

# BUSINESS

## Frontier

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EL PASO BRANCH

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*"The maquiladora industry's history of positive growth in Mexico establishes it as an activity of ever-increasing importance for the country's overall economic growth and development."*

## The Maquiladora Industry in Historical Perspective (Part 2)

The maquiladora industry is a key component of Mexico's economy for job creation, exports and foreign exchange (see Part 1, Issue 3). It has also made important contributions to the country's technological development, especially in the electric and electronics, transportation equipment, and textiles and apparel sectors. Finally, maquiladoras have spurred development in Mexico's various regions. This article describes maquiladora evolution since 1980 through the current year based on the industry's sectoral and regional performance.

### Sectoral Performance

Official sources in Mexico classify maquiladora industry activity into 10 specific manufacturing sectors: food; textiles and apparel; footwear and leather goods; furniture and wood and metal products; chemicals; transportation equipment; machinery and tools; electric and electronics; toys and sporting goods; and services (*Table 1*). There

is also a classification of miscellaneous manufactures.

The industry's principal sectors continue to be electric and electronics, textiles and apparel, and transportation equipment (*Chart 1*). Together these three sectors employ nearly 74 percent of all maquiladora workers. The electric and electronics sector is still the industry's largest employer, although its share of total employment has come down considerably over the years. While in 1980 electric and electronics employed a majority of maquiladora workers (58.1 percent), in 1998 its employment share had dropped to just over a third (34.2 percent), for a total of 340,117 workers.

The maquiladora industry's second-largest employer has alternated between textiles and apparel and transportation equipment. As *Chart 1* shows, textiles and apparel in 1980 occupied second place in maquiladora industry employment, with a 14.7 percent share; transportation equipment, in third place, represented only 6.3 percent of workers that year. In 1983, transportation equipment moved to second place with a 13 percent employment share, while textiles and apparel dropped to 10.7 percent. Transportation equipment sustained its second-place position up through 1996. However, by 1997 the

textiles and apparel sector was almost equal to the size of the transportation equipment sector. Their respective employment shares that year were 19.1 percent and 19.6 percent. This year, textiles and apparel—with a 20 percent employment share—is once again the industry's second-largest employer, although by a small margin since transportation equipment's share is 19.4 percent. Still, transportation equipment's share has come down from its 1991 peak of almost a fourth of total employment. Employment during January–September 1998 reached 198,530 workers in textiles and apparel and 192,418 workers in transportation equipment.

Textiles and apparel's renewed dynamism since 1991 can be attributed to two factors. First, new NAFTA rules opened up the sector to greater trade and investment so that even in anticipation of these rules, which became effective in 1994, companies reacted with increased investment in this sector. Second, growth in 1995 accelerated further in response to the substantial reduction in dollar-denominated Mexican wages brought about by the 1994 peso devaluation. Thus, while employment growth in textiles and apparel had averaged less than 10 percent per year during 1980–91, it rebounded to an average annual growth rate of almost 24 percent

**Table 1**

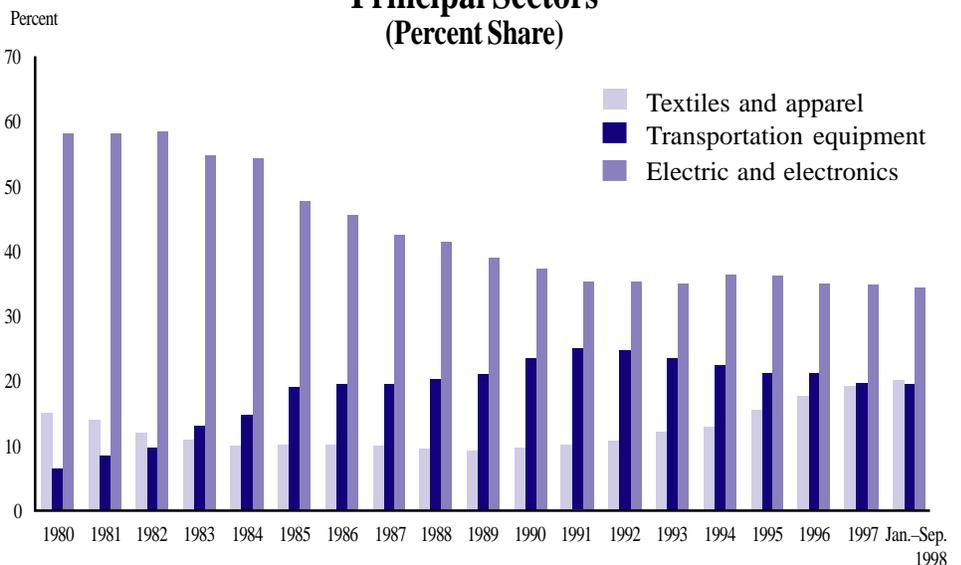
## Maquiladora Employment by Sector January–September 1998

		% Change from Year Earlier	% Share
<b>TOTAL</b>	<b>994,379</b>	<b>12.7</b>	
<b>SECTORS</b>			
Food	11,492	-4.4	1.2
Textiles & Apparel	198,530	17.9	20.0
Footware & Leather Goods	9,041	2.3	.9
Furniture & Wood/Metal	47,412	8.4	4.8
Chemicals	19,239	19.5	1.9
Transportation Equipment	192,418	11.0	19.4
Machinery & Tools	10,373	13.0	1.0
Electric & Electronics	340,117	11.6	34.2
Toys & Sporting Goods	14,129	2.5	1.4
Other Manufactures	112,404	15.6	11.3
Services	39,224	12.4	3.9

SOURCE OF PRIMARY DATA: Instituto Nacional de Estadística, Geografía e Informática.

**Chart 1**

## Maquiladora Industry Employment Principal Sectors (Percent Share)

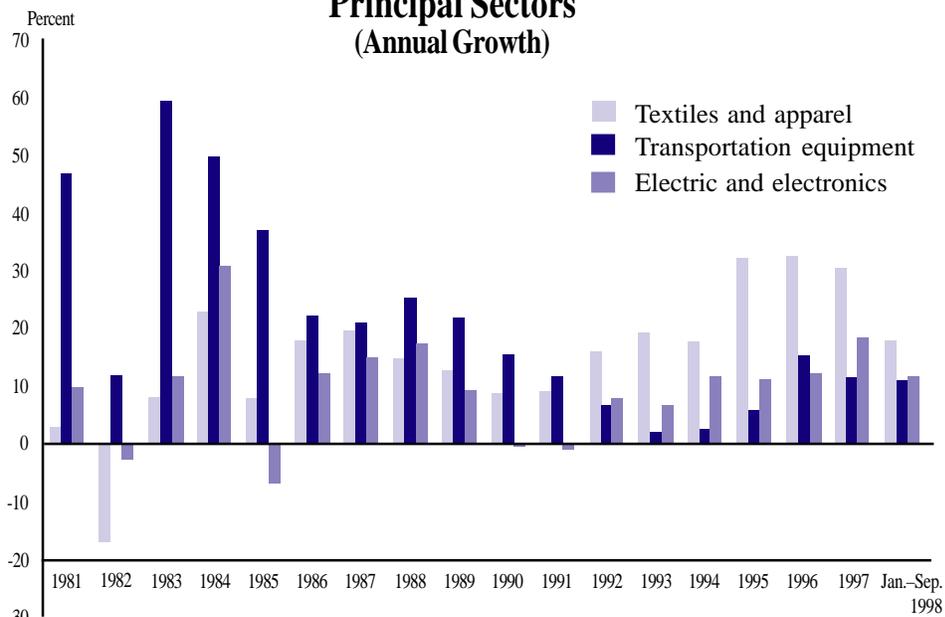


during 1992–98. In fact, during 1995–97, textiles and apparel’s growth was above 30 percent each year. By comparison, during 1995–98 annual employment growth averaged 13.3 percent in electric and electronics and 10.9 percent in transportation equipment (*Chart 2*). Table 2 profiles the maquiladora industry’s three principal sectors.

Of the other sectors, the maquiladora industry’s fourth-largest employer is furniture and wood and metal products, with a 4.8 percent share, followed by services, with 3.9 percent. The remaining sectors’ individual shares are minor, with each

**Chart 2**

### Maquiladora Industry Employment Principal Sectors (Annual Growth)



SOURCE OF PRIMARY DATA: Instituto Nacional de Estadística, Geografía e Informática.

**Table 2**

### Maquiladora Industry: Profile of Principal Sectors January–September 1998

	Electric & Electronics		Transportation Equipment		Textiles & Apparel	
	Jan.–Sep. 1998	% Change from Year Earlier	Jan.–Sep. 1998	% Change from Year Earlier	Jan.–Sep. 1998	% Change from Year Earlier
<b>Plants</b>	607	6.7	207	6.7	817	16.5
<b>Employment</b>	340,117	11.6	192,418	11.0	198,530	17.9
<b>Total Raw Materials</b> (Billions of U.S. dollars)	15.2	8.3	5.5	-5.5	2.5	19.2
<b>Imported</b> (Billions of U.S. dollars)	14.9	8.2	5.5	-5.5	2.3	18.0
<b>Domestic</b> (Billions of U.S. dollars)	.27	17.7	.05	-0.4	.12	47.8
<b>Value Added</b> (Billions of U.S. dollars)	2.9	23.0	1.5	8.3	1.1	32.3
<b>Gross Production</b> (Billions of U.S. dollars)	17.8	10.3	7.0	-2.9	3.5	22.4

SOURCE OF PRIMARY DATA: Instituto Nacional de Estadística, Geografía e Informática.

representing only between 1 percent and 2 percent of maquiladora employment. The employment share of the miscellaneous manufactures category is 11.3 percent.

## Regional Performance

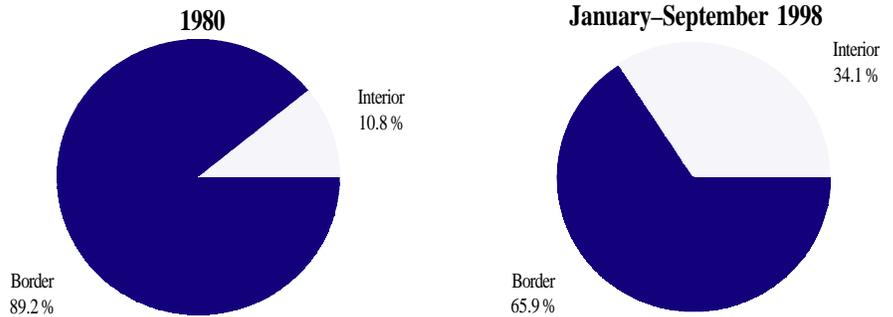
### Border vs. Interior

Although the maquiladora industry is concentrated mostly on the border, cities in Mexico's interior region have been gaining in their maquiladora participation. In 1998, two-thirds of maquiladora employment—equivalent to 655,403 workers—was found in border cities. However, this is down from the border cities' 1980 employment share of over 89 percent. A similar trend is observed in the number of maquiladora plants. While in 1980 nearly 89 percent of maquiladora plants were found in border cities, by 1998 this share had dropped to just over 62 percent, for a total of 1,836 plants. Charts 3 and 4 show the evolution of the maquiladora industry's border and interior presence during 1980–98.

The industry's movement to the interior includes cities in Mexico's border states. When the industry's border presence is evaluated under this broader definition to include all cities in border states rather than only cities along the immediate border with the United States,

**Chart 3**

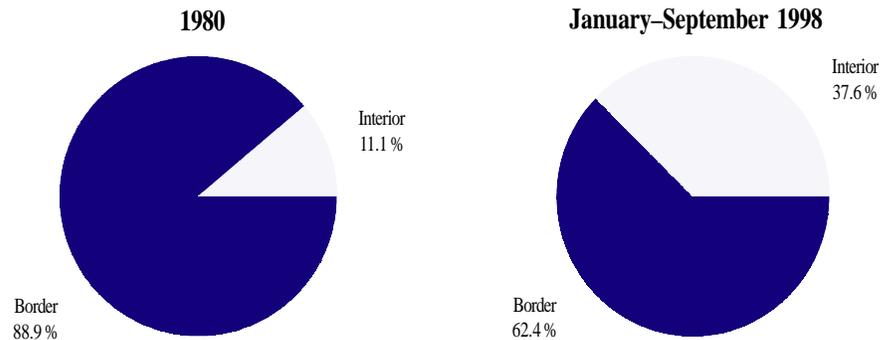
### Maquiladora Industry Employment by Region



SOURCE OF PRIMARY DATA: Instituto Nacional de Estadística, Geografía e Informática.

**Chart 4**

### Maquiladora Plants by Region



SOURCE OF PRIMARY DATA: Instituto Nacional de Estadística, Geografía e Informática.

the border participation is higher. Thus, in 1998 border states housed nearly 76 percent of maquiladora plants and employed over 80 percent of the industry's workers. However, this participation has also come down. In 1980, border states had 92.3 percent of maquiladora plants and 94.1 percent of maquiladora workers.

### States

The border states of Chihuahua, Baja California Norte and Tamaulipas continue to have the highest maquiladora employment.

In 1998, these three states represented over 62 percent of maquiladora workers, though this share is down from nearly 73 percent in 1980. Chihuahua, though still the industry's largest employer, has seen its employment share reduced over the years. In 1980, it was the source of over one-third of maquiladora employment; by January–September 1998, its share had dropped to 26 percent, equivalent to 258,964 workers. On the other hand, Baja California—the industry's second-largest employer—has

seen an increase in its employment share. In 1980, this state employed just over 17 percent of maquiladora workers; during January–September 1998, its employment share jumped to over 21 percent, for a total of 212,029 workers. Tamaulipas, like Chihuahua, has suffered a reduction in its employment share, slipping from over 19 percent in 1980 to less than 15 percent in January–September 1998, equivalent to 147,016 of the industry’s workers (Chart 5).

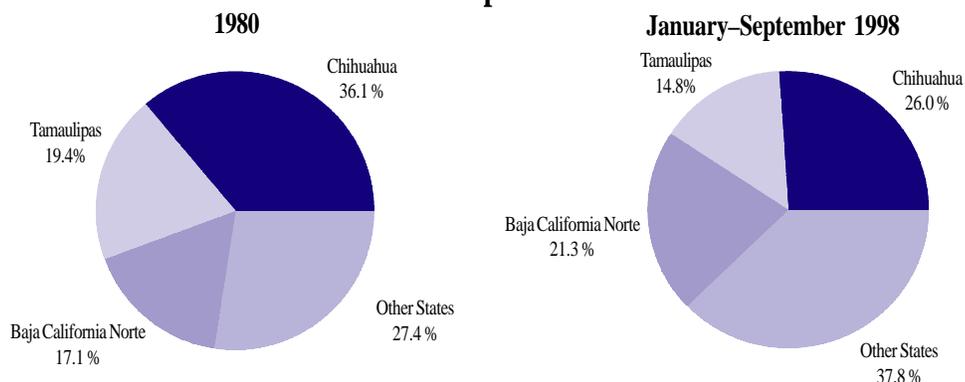
While border states have retained their investment appeal, other states in Mexico have emerged as important maquiladora locations. As seen in Table 3, which lists states that have received new maquiladora investments this year, maquiladoras today are in every region of the country—north, central and south; east and west (see map).

### Cities

The top locations for the maquiladora industry are the border cities of Cd. Juárez in Chihuahua state and Tijuana in Baja California Norte. Together, these two cities employ 348,929 workers and represent over 35 percent of total maquiladora employment. Cd. Juárez continues to be the city with the largest maquiladora

Chart 5

## Maquiladora Industry Employment Principal States



SOURCE OF PRIMARY DATA: Instituto Nacional de Estadística, Geografía e Informática.

presence, with 204,454 workers and a 20.6 percent share of employment during January–September 1998. Cd. Juárez’s share in maquiladora employment, however, is down from 33 percent in 1980. Tijuana, on the other hand, has seen its employment share rise. While in 1980 this city employed 10.3 percent of maquiladora workers, during January–September 1998 its share rose to 14.5 percent, for a total of 144,475 workers. (See page 7 for a more detailed discussion of the maquiladora industry in Cd. Juárez and Tijuana.)

As seen in Table 4, which shows maquiladora industry employment by selected cities, other border cities with an important maquiladora presence are Reynosa/Río Bravo and Matamoros, both in the state of Tamaulipas; Mexicali, Baja California Norte; and Nogales, Sonora. While the area of Reynosa/Río Bravo has gained in

importance over the years, Matamoros has seen its employment share reduced from almost 13 percent in 1980 to under 6 percent during January–September 1998. Similarly, Nogales saw its employment share of almost 11 percent in 1980 slip to just over 3 percent in 1998. Though Mexicali’s employment share this year, at 4.8 percent, is lower than its 1980 share of 6 percent, this city has exhibited some of the most dynamic growth in the industry in recent years and hence is gaining in importance.

In terms of important locations in Mexico’s interior, Chihuahua city has the largest maquiladora presence, with 4 percent of the total. Although other cities in the interior have been gaining momentum in maquiladora investment, they each employ 2 percent or less of maquiladora workers.

*"Maquiladoras  
today are  
in every  
region of  
Mexico—  
north,  
central  
and south;  
east  
and west."*

**Table 3**

**New Maquiladora Plants Authorized by State  
January–July 1998**

	Plants	Workers	Initial Investment (Millions of U.S. dollars)
<b>TOTAL</b>	<b>330</b>	<b>67,677</b>	<b>1,100.45</b>
Aguascalientes	16	2,421	1.62
Baja California Norte	92	28,670	418.79
Campeche	1	186	.52
Chihuahua	31	4,572	112.06
Coahuila	25	3,807	2.32
Distrito Federal	7	577	.15
Durango	7	1,139	.76
Guanajuato	5	313	.34
Jalisco	16	3,063	240.05
México	8	1,281	11.25
Morelos	6	1,719	116.82
Nayarit	1	150	–
Nuevo León	17	1,821	4.85
Puebla	16	2,942	8.70
Querétaro	1	26	.06
Quintana Roo	1	30	–
San Luis Potosí	6	343	1.18
Sinaloa	1	20	–
Sonora	27	4,764	21.39
Tamaulipas	30	3,671	99.68
Tlaxcala	2	2,613	18.21
Veracruz	1	47	.06
Yucatán	10	2,806	17.68
Zacatecas	3	696	24.96

SOURCE OF PRIMARY DATA: Secretaría de Comercio y Fomento Industrial.



States shown in blue received maquiladora investment in 1998.

## Cd. Juárez and Tijuana: Top Maquiladora Exporters

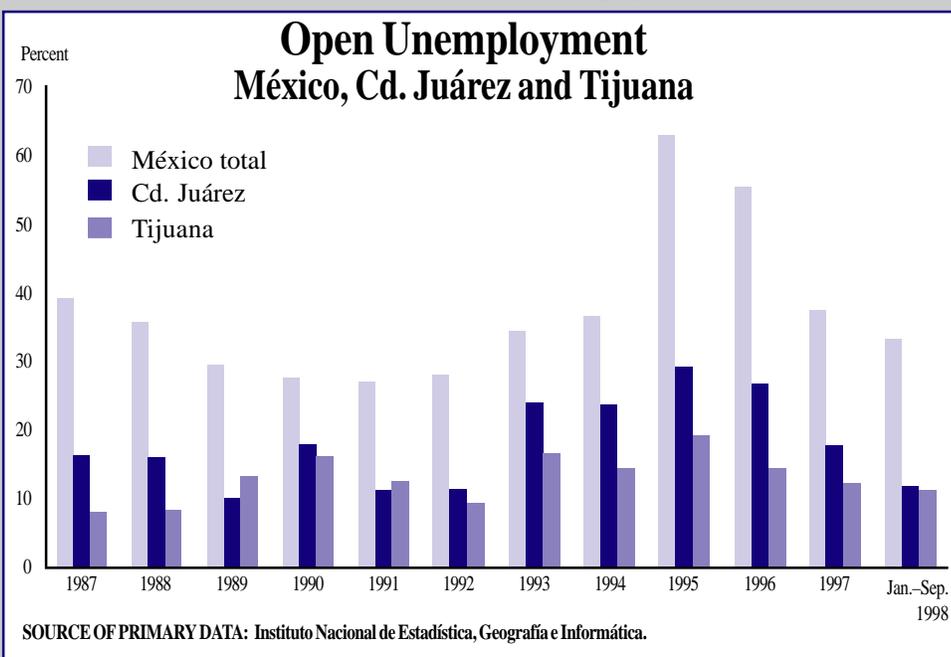
The maquiladora industry has played a key role in positioning Mexico as Latin America's largest exporter and the 13th largest in the world. About half of Mexico's manufactured-goods exports and over 44 percent of its total exports are derived from the maquiladora industry. Moreover, the majority of maquiladora goods is produced in two cities—Cd. Juárez and Tijuana.

Tijuana is known as the "TV manufacturing capital of the world." Maquiladora companies produce more than 12 million television sets there each year. Tijuana's largest employers, for example, are Sony and Sanyo. While Cd. Juárez has its share of TV manufacturers—Thomson-RCA, Philips, Toshiba and Zenith, for example—it is known mostly for its concentration of maquiladoras by the world's largest company, General Motors, which employs some 21,500 workers in 15 plants. Moreover, GM has recently undertaken more sophisticated investments in Cd. Juárez. In 1995, the giant automaker opened its Delphi Mexico Technical Center,

dedicated to the engineering and design of auto parts used in GM plants throughout the world; by 1998, GM had tripled the capacity of this center.

Because of the maquiladora industry's sustained growth in Cd. Juárez and Tijuana, these locations—like others that have a significant maquiladora

presence—have traditionally exhibited lower open-unemployment rates vis-à-vis Mexico as a whole (see chart below). Undoubtedly, these locations owe much to the maquiladora industry, just as the industry owes much to them in reaching an important place in Mexico's economy in job creation, exports and foreign exchange generation.



## Maquiladora Industry Key Indicators

	Cd. Juárez, Chihuahua		Tijuana, Baja California Norte	
	Jan.-Sep. 1998	% Change from Year Earlier	Jan.-Sep. 1998	% Change from Year Earlier
<b>Plants</b>	259	-7.8	656	11.0
<b>Employment</b>	204,454	8.6	144,475	7.4
<b>Total Raw Materials</b> ( <i>Billions of U.S. dollars</i> )	6.0	14.9	5.3	-18.0
<b>Imported</b> ( <i>Billions of U.S. dollars</i> )	6.0	16.9	5.1	-19.2
<b>Domestic</b> ( <i>Billions of U.S. dollars</i> )	.05	-64.4	.13	87.2
<b>Value Added</b> ( <i>Billions of U.S. dollars</i> )	1.5	6.7	1.2	18.8
<b>Gross Production</b> ( <i>Billions of U.S. dollars</i> )	7.5	14.6	6.4	-13.9

SOURCE OF PRIMARY DATA: Instituto Nacional de Estadística, Geografía e Informática.

Table 4

## Maquiladora Employment by Selected Cities January–September 1998

		% Change from Year Earlier	% Share		
			1980	1990	Jan–Sep. 98
<b>TOTAL</b>	<b>994,379</b>	<b>12.7</b>			
<b>Border Cities</b>					
Cd. Juárez	204,454	8.6	33.0	27.4	20.6
Tijuana	144,475	7.4	10.3	13.4	14.5
Reynosa/Rio Bravo	55,659	15.6	4.6	5.6	5.6
Matamoros	55,378	9.0	12.7	8.6	5.6
Mexicali	47,256	14.7	6.0	4.6	4.8
Nogales	32,684	13.5	10.8	4.4	3.3
Cd. Acuña	30,334	11.6	2.5	3.4	3.1
Nuevo Laredo	20,379	2.9	2.1	3.6	2.0
Piedras Negras	14,467	18.6	2.2	1.8	1.5
Tecate	9,842	13.3	–	1.2	1.0
San Luis Rio Colorado	9,479	22.5	–	.5	1.0
<b>Interior Cities</b>					
Chihuahua	39,968	8.9	3.1	6.6	4.0
Torreón	19,604	44.6	–	.8	2.0
Hermosillo	15,365	23.6	–	.9	1.5
Guadalupe	14,406	13.8	–	.8	1.4
Ensenada	10,456	14.7	–	.5	1.1
Guadalajara	3,612	4.1	–	1.2	.4
Monterrey	3,357	34.2	–	.3	.3

SOURCE OF PRIMARY DATA: Instituto Nacional de Estadística, Geografía e Informática.

## Conclusion

The maquiladora industry's history of positive growth in Mexico establishes it as an activity of ever-increasing importance for the country's overall economic growth and development.

—Lucinda Vargas  
Senior Economist

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