancing rule, requiring assemblers to offset all foreign currency spending required for production activities by exports.
- 2) 50% of exports consist of products made by parts manufacturers in which local capital holds a majority of share (40% in the 1972 decree).
- 3) Higher ratio of mandatory local-contents in real terms

- 4) To increase the minimum ratio of local contents required for parts, which may be included in local contents for assemblers and exports by parts manufacturers, from 60% to 80%.
- 5) Abolition of production quota and price control

As the 1977 decree required assemblers to compensate for all foreign currency expenditure required for production by their own exports, they started to build assembly plants that mainly produce export cars, mainly in the northern part of the country. However, the second oil crisis in 1979 brought about a worldwide decline in automobile demand, which diminished automotive exports from Mexico. This was followed by the oil boom which boosted domestic demand (1978 - 1981) and spurred imports of raw materials and parts required for automobile production, further deteriorating trade balance of the automotive industry as a whole.

(3) 1980s to the present

In 1982, Mexico faced a serious debt crisis, which made the country suffer from a severe shortage of foreign currency reserves and a drastic reduction in domestic automobile demand. In 1983, the government announced a decree to counteract the situation, which aimed to convert the automotive industry (which generated nearly half of the country's trade deficit) into an foreign currency earner, and improve the industry's productivity to enhance its international competitiveness. The decree contained the following regulations:

- 1) Restriction on the number of types and models produced
- 2) Higher ratio of mandatory local contents
- 3) An assembler who maintains a trade surplus and exports more than 50% of total production can produce additional model(s).
- 4) Lower ratio of local contents for export cars corresponding to the export/production ratio.

Exports of engines rapidly increased in early 1980 as engine factories built in the beginning of 1980 started commercial production. Exports of finished cars soared in the mid-1980s, with the lower ratio of mandatory local contents for export cars and the Big Three's strategy to establish Mexico as a source to

supply small cars to the U.S. market. In 1983, the trade balance of the automotive industry turned into a surplus, which continued until 1989.

It was around 1986, the year in which Mexico joined GATT, that her policy shifted from protectionism to deregulation and liberalization. In 1989, a decree was issued in line with this policy change, abolishing restrictions based on the local-contents formula and the list of parts considered as mandatory local-contents: a shift from the previous import substitution strategy. Major reforms initiated by the decree are as follows:

- 1) Assemblers are able to import passenger cars and trucks on condition that the total imports must be below 15% of domestic sales.
- 2) For every 1.00 US\$ worth of import of new cars, assemblers must export 2.50 US\$ of the same in 1991, 2.00 US\$ in 1992 and 1993, and 1.75 US\$ in 1994.
- 3) Following the termination of local-contents designation rule for parts, the ban on imports was lifted, while limited by the domestic rate of additional value in 5).
- 4) Abolition of restrictions on in-house production by assemblers.
- 5) Calculation of the ratio of local contents on the basis of value added within the country, rather than on parts cost or imported materials (domestic value added rate : 36%).

The import of finished cars was deregulated (liberalized) with import restrictions on small cars upheld; finished cars have actually been imported since in 1990. At the same time, assemblers were allowed to procure parts from overseas sources, even though they still had to achieve the local-contents ratio based on the domestic value-added rate. Consequently, domestic parts manufacturers were exposed to competition with foreign products, and thus forced to introduce international-class technology and make efforts to improve productivity and quality. In fact, after the decree, assemblers increased parts import for assembly. Imports of materials for assembly purposes jumped from 950 million US\$ to 3.89 billion US\$ between 1989 and 1990. This brought the automotive industry back to a trade deficit. On the other hand, parts manufacturers who modernized and upgraded production facilities steadily increased indirect exports through assemblers. Exports of

automotive parts grew from slightly below 400 million US\$ in 1990 to 2.1 billion US\$ in 1995.

In 1995, as NAFTA became effective, the decree was amended with some additions to ensure harmonization with NAFTA requirements. In particular, the decree contained gradual amendments in the Automobile Decree to avoid contravention of the NAFTA agreement within 10 years after the effectuation (by 2003). Major provisions are summarized as follows:

- 1) To maintain the domestic value-added rate at 34% up until 1998 and cut it by 1% on an annual basis so that it settles at 29% in 2003. In principle, the rate will be suspended on and after 2004.
- 2) To lower the export/import ratio of each enterprise from 0.8 in 1994 to 0.55 in 2003. The ratio system is to be abolished after 2004.
- 3) To immediately eliminate import quota restrictions on finished cars.

It remains unclear whether the Automobile Decree will be completely eliminated.

(4) Summary of changes in promotional policy for the automotive industry in Mexico

As discussed in the previous sections, the Mexican government issued a series of decrees to promote the automotive industry (collectively referred to as the Automobile Decree) in 1962, 1972, 1977, 1983, and 1989. The first four decrees were designed to encourage import substitution for automotive parts, mainly relying on regulatory measures consisting of: 1) designation of parts subject to mandatory local contents, 2) import restrictions on finished cars, and 3) restriction on the in-house production of parts. In addition, the 1972, 1977 and 1983 decrees obliged assemblers to export their products, and gradually imposed stricter export obligations. Then, the 1989 decree made a sharp turn in that it aimed to remove protective measures for the auto parts industry to transform it into an internationally competitive industry. To this end, the decree was geared to encourage the automotive industry to participate in the international market, enhance price competitiveness, and raise productivity by attracting foreign investment.

Then, in May 1995, amendatory and supplementary decrees were enforced to ensure that the "Decree on Modernization and Promotion of the Automobile Industry" (Automobile Decree) complies with North American Free Trade Agreement (NAFTA). (For the details of the current Automobile Decree amended in May 1995, see section 2.4.1.)

1.3.2 Production, Exports and Imports of Finished Products

The production, domestic sales, imports and exports of passenger cars, mini-buses/trucks, trailers and buses between 1982 and 1995, based on SECOFI's statistical data, are summarized in Tables 1.3-1 and 1.3-2, and Figure 1.3-1. In 1995, as shown in Table 1.3-2, domestic sales of passenger cars and mini-buses/trucks dropped by 71.7% and 64.9%, respectively, compared to the previous year. Accordingly, their production for the domestic market in 1995 plummeted 70.9% and 72.0%, respectively. In terms of overall production, however, they managed to limit the reduction at 16.3% in 1995, as export growth largely compensated for the sluggish domestic market following the devaluation of the peso in 1994.

The Table 1.3-3 describes exports of passenger cars and mini-buses/trucks as a percentage of total production volume in recent years. Even if we ignore the anomalous figure of 88.8% in 1995 which resulted from the gloomy domestic market and dramatic export growth, it is clear that exports have significant share in total production of automobiles.

Table 1.3-3 Changes in Share of Automobile Exports in Production

(Unit : %)									
1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
21.3	41.4	34.0	30.8	34.0	36.7	36.3	44.0	50.9	88.8

Source : Tables 1.2-9, 10

Note that data in Table 1.3-4 represent the breakdown of total production data in Table 1.3-1, by assembler. Table 1.3-5 shows their percentage share in total.

Table 1.3-1 Car Production by Type

	(Unit : Unit)													
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
For Domestic Market														
<i>Automobile</i>	300,579	207,157	231,578	246,960	169,567	142,436	208,781	273,738	345,551	378,558	429,069	389,503	352,975	102,573
<i>Minibus</i>	167,430	77,413	109,346	145,841	100,099	88,478	126,438	167,897	191,083	234,519	252,042	189,049	186,959	52,263
<i>Trailer</i>	3,305	579	1,653	3,740	1,279	1,392	2,198	3,498	3,853	8,689	6,299	5,158	6,199	530
<i>Bus</i>	1,323	356	1,121	1,651	1,223	209	603	680	1,521	2,248	2,093	3,239	1,015	184
<i>Total</i>	472,637	285,485	343,698	398,192	272,168	232,515	338,020	445,813	542,008	624,014	689,503	586,949	547,148	155,550
For Export														
<i>Automobile</i>	-	-	13,126	50,104	38,902	134,972	145,002	164,894	252,542	341,826	347,116	445,587	503,588	596,739
<i>Minibus</i>	-	-	1,049	10,036	29,668	27,771	29,601	30,573	26,016	23,528	43,934	48,036	71,955	182,542
<i>Trailer</i>	-	-	125	348	314	-	3	1	10	5	-	-	9	55
<i>Bus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	131
<i>Total</i>	-	-	14,300	60,488	68,884	162,743	174,606	195,468	278,568	365,359	391,050	493,623	575,552	779,467
Production Total														
<i>Automobile</i>	300,579	207,137	244,704	297,064	208,469	277,408	353,783	438,632	598,093	720,384	776,185	835,090	856,563	699,312
<i>Minibus</i>	167,430	77,413	110,395	155,877	129,767	116,249	156,039	198,470	217,099	258,047	295,976	237,085	258,914	234,805
<i>Trailer</i>	3,305	579	1,778	4,088	1,593	1,392	2,201	3,499	3,863	8,694	6,299	5,158	6,208	585
<i>Bus</i>	1,323	356	1,121	1,651	1,223	209	603	680	1,521	2,248	2,093	3,239	1,015	315
<i>Total</i>	472,637	285,485	357,998	458,680	341,052	395,258	512,626	641,281	820,576	989,373	1,080,553	1,080,572	1,122,700	935,017

Source : SECOFI, "Dirección General de Industrias"

Table 1.3-2 Car Sales by Type

(Unit : Unit)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
a) Domestic Market														
<i>National</i>														
<i>Automobile</i>	286,761	192,052	217,650	242,187	160,670	154,152	210,066	274,505	348,803	386,919	439,255	395,470	358,222	100,425
<i>Minibus</i>	174,861	80,037	110,195	144,038	95,647	92,071	129,102	167,409	190,479	236,031	247,259	189,413	182,070	59,729
<i>Trailer</i>	3,611	451	1,376	3,600	1,298	1,504	2,143	3,269	4,146	8,256	6,241	5,113	6,231	677
<i>Bus</i>	1,430	275	1,066	1,824	1,220	217	608	681	1,511	2,404	2,381	3,243	1,122	155
<i>Total</i>	466,663	272,815	330,287	391,649	258,835	247,944	341,919	445,864	544,939	633,610	695,136	593,239	547,645	160,986
<i>Import</i>														
<i>Automobile</i>	-	-	-	-	-	-	-	-	3,805	5,191	6,048	3,273	56,432	16,968
<i>Minibus</i>	-	-	-	-	-	-	-	-	1,571	4,180	3,738	5,503	18,601	10,744
<i>Trailer</i>	-	-	-	-	-	-	-	-	-	-	878	250	148	48
<i>Bus</i>	-	-	-	-	-	-	-	-	-	-	1,046	1,075	1,175	53
<i>Total</i>	-	-	-	-	-	-	-	-	5,376	9,371	11,710	10,101	76,356	27,813
<i>Total</i>	286,761	192,052	217,650	242,187	160,670	154,152	210,066	274,505	352,608	392,110	445,303	398,743	414,654	117,393
<i>Minibus</i>	174,861	80,037	110,195	144,038	95,647	92,071	129,102	167,409	192,050	240,211	250,997	194,916	200,671	70,473
<i>Trailer</i>	3,611	451	1,376	3,600	1,298	1,504	2,143	3,269	4,146	8,256	7,119	5,363	6,379	725
<i>Bus</i>	1,430	275	1,066	1,824	1,220	217	608	681	1,511	2,404	3,427	4,318	2,297	208
<i>Total</i>	466,663	272,815	330,287	391,649	258,835	247,944	341,919	445,864	550,315	642,981	706,846	603,340	624,001	188,799
b) Export														
<i>Automobile</i>	14,142	20,767	32,241	49,856	40,216	123,919	144,000	165,800	249,921	334,749	344,532	424,445	497,049	598,803
<i>Minibus</i>	1,494	1,451	958	8,213	31,886	39,154	29,147	30,198	26,938	23,912	44,207	47,467	70,570	183,561
<i>Trailer</i>	162	238	436	354	327	-	-	1	10	5	-	-	9	178
<i>Bus</i>	21	-	-	-	-	-	-	-	-	-	-	-	-	134
<i>Total</i>	15,819	22,456	33,635	58,423	72,429	163,073	173,147	195,999	276,869	358,666	388,739	471,912	567,628	782,676
Total														
<i>Automobile</i>	300,903	212,819	249,891	292,043	200,886	278,071	354,066	440,305	602,529	726,859	789,835	823,188	911,703	716,196
<i>Minibus</i>	176,355	81,488	111,153	152,251	127,533	131,225	158,249	197,607	218,988	264,123	295,204	242,383	271,241	254,034
<i>Trailer</i>	3,773	689	1,812	3,954	1,625	1,504	2,143	3,270	4,156	8,261	7,119	5,363	6,388	903
<i>Bus</i>	1,451	275	1,066	1,824	1,220	217	608	681	1,511	2,404	3,427	4,318	2,297	342
<i>Total</i>	482,482	295,271	363,922	450,072	331,264	411,017	515,066	641,863	827,184	1,001,647	1,095,585	1,075,252	1,191,629	971,475

Source : SECOFI, "Dirección General de Industrias"

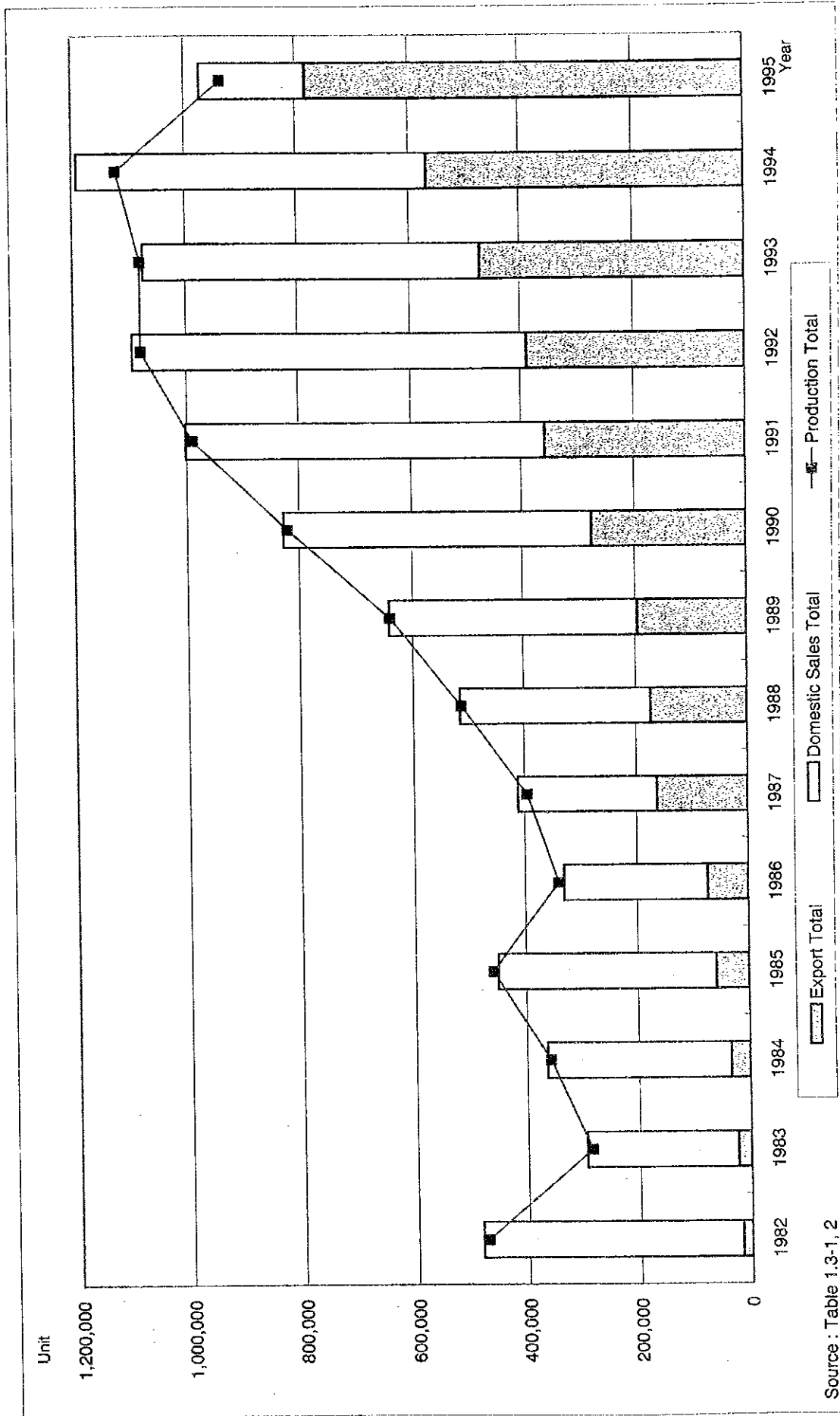


Figure 1.3-1 Car Production and Sales

Table 1.3-4 Automobile Production by Assembler

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Chrysler	39,143	26,203	38,122	52,834	42,606	64,208	77,332	102,734	108,371	132,488	154,645	159,144	164,668	80,131
Ford	36,797	26,851	25,817	38,372	20,013	67,578	98,815	87,160	134,591	167,004	198,258	169,931	192,038	207,015
GM	21,250	14,996	25,407	48,501	32,660	43,508	51,477	63,061	73,775	125,663	126,509	141,294	112,345	139,688
Nissan	48,824	40,541	44,439	55,555	49,791	58,461	73,045	86,749	98,450	98,151	121,743	137,606	143,533	82,739
Volkswagen	126,296	78,005	85,944	70,953	50,487	43,653	50,019	98,928	182,906	197,078	175,030	227,115	243,389	188,545
Other	28,269	20,541	26,975	30,849	12,912	0	3,095	0	0	0	0	0	590	1,194
Total	300,579	207,137	244,704	297,064	208,469	277,408	353,783	438,632	598,093	720,384	776,185	835,090	856,563	699,312

Source : SECOFI, "Dirección General de Industrias"

Table 1.3-5 Production Share of Automobile by Assembler

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Chrysler	32.3	32.9	36.5	47.0	45.7	63.2	64.3	57.7	53.0	59.0	61.8	56.3	54.8	61.0
Ford	16.2	19.6	18.2	18.7	23.9	21.1	20.6	19.8	16.5	13.6	15.7	16.5	16.8	11.8
GM	42.0	37.7	34.3	23.9	24.2	15.7	14.1	22.6	30.6	27.4	22.6	27.2	28.4	27.0
Nissan	9.4	9.9	11.0	10.4	6.2	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Volkswagen	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Other														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source : SECOFI, "Dirección General de Industrias"

1.3.3 Export/Import of Automobile Industry

(1) Balance of trade of the automobile industry

Table 1.3-6 depicts the trade balance of the Mexican automobile industry, including both finished cars and autoparts. In general, a trade deficit prevailed up until 1994, despite autoparts exports from Maquiladora. The situation reversed in 1995, when the exports enjoyed substantial growth following the devaluation of the peso.

Table 1.3-6 Trade Balance of Automotive Industry

Total (1/3)				
(Unit : Thousand US\$)				
	1992	1993	1994	1995
Export	7,297,207	8,900,123	10,796,059	15,275,868
Import	9,160,641	9,467,370	11,468,620	9,520,783
Balance	-1,863,434	-567,247	-672,561	5,755,085

Source : Annex 1-1

Maquiladora (2/3)				
(Unit : Thousand US\$)				
	1992	1993	1994	1995
Export	1,253,607	1,650,371	2,030,067	2,292,091
Import	480,036	452,632	580,107	880,337
Balance	773,571	1,197,739	1,449,960	1,411,754

Source : Annex 1-1

Excl. Maquiladora (3/3)				
(Unit : Thousand US\$)				
	1992	1993	1994	1995
Export	6,043,600	7,249,752	8,765,992	12,983,777
Import	8,680,605	9,014,738	10,888,513	8,640,446
Balance	-2,637,005	-1,764,986	-2,122,521	4,343,331

Source : Annex 1-1

(2) Export/import of autoparts

The trade balance of the autoparts industry (excluding finished parts) is illustrated in Table 1.3-7 and Figure 1.3-2. With the figures including Maquiladora, there has been excessive imports of autoparts ever since the revision of the Automobile Decree.

Table 1.3-7 Import and Export of Autoparts Industry

(Unit: Thousand US\$)

	1992		1993		1994		1995	
	Import	Export	Import	Export	Import	Export	Import	Export
Autoparts								
Import								
Chassis for automobiles	24,861		9,382		50,064		17,883	
* Assemble materials for automobiles	6,007,099		6,439,314		6,733,137		3,649,430	
Motors and its parts for automobiles	376,917		394,219		565,446		997,742	
Maintenance parts for automobiles and trucks	1,337,861		1,377,121		1,980,573		3,919,961	
Non automatic trailer for vehicles	41,606		22,456		31,481		26,588	
Others	806,729		701,125		677,164		420,378	
Export								
Chassis for all kinds of vehicles		80,982		134,313		212,771		216,538
Motors for automobiles		1,202,724		1,302,179		1,778,112		2,122,644
Springs and sheets for automobiles		63,015		106,036		125,719		125,761
Parts for automobiles		1,524,715		1,888,961		2,106,949		2,300,796
Parts for motors		271,530		316,752		404,798		468,722
Others		187,833		229,914		263,638		613,819
Total	8,595,073	3,330,799	8,943,617	3,978,155	10,037,865	4,891,987	9,031,982	5,848,280

Note : * H.S No. 98.03.001, 98.03.002

Source : Annex 1-1

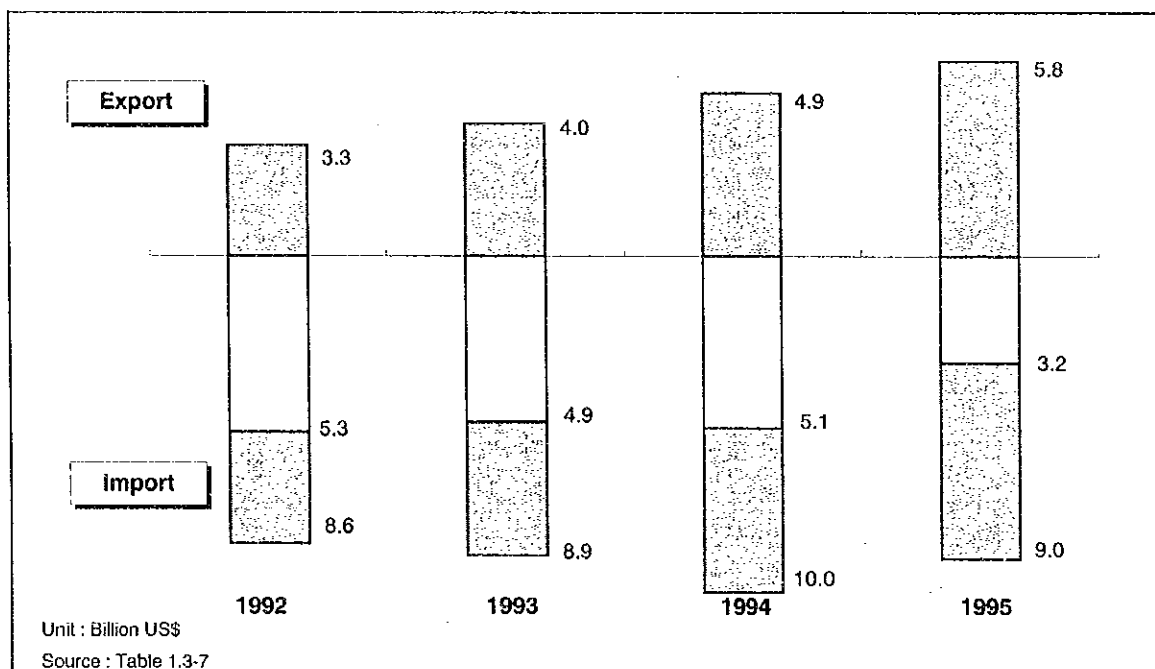


Figure 1.3-2 Trade Balance of Autoparts Industry

In export and import statistics of autoparts in Mexico, approximately 70% of imported parts are classified as " parts for automobile assembly" and no further classification is made, due to the following reasons.

Under the import duty act, the import tariff rates depends of the type of autoparts, ranging between 10% and 15%. On the other hand, up until June 1995, there was a special provision which allowed a 10% uniform tariff rate to be applied to imported autoparts without any classification provided that they were approved by Comisión Intersecretarial de la Industria Automotriz, under HS No.89.03 of the tariff table. The special provision brought the following two benefits:

- 1) Lower import duties compared to those which depend on the classification of autoparts; and
- 2) Simplification of import procedures by eliminating the need to undergo several procedures when various autoparts are involved.

In practice, this provision was applied upon the import of autoparts by assemblers, which accounted for a substantial part of autoparts import. To be specific, it was applied to autoparts under the heading of HS No.98 in the import/export statistics by Anuario Estadístico del Comercio Exterior de los Estados Unidos Mexicanos -INEGI) imported by assemblers, and those under other HS codes imported by other autoparts companies for OEM and aftermarket purposes.

"Assemble materials for automobiles" in the import category in Table 1.3-7 are those imported by assemblers under the special provision, accounting for 67.1% of all autoparts imported in 1994. The special provision has not been applied since July, 1995.

Tables 1.3-8 and 1.3-9 tabulates major autoparts other than those under HS No.98 in the import/export statistics. These parts have been imported by autoparts firms other than assemblers.

Table 1.3-8 Export of Major Autoparts

(Unit: Thousand US\$)

Fraction H.S No.	Commodity	1991	1992	1993	1994	1995
87.08.10	Bumpers and parts thereof	2,298	11,864	8,550	13,812	11,444
87.08.21	Safety seat belts	136	309,764	415,258	446,853	517,274
87.08.29	Parts of bodies	212,053	429,489	478,599	484,806	449,091
87.08.31	Mounted brake linings	2,357	15,503	11,631	15,567	24,104
87.08.39	Brakes and servo-brakes	37,189	197,492	248,344	246,766	236,435
87.08.40	Gear boxes	3,674	4,376	7,282	8,921	12,254
87.08.50	Drive-axles with differential	13,888	17,378	20,910	43,193	20,768
87.08.60	Non-driving axles and parts	105,894	139,672	119,300	30,494	44,817
87.08.70	Road wheels	5,353	35,844	48,229	56,226	93,650
87.08.80	Suspension shock-absorbers	2,966	3,219	3,703	4,655	8,273
87.08.91	Radiators	4,122	67,238	87,919	101,428	111,959
87.08.92	Silencers and exhaust pipes	1,563	9,440	11,359	8,091	14,418
87.08.93	Clutches and parts	4,563	4,397	3,315	6,535	2,560
87.08.94	Steering wheels, columns, boxes	3,829	98,035	110,208	124,376	123,973
87.08.99	Other parts and accessories	51,187	156,118	273,622	467,257	555,902
	Sub-total	451,072	1,499,829	1,848,229	2,058,980	2,226,922
87.06.00 & 87.07.10,90	Chassis & bodies	47,048	103,028	165,560	251,619	262,892
84.07.32,33,34,90 & 84.08.20 & 84.09.91,99	Engines & parts	1,290,855	1,504,616	1,606,676	2,179,035	2,759,853
	Sub-total	1,337,903	1,607,644	1,772,236	2,430,654	3,022,745
	Air conditioning machines	-	-	-	-	-
85.27.19	Radio receivers	7,491	160,558	4,842	-	-
	Sub-total	7,491	160,558	4,842	0	0
	Grand Total	1,796,466	3,268,031	3,625,307	4,489,634	5,249,667

Table 1.3-9 Import of Major Autoparts

(Unit: Thousand US\$)

Fraction H.S No.	Commodity	1991	1992	1993	1994	1995
87.08.10	Bumpers and parts thereof	12,392	28,179	21,008	26,227	70,676
87.08.21	Safety seat belts	2	5,433	17,284	20,195	56,111
87.08.29	Parts of bodies	104,072	105,700	149,181	236,341	780,939
87.08.31	Mounted brake linings	5,888	9,265	10,834	15,007	8,742
87.08.39	Brakes and servo-brakes	49,092	85,958	92,817	121,765	158,221
87.08.40	Gear boxes	31,637	74,698	69,613	85,275	242,601
87.08.50	Drive-axles with differential	7,992	17,618	22,427	33,444	97,720
87.08.60	Non-driving axles and parts	12,515	17,355	18,004	19,510	39,077
87.08.70	Road wheels	31,479	74,456	84,028	94,261	116,657
87.08.80	Suspension shock-absorbers	15,576	19,957	22,491	22,252	32,951
87.08.91	Radiators	6,574	12,183	8,529	8,355	22,643
87.08.92	Silencers and exhaust pipes	2,263	5,146	13,328	16,553	34,630
87.08.93	Clutches and parts	16,955	27,478	21,103	26,574	24,634
87.08.94	Steering wheels, columns, boxes	8,797	18,431	21,759	35,704	113,418
87.08.99	Other parts and accessories	197,722	303,421	321,022	527,723	1,287,497
	Sub-total	502,956	805,278	893,428	1,289,186	3,086,517
87.06.00 & 87.07.10,90	Chassis & bodies	4,226	27,383	11,433	53,784	22,442
84.07.32,33,34,90 & 84.08.20,90.01 & 84.09.10,91,99	Engines & parts	332,701	353,467	540,236	611,222	1,081,539
	Sub-total	336,927	380,850	551,669	665,006	1,103,981
84.15.82.02 & 84.15.83.02	Air conditioning machines	-	-	11,662	15,448	4,046
85.27.19.99 & 85.27.29.02	Radio receivers	3,477	3,532	5,024	517	57
	Sub-total	3,477	3,532	16,686	15,965	4,103
	Grand Total	843,360	1,189,660	1,461,783	1,970,157	4,194,601

Source: Anuario Estadístico del Comercio Exterior de los Estados Unidos Mexicanos - INEGI

(3) Trade Specification Index (TSI)

Trade Specification Index is calculated by the following formula:

$$\text{TSI} = (\text{Export} - \text{Import}) / (\text{Export} + \text{Import})$$

Any product exported from a country has a comparative advantage in international trade, while a product imported to a country has a comparative disadvantage. TSI is designed on the basis of this principle, and a trade surplus results in a positive value for TSI, while export without import becomes 1. A trade deficit appears as a negative value for TSI, and import with no export results in -1. The TSI value approaches 1 as the product's comparative advantage becomes bigger. On the other hand, a product with a higher comparative disadvantage comes closer to -1.

TSI values determined from data in Table 1.3-7 are presented in Tables 1.3-10 (autoparts as a whole). Although the TSI value has been taking a favorable turn, imports are still exceeding exports i.e. a comparative disadvantage. The TSI values for major autoparts in Tables 1.3-8 and 1.3-9 are shown in Table 1.3-11; as mentioned in (1), parts imported by assemblers are not included in these rough figures.

Table 1.3-10 TSI of Autoparts

(Unit : Thousand US\$)

	1992	1993	1994	1995
Export	3,330,799	3,978,155	4,891,987	5,848,280
Import	8,595,073	8,943,617	10,037,865	9,031,982
TSI	-0.44	-0.38	-0.34	-0.21

Table 1.3-11 TSI of Major Autoparts

	1991	1992	1993	1994	1995
Bumpers and parts thereof	-0.69	-0.41	-0.42	-0.31	-0.72
Safety seat belts	0.97	0.97	0.92	0.91	0.80
Parts of bodies	0.34	0.60	0.52	0.34	-0.27
Mounted brake linings	-0.43	0.25	0.04	0.02	0.47
Brakes and servo-brakes	-0.14	0.39	0.46	0.34	0.20
Gear boxes	-0.79	-0.89	-0.81	-0.81	-0.90
Drive-axles with differential	0.27	-0.01	-0.04	0.13	-0.65
Non-driving axles and parts	0.79	0.78	0.74	0.22	0.07
Road wheels	-0.71	-0.35	-0.27	-0.25	-0.11
Suspension shock-absorbers	-0.68	-0.72	-0.72	-0.65	-0.60
Radiators	-0.23	0.69	0.82	0.85	0.66
Silencers and exhaust pipes	-0.18	0.29	-0.08	-0.34	-0.41
Clutches and parts	-0.58	-0.72	-0.73	-0.61	-0.81
Steering wheels, columns, boxes	-0.39	0.68	0.67	0.55	0.04
Other parts and accessories	-0.59	-0.32	-0.08	-0.06	-0.40
Chassis & bodies	0.84	0.58	0.87	0.65	0.84
Engines & parts	0.59	0.62	0.50	0.56	0.44
Air conditioning machines	-	-	-	-	-
Radio receivers	0.37	0.96	-0.02	-	-

Source : Table 1.3-8, 9

1.3.4 Structure of the Automobile Industry

(1) Assemblers

Under the current system, automobile assemblers are required to register with any of three national chambers, CANACINTRA, CAINTRA (State of Nuevo León), and CAREINTRA (Jalisco). However, member lists and data of two trade associations, AMIA and ANPACT, seem to be most reliable. According to them, assemblers of passenger cars, mini-buses/trucks, trailers, and buses, based on 1995 production data for the domestic market, are listed as follows:

Passenger cars 8 companies:
 Ford, General Motors, Chrysler, Nissan, Volkswagen,
 BMW, Mercedes Benz, and Honda
 Note: Renault and Vehículos Automotores were engaged
 in production before 1986.

Mini-buses/trucks 9 companies:
 Ford, General Motors, Chrysler, Nissan, DINA,

Mercedes Benz, Kenworth, Chasises y Autopartes Oshmex, and Volkswagen

Note: Companies previously operated are Fábrica de Autotransportes (up to 1989), Renault (1986 only), Trailers de Monterrey (up to 1993), Vehículos Automotores (up to 1985), and Victor Patron (1994 only).

Trailers 4 companies:
DINA, Kenworth, Mercedes Benz, and Trailers de Monterrey

Note: 3 companies operated previously are Fábrica de Autotransportes (up to 1990), Traksomex (up to 1983), and Victor Patron (up to 1993).

Buses 3 companies:
DINA, Mexicana de Autobuses, and Omnibuses Integrales

Note: 2 companies previously operated are Fábrica Nacional de Autobuses (up to 1994) and Trailers de Monterrey (1990 only).

Assembly plants and production capacities of the above assemblers are listed below. Note that location is indicated by state.

Table 1.3-12 List of Assembly Plants

Assembler	Assembly Plant Location	Plant Capacity
Ford	Chihuahua	n.a.
	Sonora	168,000 unit/year
	Edo. de México	150,000 unit/year
General Motors	Coahuila	150,000 unit/year
	Guanajuato	n.a.
Chrysler	Edo. de México	175,000 unit/year
	Coahuila	n.a.
NISSAN	Aguascalientes	120,000 unit/year
	Morelos	170,000 unit/year
Volkswagen	Puebla	185,000 unit/year
BMW	Edo. de México	1,450 unit/year
Mercedes Benz	Edo. de México	2,000 unit/year
Honda	Jalisco	15,000 unit/year
DINA	Hidalgo	n.a.
Kenworth	Baja California	n.a.
Trailers de Monterrey	Nuevo León	n.a.
MASA	Edo. de México	n.a.

Source: Banco de México, ELM Guide to Mexican Automotive Sourcing (Third Edition), SECOFI

While the current automobile decree specifies the minimum national value added rate of 34%, the interview survey reveals that some assemblers have achieved nearly 40%. Importantly, in-house manufactured parts are not considered in the calculation of the national value added rate. If they are counted, local contents of automobiles in Mexico reach a fairly high level.

Note: Before the amendment of the Automobile Decree in 1989, the localization rate of 60% on a parts cost basis was required (applied to passenger cars only). Based on rough estimates, the national value added rate of 34% seems to be equivalent to or higher than the 60% localization rate.

(2) Autoparts manufacturers

The directory of Association of Automotive Parts Industry (INA) lists approximately 500 companies as autoparts manufacturers in Mexico, of which 111 companies are INA members. According to INA, all of its member companies are primary (OEM) suppliers who deliver products directly to assemblers. Note that the directory does not include Maquiladora.

The table below (1.3-13) classifies approximately 500 automotive parts manufacturers listed in INA's directory according to type of parts. Needless to say, many companies manufacture two or more parts, resulting in grand total of 721.

Table 1.3-13 Autoparts Manufacturers by Product

Parts	No. of INA Members	Others
Accessories	11	59
Lubricating oil/Grease	3	21
Seats	4	27
Electrical	16	51
Radiators	3	22
Stamping	0	79
Brakes	10	23
Measuring instruments	1	2
Engine parts	33	97
Others	13	104
Rubber/Steel	11	44
Transmission/Suspension /Steering/Clutch	34	40
Glass	2	11
Total	141	580

Source: INA Directorio 1994

The table below classifies the same companies according to their location by state.

Table 1.3-14 Autoparts Manufacturers by State

Location	No. of INA Members	Others
Baja California	1	1
Sonora	0	2
Chihuahua	1	0
Coahuila	4	3
Nuevo León	11	77
Durango	1	2
Aguascalientes	3	3
San Luis Potosí	1	3
Jalisco	1	12
Guanajuato	6	2
Querétaro	14	5
Hidalgo	0	1
Michoacán	1	1
México	37	109
D.F.	25	154
Morelos	0	2
Tlaxcala	1	1
Puebla	4	8
Yucatán	0	1
Total	111	387

Source: INA Directorio 1994

In the automotive parts industry in Mexico, there are several group companies such as UNIK and CONDUMEX. In fact, 50 out of 111 companies having INA membership belong to group companies. Furthermore, in terms of employment size, 52 (62%) out of 84 INA member companies for which employment data are available are categorized as large enterprise having 250 or more employees.

Table 1.3-15 No. of Employees of INA Members

No. of Employees	No. of INA Members
15 or less	0
16-100	13
101-250	19
251 or more	52
Total	84

Source: INA Directorio 1994

The number of years in operation is available only for 44 companies, of which 40 companies (more than 90%) have operated for more than ten years.

Other corporate data related to the automotive parts industry include BANCOMET's classification of 651 companies by processing technology, and CANACINTRA's list of 135 automotive parts manufacturers located in the state of Mexico and its vicinities.

Data on parts plants of assemblers are contained in "ELM Guide to Mexican Automotive Sourcing". Table 1.3-16 summarizes parts plants (including Maquiladora) and types of parts produced of six (6) assemblers, namely the Big Three (Ford, GM, Chrysler), Nissan, Honda, and Volkswagen, by state. The total production of passenger cars and mini-buses/trucks in 1994 by these six (6) assemblers is 1,096,791 units, accounting for 98.3% of total. Parts produced are export-oriented if produced by Maquiladora, and those manufactured by domestic plants are also partly exported, although major portions are used for domestic assembly. Some parts are supplied to other assemblers.

(3) Characteristics of the Mexican automotive industry

The Mexican automotive industry has the capacity to produce about 1 million cars per year, including passenger cars, buses and trucks. As assemblers, there are 5 passenger-car manufacturers (the Big Three, Volkswagen and Nissan, which account for 99% of total production in 1994), and 12 bus/truck assemblers in addition to these. The number of autoparts manufacturers amount to 500-600 in total according to various statistics, out of which 110-150 firms are presumed as OEM suppliers.

In comparison, the Japanese automotive industry apparently consists of 11 assemblers, under which roughly 20,000 autoparts manufacturers operate. In Japan, about 20,000 firms form the subcontracting framework which is divided in stages primary parts production, parts unit and process, within the uniquely stratified, specialized production system.

Table 1.3-16 Autoparts Plants of Assemblers

Location	Assembler	Parts	Process
Sonora	Ford	Light, Lamp	Injection molding
Chihuahua	Ford	Electronic parts	
	Ford	Glass parts	
	Ford	Radiator, Heater, Condenser	Soldering, Stamping, Injection molding, Brazing, etc.
	Ford	Hose, Radiator tube	Plastic injection molding
	Ford	Engine	Machining
	GM	Ignition Switch, Signal, Oil pump	Wiring, Plastic
	GM	Engine control, Solenoid, Lamp	Soldering, Plastic, Wiring
	GM	Seat cover	Sewing
Coahuila	GM(12)	Wiring harness	Soldering, Wiring
	Chrysler	DOHC Engine	Machining
	GM(2)	Wiring harness	Soldering, Wiring
Nuevo León	GM	Engine	Machining
	Ford	Glass parts	
	Ford	Plastic components	Injection molding
Tamaulipas	GM(5)	Wiring harness	Soldering, Wiring
	Ford	Spring, Bracket, Steering wheel	Stamping
	GM	Panel cover	Injection molding
	GM	Body molding	Molding
	GM(3)	Wiring harness	Soldering, Wiring
	GM(2)	Control, Display	Wiring
Aguascalientes	GM	Control, Audio	Soldering, Wiring
	NISSAN	Engine	Aluminum die-casting, Stamping
Jalisco	GM	Shock absorber	Assembly
	Honda	Panel, Fender, Hood, Bracket	Welding, Stamping, Bending
Querétaro	Ford	Air conditioning	Brazing, etc.
México	Chrysler	Condenser	Brazing, Soldering, Stamping
	Chrysler	Engine	Machining, Welding
	Chrysler	Body components	Stamping
	Chrysler	Transaxles	Machining, Welding
	Ford	Engine block, etc.	Casting, Machining
	GM	Engine	Machining, Welding, Casting
	NISSAN	Engine	Casting
Morelos	NISSAN	Bumper	Plastic injection
Puebla	VW	Engine, etc.	Stamping, Assembly

Note : Numbers in parentheses indicate no. of plants.

Source : ELM Guide to Mexican Automotive Sourcing(Third Edition).

Table 1.3-17 shows the subcontracting ratio in assembler. Generally speaking, European and American assemblers adopt a different purchasing system from Japanese and Korean counterparts. They tend to directly deal with parts manufacturers even if the parts in question are small, implying that they deal with more manufacturers directly. On the other hand, in Japan, suppliers are organized into a multilayered structure led by primary suppliers, so that assembly makers deal with a limited number of suppliers. Furthermore, suppliers are classified as to which assembly maker they supply their products, i.e., each supplier is captive to a particular assembler and few of them deal with more than two makers.

Table 1.3-17 Rate of the Specialization Structure of Automotive Industries of U.S., Europe and Asia

Automotive Manufacturers		Rate of In-House Production	Transacting Enterprises
Toyota	(Japan)	30%	229 (Only cooperative group members)
Nissan	(Japan)	30%	193 (Only cooperative group members)
GM	(U.S.)	70%	12,000 (1,500 firms per one factory)
Ford	(U.S.)	50%	2,300
M. Benz	(Germany)	43%	2,000 (Small vendors excluded)
Peugeot	(France)	50-60%	950 (Including 300 primary suppliers)
Renault	(France)	50-60%	1,100 (Planning to decrease to 700 - 800)
Fiat	(Italy)	-	1,000 (Planning to decrease to 300 - 400)
Kia	(S. Korea)	30%	250 (Only Korean domestic makers)

Source: International Comparison of Subcontracting Dealing Practices, March 1993, National Association for Subcontracting Enterprises Promotion

Figure 1.3-3 is a conceptual drawing of the relationship between assembly makers and suppliers by using hypothetical examples of Japanese company A and U.S. company B. The figure also shows the comparable structure of the Mexican automobile industry; autoparts manufacturers in Maquiladora are excluded to make comparison much easier. In-house production refers to the

share of assembler's parts factories other than those in Maquiladora, and parts from Maquiladora are not included in the imports shown in the Figure.

Company A (Japan) has 230 primary suppliers and 2,000 - 3,000 secondary suppliers, whereas Company B (the U.S.) has 8,500 suppliers including both primary and secondary. If subcontractors serving for primary and secondary suppliers (tertiary and below) are added, both, A and B, companies have more than 10,000 SIs each. In contrast, taking Mexico as a whole, SIs merely amount to 500-600 even if repair-parts and motorcycle-parts manufacturers are included. This shows that the foundations of the Mexican autoparts industry are fragile, and the industrial structure of the automobile sector is shaped like an umbrella rather than a pyramid as in developed countries.

Naturally it is difficult to compare the figures directly with those of the hypothetical Japanese and U.S. companies whose production is 5 times as much as total production in Mexico. In addition, the number of suppliers is not necessarily proportional to the number of vehicles produced. According to Japan Automotive Parts Industry Association (JAPIA), automotive parts manufactured by Japanese suppliers are classified into 130 types, meaning that there would be more than 130 firms even if it is assumed that each company produces only one type.

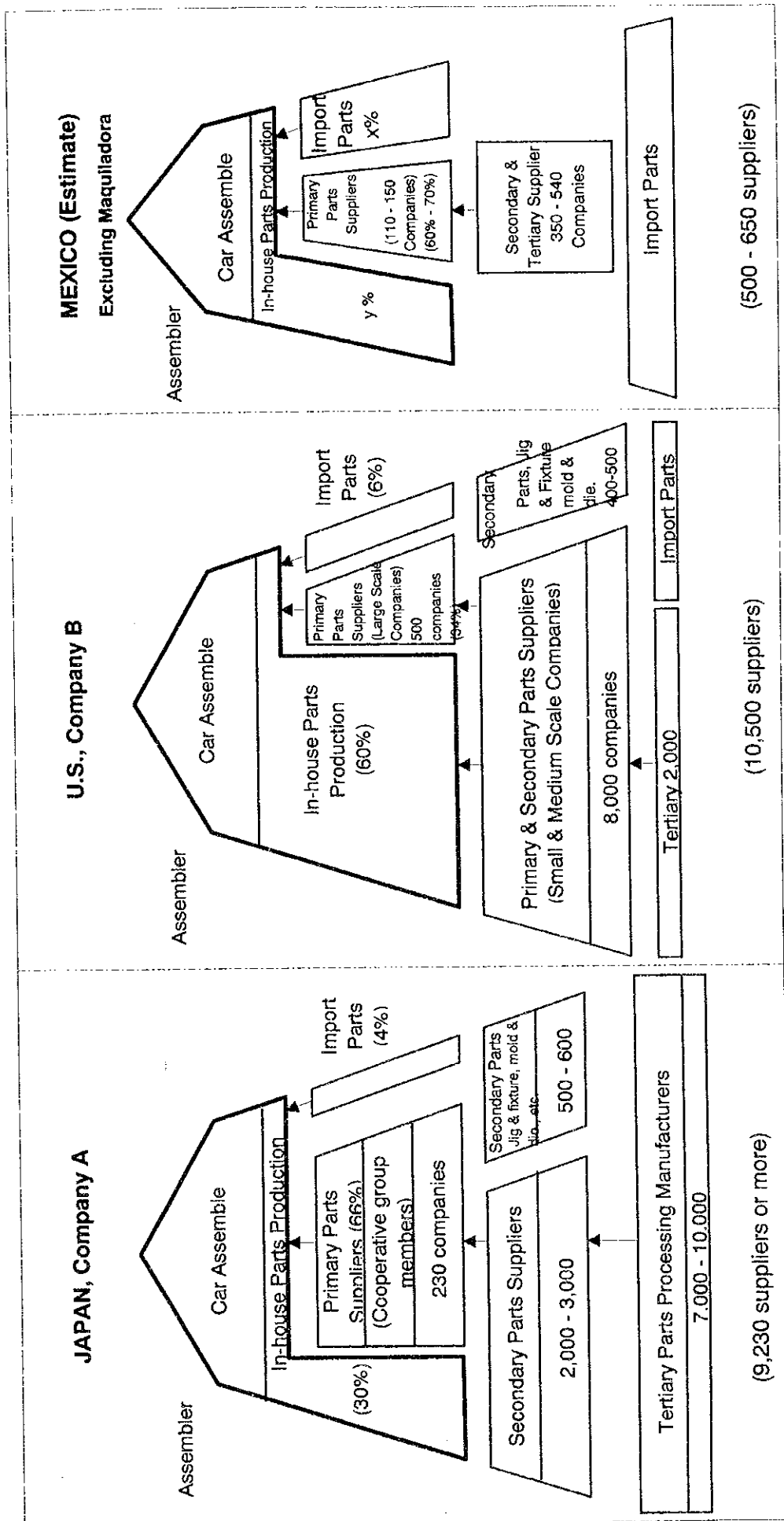


Figure 1.3-3 International Comparison of Car Assembling
(Conceptual Drawing)



1.4 Electrical and Electronics Industries in Mexico

1.4.1 Electrical and Electronics Industry in Mexico

(1) Historical background

The history of the electrical and electronics industry in Mexico divided into two phases; the period up to the mid-1980s during which the industry was protected under import substitution policy, followed by the period of trade liberalization. During the protection period, the household appliance industry serving the domestic market emerged, with the progress of parts localization. During the trade liberalization period, the appliance industry deteriorated, and companies who manufactured and shipped color TVs to the U.S. market, operating near the boundary (Maquiladora) thrived. In addition to the household appliance industry, the government's industrial promotion policy extended to the computer industry in the 1980s.

The following section describes historical background of two major electrical and electronics segments in the country, namely the TV and computer industries.

1) TV industry

History of TV manufacturing in Mexico starts from black-and-white TVs in 1950s, followed by color TVs in the 1960s. Then the industry operated under local products protection policy based on import substitution policy, until 1982, and it produced TVs for the domestic market. Major protection measures were import license and tariff designed to encourage the development of manufacturers of final products and parts. Also, to nurture parts manufacturers, assemblers were required to localize assembly of final products. In response, many parts manufacturers were established and started commercial production of picture tubes, transformers, and capacitors by making large capital investment. In the late-1970s, the country had local production capacities for major parts and components. However, a small domestic market prevented the industry to enjoy economy of scale, so that products were relatively expensive and lacked international competitiveness.

The economic crisis in 1982 led to sluggish domestic demand, and European and U.S. electric manufacturers withdrew from the market. In 1984, the government announced the Plan for Industry and Trade (PRONAFICE) and the Program for Comprehensive Export Promotion (PROFIEEX), based on which the abolishment of the import license system and tariff reduction were implemented by the yearend. Manufacturers who had supplied their products to the domestic market which is exclusive to imports under the protection policy were way behind international standards in terms of quality, price, and design. They lost market share to imported products and were forced to reduce or terminate production or sell imported products. In 1980, 15 manufacturers were active in the TV industry, and by 1986, 7 withdraw from manufacturing. As a result, domestic production declined considerably and the 1988 figure became nearly one half (58%) of the 1981 level. Manufacturers further decreased in number, and in 1990, there were only four manufacturers of TVs for the domestic market, namely one Japanese company (Panasonic), one joint venture with a Japanese company (Clarion), and two local enterprises (Grupo Majestic and Zonda).

In exchange for withdrawal or suspension of production by manufacturers of TVs for the domestic market, production of some labor-intensive parts started to relocate from the U.S. in 1980, as driven by intensive competition in the U.S. market. These manufacturers moved into the Mexican border area to benefit from the Maquiladora program. In late 1980, a large number of Japanese companies built large assembly shops in the northern border area to produce color TVs and chassis. During the same period, Korean companies started production of TVs for export in Tijuana and Mexicali. As a result, color TV production by major Maquiladora companies surged from 3.8 million units in 1990 to 13.2 million units in 1995. During the same period, manufacturers of one million or more color TV sets grew in number from 1 to 10. At present, however, Maquiladora companies procure small portions of components and parts from local companies, thus not forming an effective linkage to the local industries. The Mexican government, in recognition of the situation, has been making efforts to foster local enterprises into supporting industries for Maquiladora.

2) Microcomputer industry

Again, the history of the microcomputer industry in Mexico is roughly divided into two phases: 1) the period during which foreign computer companies invested in Mexico under the government's protectionism and export-oriented policy, and 2) the period when non-competitive companies withdrew from manufacturing after liberalization of trade and investment. In this section, the historical progress of the industry in Mexico after 1981 is described with a particular emphasis on government policy that had major impacts on the computer industry.

Prior to the announcement of the 1981 Computer Program¹⁾, microcomputer demand in the country was all met by imports. The program enacted in 1981 intended to reserve production of microcomputers and peripherals for companies controlled by local capital, and protect and foster them. Another objective of the program was to help develop the computer industry by using proprietary technology in Mexico, while promoting import substitution and saving and earning foreign currency. In response to this policy, multinationals established joint ventures as the gateway to the growing Mexican market.

In 1985, IBM applied for approval of a investment project to establish a wholly owned, export-oriented venture. The government, holding high expectation for IBM in job creation, export expansion, and access to leading-edge technology, approved construction of a manufacturing plant wholly owned by the foreign company, which, however, was prohibited under the Computer Program. In fact, the IBM case triggered off the liberalization, and the government started to issue a permit for microcomputer production - which was previously issued to local companies only - to foreign companies (wholly owned subsidiaries) under the condition that they would export major portions of projects.

The GATT membership in 1986 entailed the broad-based policy shift to trade liberalization. In line with the new policy, the import license for

¹⁾ "Program Fostering Production of Electronic Computing Systems, Their Main Modules, and Peripheral Equipment"

computer parts, components, and semi-completed products was terminated, and tariff rates were lowered. While import restriction on final products remained in place, increased assembly of imported SKD kits diluted the effect of such restriction.

Under the Computer Decree issued in 1990²⁾, the termination of the import license system for computer products, the lowering of tariff rates, and the abolishment of the export/import restriction (previously 3:1) were incorporated³⁾. At the same time, however, the decree required computer manufacturers to balance foreign currency revenues and expenditures. This allowed foreign companies to ensure production activity leveraging low-cost labor in Mexico, while importing required parts and operating their plants to full capacity. Meanwhile, reduced protection of the domestic market forced uncompetitive U.S. computer companies to withdraw from Mexico. As a result, the computer industry is dominated by IBM, HP, and their parts suppliers.

1.4.2 Production, Exports and Imports of Finished Products

Unlike the automotive industry, the electrical and electronics industry is not required to report production, sales, exports and imports to the government, and statistical data have to rely on trade organizations. However, the following data furnished by different trade organizations are incomplete and inconsistent, and thus simply not suitable for analysis.

Domestic sales of electrical products between 1980 and 1995, based on data furnished by Association of Household Appliance Manufacturers (ANFAD), are shown in Table 1.4-1. Note that the data do not include imported products.

As for electronic products, CANIECE's production data - one and only source - are shown in Table 1.4-2. As for Maquiladora production, the Maquiladora Association provides data on color TVs - Maquiladora's principal product - which are shown in Table 1.4-3.

²⁾ "Decree to Establish Tax Incentives for Modernization of the Computer Industry"

³⁾ The export/import ratio for wholly-owned foreign companies (Apple Computer and Hewlett Packard) was 3:1, while 1:1 for companies which are 49% owned by foreign capital.

**Table 1.4-1 Mexican Market of Electrical Domestic Appliances
(Excl. Maquiladora)**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Heater	951	993	948	871	691	737	708	677	626	813	813	887	928	847	1,039	652
Refrigerator	626	693	754	560	462	527	543	508	486	665	688	789	777	762	1,003	790
Washing Machine	554	628	645	494	514	609	569	517	511	661	874	919	958	948	1,040	746
Blender	1,026	1,142	1,198	931	909	1,269	1,166	1,114	1,103	1,150	1,210	1,230	1,624	1,750	1,699	-
Iron	1,100	1,700	1,700	1,900	1,600	1,900	1,900	1,800	1,700	2,530	2,390	2,500	2,516	2,650	2,654	-
Fan	492	416	50	355	360	525	470	478	407	780	825	830	800	750	748	-
Vacuum Cleaner	122	115	124	106	81	102	90	127	66	135	140	150	120	130	125	-

(Unit : Thousand of Units)

Source : ANFAD

**Table 1.4-2 Production of Electronic Appliances
(Excl. Maquiladora)**

	1989	1990	1991	1992	1993	1994	1995
CTV	344,791	452,895	361,592	383,817	270,538	321,063	-
Stereo-Audio Set	108,531	174,075	194,517	159,000	125,489	147,240	-
Telephone Set	1,243,045	1,201,926	751,468	561,011	561,437	530,329	-
Computer	169,796	209,934	230,539	183,203	366,666	318,956	-
Printer	12,341	16,530	20,236	9,291	6,563	5,549	-

(Unit : Unit)

Source : CANIECE

Table 1.4-3 CTV Production by Maquiladora

	1989	1990	1991	1992	1993	1994	1995
CTV	-	3,769,117	7,058,277	8,311,146	10,238,629	12,787,569	13,212,375

(Unit : Unit)

Source : Maquiladora Association

1.4.3 Export and Import of the Electrical/Electronic Industries

(1) Trade balance of the electrical/electronic industries

Table 1.4-4 shows the trade balance of the electrical/electronic industries in Mexico, in which household appliances and industrial equipment are both indulged with regard to the electric industry.

Table 1.4-4 Trade Balance of Electric/Electronic Industries

Total (1/3)

(Unit : Thousand US\$)

	1992	1993	1994	1995
Export	11,729,615	14,031,700	17,276,585	20,893,045
Import	10,969,890	12,511,059	15,310,284	16,443,060
Balance	759,725	1,520,641	1,966,301	4,449,985

Source : Annex 1-1

Maquiladora (2/3)

(Unit : Thousand US\$)

	1992	1993	1994	1995
Export	10,476,406	12,315,898	14,850,333	18,097,511
Import	5,976,672	7,328,573	9,293,651	12,304,294
Balance	4,499,734	4,987,325	5,556,682	5,793,217

Source : Annex 1-1

Excl. Maquiladora (3/3)

(Unit : Thousand US\$)

	1992	1993	1994	1995
Export	1,253,209	1,715,802	2,426,252	2,795,534
Import	4,993,218	5,182,486	6,016,633	4,138,766
Balance	-3,740,009	-3,466,684	-3,590,381	-1,343,232

Source : Annex 1-1

In Mexico, electrical/electronic industries are exporters enjoying a trade surplus, and 87% of exports are from Maquiladora (4-year average).

Following the devaluation of the peso which helped promote exports in 1995, growth in exports from non-Maquiladora companies amounted to 48% in the automotive industry whereas that in the electrical/electronic industries was much lower, namely 15.2%. This is because the automotive industry already had an international sales network with assemblers at the core, which enabled

them to make export some of the products originally intended for the domestic market simply by making minor modifications in the specifications. On the other hand, non-Maquiladora companies in the electrical/electronics industries failed to enjoy substantial export growth because: (1) the marketability of their products in the international market is low considering their quality and design; and (2) they lacked the sales network change the direction of products to exports.

Table 1.4-5 shows the import and export data on household appliances, electronic equipment, and their parts compiled from Anuario Estadístico del Comercio Exterior de los Estados, including exports and imports by Maquiladora companies.

In Mexico, "Supplemental Regula #8 to the Import Duty Act" is provided to reinforce competitiveness of local products against imported ones. Many non-Maquiladora companies in the electrical/electronics industry, including assemblers, use Regula #8 under approval of SECOFI and imports parts under HS No.98.02 of the tariff table. Essentially, importers can enjoy the same benefits as importers of automotive parts subject to HS No.98.03 under the special provision.

(2) Trade Specification Index (TSI)

The TSI values calculated from trade balance in Table 1.4-5 are shown in Tables 1.4-6 (finished electrical and electronic products) and 1.4-7 (electrical and electronic parts). While finished products show a comparative advantage generally due to contribution by Maquiladora exports, the TSI value for parts has been negative for four years, ranging between -0.2 and -0.53.

Table 1.4-6 TSI of Electrical (Domestic)/Electronic Finished Goods

(Unit : Thousand US\$)

	1991	1992	1993	1994	1995
Export	575,356	3,009,696	4,198,856	5,858,443	7,310,778
Import	1,922,408	2,695,516	2,745,126	3,567,891	2,526,201
TSI	-0.54	0.06	0.21	0.24	0.49

Table 1.4-5 Import and Export of Electrical (Domestic) and Electronic Industries (1/3)

(Unit: Thousand US\$)

	1991		1992		1993		1994		1995		H.S No.
	Import	Export	Import	Export	Import	Export	Import	Export	Import	Export	
	A. Finished Good										
Air Conditioning Machines	68,553	11,967	96,451	14,557	82,884	34,718	109,237	55,530	69,406	81,485	84.15
Refrigerator	164,008	44,637	155,423	116,951	227,510	153,782	235,201	182,649	90,831	255,335	84.18
Washing Machines	46,917	2,130	58,042	12,693	63,515	21,957	75,522	16,348	20,469	17,963	84.50
Word Processor	24,785	1,318	24,737	6,243	27,875	841	27,103	44,111	7,248	62,852	84.69
Electronic Calculator	19,451	74	19,798	68	18,531	433	19,677	922	16,295	5,483	84.70
Cash Register	22,917	294	50,609	6,197	33,333	6,914	33,301	7,629	19,760	10,135	84.70
Computers	598,990	391,891	931,572	440,612	956,007	826,060	1,302,965	1,243,314	979,446	1,734,096	84.71
Telephones	226,082	18,087	354,586	155,780	300,388	234,422	490,341	420,707	346,075	468,900	85.17
Video Tape Recorders	136,105	1,917	173,302	2,395	278,669	45,025	424,932	90,872	316,387	230,851	85.21
Television Receivers	261,360	1,273	371,213	1,335,994	308,073	1,774,014	319,248	2,678,290	165,656	2,977,544	85.28
Radio Receivers	245,087	8,369	338,875	775,372	308,335	913,336	353,957	935,608	370,469	1,224,805	85.27
Photo-Copy Machine	108,153	93,399	120,908	142,834	140,006	187,354	176,407	182,463	124,159	241,329	90.09
Total	1,922,408	575,356	2,695,516	3,009,696	2,745,126	4,198,856	3,567,891	5,858,443	2,526,201	7,310,778	

Table 1.4-5 Import and Export of Electrical (Domestic) and Electronic Industries (2/3)

(Unit: Thousand US\$)

	1991		1992		1993		1994		1995		H.S No.
	Import	Export	Import	Export	Import	Export	Import	Export	Import	Export	
	B. Parts/Components										
B-1 Parts/Components for											
Air Conditioning Machines	21,969	15,752	31,478	160,668	33,365	123,404	44,776	195,868	67,284	238,203	84.15
Refrigerator	17,395	16,674	40,586	45,347	34,504	20,933	39,991	22,009	27,264	40,864	84.18
Washing Machines	3,076	201	4,715	1,692	3,824	3,301	3,655	3,726	5,907	3,241	84.50
Telephones	208,349	29,172	156,226	36,808	138,771	50,280	214,717	39,638	143,493	76,465	85.17
Video Tape Recorders	26,090	1,305	209,611	22,150	157,593	47,890	130,343	65,345	167,636	61,948	85.22
Television Receivers	139,192	30,702	486,523	948,054	549,506	1,004,367	751,980	1,168,879	737,433	1,276,809	85.29
Photo-Copy Machine	64,925	25,184	71,744	25,711	75,386	26,696	97,584	45,865	108,837	40,258	90.09
Office Machines	197,094	217,210	250,189	504,125	328,683	365,267	559,100	605,935	602,186	764,618	84.73

Table 1.4-5 Import and Export of Electrical (Domestic) and Electronic Industries (3/3)

(Unit: Thousand US\$)

	1991		1992		1993		1994		1995		H.S No.
	Import	Export	Import	Export	Import	Export	Import	Export	Import	Export	
	B-2 Parts/Components										
Capacitors	30,434	3,334	295,200	269,349	396,249	273,165	500,217	416,988	704,109	946,286	85.32
Resistors	17,563	2,582	166,244	79,218	183,213	68,050	296,702	79,116	292,717	90,597	84.33
CRT	34,557	15,939	637,058	101,582	710,076	92,720	966,163	130,877	1,368,979	161,559	85.40
Diodes & Transistors	52,400	16,003	298,163	321,583	416,954	270,037	609,455	330,947	835,763	362,842	85.41
Printed Circuits	37,810	2,090	249,788	157,054	317,263	323,137	464,883	408,123	655,872	630,931	85.34
B-3 Parts/Components (HS No.98)	386,214	-	570,896	-	662,452	-	964,563	-	1,020,446	-	98.02.00
Total	1,237,068	376,148	3,468,421	2,673,341	4,007,839	2,669,247	5,644,129	3,513,316	6,737,926	4,694,621	

Source: Anuario Estadístico del Comercio Exterior de los Estados Unidos Mexicanos - INEGI

Table 1.4-7 TSI of Electrical (Domestic)/Electronic Parts

(Unit : Thousand US\$)					
	1991	1992	1993	1994	1995
Export	376,148	2,673,341	2,669,247	3,513,316	4,694,621
Import	1,237,068	3,468,421	4,007,839	5,644,129	6,737,926
TSI	-0.53	-0.13	-0.20	-0.23	-0.18

The TSI values for individual parts in Table 1.4-5 were calculated and are presented in Table 1.4-8. Since the same parts are included in imports under HS No.98.02, these figures are considered to be preliminary data.

Table 1.4-8 TSI of Electronic Parts

	1991	1992	1993	1994	1995
Capacitors	-0.80	-0.05	-0.18	-0.09	0.15
Resistors	-0.74	-0.35	-0.46	-0.58	-0.53
CRT	-0.37	-0.72	-0.77	-0.76	-0.79
Diodes & Transistors	-0.53	0.04	-0.21	-0.30	-0.39
Printed Circuits	-0.90	-0.23	0.01	-0.07	-0.02

1.4.4 Structure of the Electric/Electronics Industry

Assemblers of household appliances, such as refrigerators and washing machines, are listed by CANAME and ANFAD. CANAME's directory classifies manufacturers according to product segment, and electrical products for home and office uses are categorized in Section 8 where 16 assemblers are listed. On the other hand, ANFAD's directory registers 26 member firms, Attachment 1-2 is a list of assemblers and their products on CANAME and ANFAD's directories, in addition to those estimated by the study team. Note that products are not known for some assemblers.

Among the ANFAD member firms, 21 companies are classified according to capital structure, as follows:

Wholly owned by foreign capital	9 companies
Majority owned by domestic capital	6
Wholly owned by domestic capital	6

CANAME's directory lists 218 companies, and if industrial electric apparatus and electric machinery related companies and household/office electric appliance assemblers are excluded, there are 67 parts manufacturers subject to this study.

The one and only directory of electronic industry is available from CANIECE. CANIECE's directory consists of 12 sections, and 589 companies were registered at D.F. and Jalisco as of July 1996. Table 1.4-9 shows breakdown of the membership. It registers only five companies in the state of Nuevo León where the second largest industrial city, Monterrey is located. Electronic equipment manufacturers in other states have their own sub-organization within CAINTRA.

Table 1.4-9 CANIECE Members

	No. of Enterprises Registered		
	D.F.	Jalisco	Total
I Electronic Apparatus and Equipment for Domestic Use	30	2	32
II Parts and Components for Electronic Circuits	90	17	107
III Electrical Communication	68	10	78
IV Electronic Apparatus for Operation by Token or Coin	12		12
V Recorder	36		36
VI Industrial and Scientific Electronics	50		50
VII Installation, Operation and Maintenance of Electronic Equipment and Systems and of Telecommunication	119		119
VIII Computer	95	4	99
IX Electronic Machinery and Equipment for Office and Commerce	23	4	27
X Electric Communication Network and Service	11		11
XI Design and Programming for Equipment and System of Computer and Telecommunication	10	6	16
XII Maquiladora	2		2
Total	546	43	589

Note : As of July, 1996

Source : CANIECE

Since 589 companies contained in the table include both assemblers and parts

manufacturers without clear indication, they have to be distinguished through hearing. Annex 1-2 lists electronic assemblers so identified and their products.

According to CANIECE's annual report, 62 companies newly registered with CANIECE in 1994 while 142 withdrew. In 1995, new registration totaled 45 companies, and withdrawal 100 companies. According to the data, 620 companies were registered in 1995, compared 770 in 1990. As far as the number of CANIECE-registered companies are concerned, the number of firms in the Mexican electronic industry is clearly in the declining trend.



1.5 Maquiladora Companies

Maquiladora has 30 years of history since 1965, and the number of companies registering with SECOFI totaled 2,184 as of October 1995. Of total, 1,489 companies (68%) are located along the border. Maquiladora companies, consisting of 12 industry sectors, employed approximately 670,000 persons as of October 1995. In 1994, employment amounted to 600,229, which accounted for 2.6% of the country's total and 26.1% of workers in the manufacturing sector. Changes in the numbers of enterprises and employment between 1988 and 1995, by sector, are shown in Tables 1.5-1 and 1.5-2. Note that there is another data indicating that 303 companies newly registered between January through August 1995, totaling 2,782 as of August. SECOFI's data base registers 3,133 companies.

Tables 1.5-3 and 1.5-4 show percentage shares of automotive parts and electric/electronic industries in Maquiladora in terms of the numbers of enterprises and employees. Compared to the automotive parts industry, the electric and electronics industry has more enterprises with less employees.

Table 1.5-3 Autoparts Industry in Maquiladora

	(Unit : %)							
	1988	1989	1990	1991	1992	1993	1994	1995
No. of Enterprises	8.8	8.4	8.2	8.3	4.5	7.8	7.8	7.7
No. of Employees	21.4	20.1	22.5	26.3	24.2	23.0	21.6	20.7

Source: SECOFI

Table 1.5-4 Electric/Electronic Industry in Maquiladora

	(Unit : %)							
	1988	1989	1990	1991	1992	1993	1994	1995
No. of Enterprises	29.0	27.2	26.1	25.6	14.4	25.0	24.8	23.8
No. of Employees	40.2	38.5	36.1	34.1	35.3	35.0	37.0	36.4

Source: SECOFI

Table 1.5-1 No. of Enterprises of Maquiladora by Industry

	1988	1989	1990	1991	1992	1993	1994	1995*
Total	1,490	1,795	1,920	2,013	3,689	2,195	2,064	2,184
Food	20	34	46	53	57	61	57	58
Textile	211	276	289	350	393	411	412	484
Leather and Footwear	50	48	51	56	62	57	54	54
Furniture, Parts, and Other Wooden and Metal Products	191	273	265	269	293	307	259	276
Chemical Products	43	72	88	106	121	125	104	103
Autoparts & Accessories	131	150	158	168	165	171	162	169
Machinery, Tools & Parts Except Electrical	32	34	34	38	46	45	41	38
Electrical & Electronic Machinery & Apparatus	106	108	105	114	115	118	116	122
Electrical & Electronic Materials & Accessories	326	380	396	401	416	430	396	397
Sports Goods & Toys	29	30	29	29	39	42	41	43
Other Industries	285	346	373	327	313	315	321	336
Services	66	80	86	102	109	113	101	104
Frontier	1,216	1,417	1,426	1,444	1,560	1,587	1,460	1,489
Interior	274	378	494	569	569	608	604	695

Note : * As of October.

Source : SECOFI

Table 1.5-2 Employment of Maquiladora by Industry

	1988	1989	1990	1991	1992	1993	1994	1995*
Total	389,245	437,064	446,258	486,723	511,339	541,233	600,229	667,613
Food	5,023	4,524	7,323	8,507	9,414	7,852	7,047	7,754
Textile	34,706	42,400	41,692	49,377	58,042	66,085	80,783	99,950
Leather and Footwear	6,776	7,535	7,164	7,712	7,901	7,574	7,345	7,591
Furniture, Parts, and Other Wooden and Metal Products	19,245	22,747	24,710	28,256	29,367	35,546	34,032	37,163
Chemical Products	1,679	5,405	7,102	7,947	9,857	12,599	11,968	13,159
Autoparts & Accessories	83,290	87,813	100,461	128,237	123,544	124,539	129,941	138,072
Machinery, Tools & Parts Except Electrical	5,131	4,990	4,617	4,959	5,197	5,352	5,923	7,638
Electrical & Electronic Machinery & Apparatus	59,100	57,524	49,872	49,597	56,360	57,712	66,633	68,261
Electrical & Electronic Materials & Accessories	97,473	110,617	111,323	116,227	124,144	131,813	155,457	174,513
Sports Goods & Toys	9,836	10,965	7,012	6,384	7,427	7,879	8,568	13,372
Other Industries	50,251	62,418	65,812	54,044	53,574	57,678	67,442	70,459
Services	16,741	20,135	19,170	25,476	26,512	26,604	25,090	29,681
Frontier	312,211	339,319	334,784	355,252	373,259	394,334	439,338	485,162
Interior	77,034	97,745	111,474	131,471	138,080	146,899	160,891	182,451

Note : * As of October.

Source : SECOFI

Then, based on 3,133 companies in SECOFI's data base, ownership structures of all the industries, the automotive parts industry, and the electric/electronics industry are compared as follows.

Table 1.5-5 Maquiladora by Capital

(Unit : %)

Capital		All Sectors	Autoparts	Electric/Electronic
Foreign	100%	41.9	61.4	57.6
Local	1-49%	9.9	11.6	15.9
Local	50%	0.8	0.5	0.3
Local	51-99%	4.3	2.4	3.7
Local	100%	43.0	24.2	22.5
Total No. of Enterprises		3,117*	207	592

Source : SECOFI

Note : * Data for 16 companies are not available.

First of all, companies whose majority of the capital is owned by foreign capital account for 51.8% of all the industries, whereas the automotive parts and the electric/electronics industries represent approximately 73%, a 21 percentage points higher than the average. Compared to other dominant sectors in Maquiladora, textile and woodworking, the two industries are clearly positioned as major assembly bases of foreign manufacturers. Automotive parts are dominated by U.S. companies, and electric and electronic products by Japanese and Korean companies.

Finally, 592 electric and electronics Maquiladora companies are classified according to geographical location, as shown below. Major concentrations are seen in Tijuana and Cd. Juárez which are color TV assembly centers. Attachment-3 lists electric and electronics assemblers in Maquiladora.

Table 1.5-6 Maquiladora of Electric/Electronic Industries by Location

Tijuana	(Baja California)	166
Cd. Juárez	(Chihuahua)	125
Matamoros	(Tamaulipas)	34
Nogales	(Sonora)	45
Reynosa	(Tamaulipas)	27
Mexicali	(Baja California)	18
Monterrey	(Nuevo León)	24
Chihuahua	(Chihuahua)	23
Piedras Negras	(Coahuila)	15
Others		115
Total		592

Source : SECOFI