MAQUILADORA OPERATIONS

A Comment on the Maquiladora Program in Mexico

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The Maquiladora program was instituted in Mexico in the early 1960s. The purpose of this program was to create jobs for Mexicans, attract foreign investment, and bring needed technology to Mexico. In the Maquiladora program components, equipment, and machinery can enter Mexico duty free, where they are then assembled. The finished products are then exported to the United States.

Initially the process included only assembly operations. Today the program, which is spread throughout the entire Mexican border region, includes high-technology operations encompassing every aspect of the manufacturing process. The Maquiladora program is now the second most important industry in Mexico, generating revenues surpassing even the tourism industry.

There are close to 740 Maquiladora plants operating in Mexico. Participants include manufacturers of toys, furniture, clothing, medical products, and other goods. Throughout Mexico, close to 200,000 individuals are employed in the Maquiladora program. In the Ensenada, Tijuana, and Tecate areas there are more than 300 American and Japanese companies employing a total of 35,000 workers.

Labor costs as little as seventy-five cents per hour in Tijuana. When one compares these wages with the average United States hourly wage, the incentive to operate a plant is Mexico is obvious. The Tijuana area is populated with over one million people. The Department of Binational Affairs of the San Diego Council reports that by the year 2000, the Tijuana and San Diego area will have approximately four million people. Sixty percent of these people will be between eighteen and twenty-three years of age. As long as

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U.S.' production costs remain high, cheap Mexican labor will be attractive and conducive to the expansion of the Maquiladora industry.

An Overview of the Maquiladora Industry

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Each day offshore export processing zones (EPZ's) become a more integral part of the international economy, playing a larger part in the manufacture and assembly of a growing array of goods and services. Goods displaying labels with "Made in the U.S.A." or "Made in Japan" are less common now than ten years ago. They are being replaced with "Made in Taiwan" or "Assembled in Mexico." These labels indicate more than a geographical shift in the production of some consumer goods. They represent a deliberate thrust towards a new development strategy for a growing number of large and small nations scattered throughout the world. This strategy is more "outward looking" than previously.

I. The Structure and Function of Maquiladoras

For the United States, the use of "offshore sourcing" began as a side effect of establishing manufacturing facilities in Europe, behind tariff walls, in order to increase sales to the giant European Economic Community. For Japan, frequently called a nation of maquiladoras because of its elaborate subcontracting system, the decision to use offshore EPZ's apparently was a part of a deliberate strategy to gain market shares in a world dominated by the United States. Mexico created the maquiladora industry as an EPZ because of both the demonstrated success of other EPZ's in the Far East, such as Taiwan and Singapore, and Mexico's need to solve pressing social and economic problems.

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The Border Industrialization Program, which gave birth to the industry in the mid-1960s, was designed to reduce unemployment in Mexico's northern border region, generate foreign exchange, and stimulate technology transfer to Mexico by attracting foreign manufacturing firms there to establish assembly operations. Since then, and especially since the peso devaluations dating from 1982, the industry has grown rapidly.

The term "maquiladora" comes from the Spanish word *maquila*, which in colonial Mexico was the charge that millers collected for processing grain. Today maquiladora stands as a generic term for those firms which "process" (assemble and/or transform in some way) components imported into Mexico which are then reexported. Alternatively it can be said that maquiladora is an economic unit for the production of goods or services based on the temporary importation of raw materials and equipment to be transformed in Mexico and subsequently sold abroad.

The term "in-bond" industry comes from the fact that those components which are imported into Mexico are imported under a bonded status in order to insure that they are not sold in Mexico markets, but are reexported for sales in foreign markets.

Another term frequently used is "twin plants," which refers to the existence of two factories, one on either side of the border. However, this does not accurately describe the arrangement for most companies, since most of the foreign parent plants are not located anywhere near the border. Originally, it was thought that labor-intensive maquiladora operations in Mexico would assemble components produced in capital intensive plants in the United States, presumably in the border region, and then distribute the final products from the U.S. border plants. Generally, however, this has not proved to be the case.[1]

At the end of 1986 there were, according to unofficial figures, approximately 1,000 plants in the industry nationwide, employing approximately 300,000 people and generating some 1.6 billion U.S.

1. Clement & Jenner, *Location Decisions Regarding Maquiladora/In-Bond Plants Operating in Baja California, Mexico*, San Diego, California, Institute for Regional Studies of the Californias, San Diego State University, (1987).

dollars in foreign exchange.[2] About 90% of these in-bond plants are located in northern Mexico bordering the states of California, Arizona, New Mexico, and Texas. Most of these plants are owned by, or have contracted relationships with, U.S. firms. Currently Mexico produces approximately 40% of the goods imported into the United States from developing countries under Tariff articles 806 and 807[3] which allow duties to be paid on only the "value added" abroad.[4]

Given its relative size and rate of growth, the maquiladora is the newest "glamour industry" along the U.S.-Mexican border. It is suggested that eventually the maquiladora industry will provide the same economic stimulation to depressed U.S. border communities that Mexican shoppers did during the oil boom period of 1977-1981. This "maquiladora boom" is attributed to several types of potential advantages to U.S. or other foreign firms, which produce relatively completed products having significant labor costs. These advantages include:

1. Significantly reduced costs, especially labor;

2.

Table 1. The Maquiladora Industry in Mexico: Plants, Employment, and Value Added*

Date Year	Total No. of Plants	Total Employment (Yearly average)	Value Added Dollars
1965		3,000	
1966	57	4,257	
1967	72	17,936	
1968	79	17,000	
1969	108	15,858	
1970	120	20,327	81
1971	209	20,000	102
1972	339	48,060	165
1973	357	64,330	278
1974	455	75,974	444
1975	454	67,214	454
1976	448	74,496	536
1977	443	78,433	525
1978	547	90,704	714
1979	540	111,365	638
1980	620	119,546	773
1981	605	130,973	976
1982	585	127,048	851
1983	600	150,867	829
1984	672	199,684	1,200
1985	789	217,544	1,300
1986	858	246,617	1,600

* Through May 1986

Sources: Instituto Nacional de Estadística e Información (INEGI); various publications.

3. *See infra* note 11 and accompanying text.

4. See Table 2 on following page.

2. One hundred percent foreign ownership, not usually possible in Mexico; and

3. Proximity to the United States allowing:

a) lower transportation and communications costs,
b) the possibility of management and technical personnel living in the United States,
c) shorter down time for repairs and new product lines, and
d) greater control over day-to-day operations.

The available literature, although sparse, indicates there are significant benefits to the U.S. border cities in terms of increased incomes, jobs, and tax revenues associated with the growth of industry in Mexico.[5] Because of these advantages, both government agencies and private firms located in the United States and Mexican border states implemented promotional campaigns designed to attract U.S. and other foreign firms to establish in-bond plants in Mexican locations adjacent to the United States.

The growth of the maquiladora/in-bond industry has been quite extraordinary as can be seen from the data presented in Table 1.[6] Since 1965, the number of plants, total employment, and value added have grown almost every year during the industry's twenty

Table 2. Dutiable Value of Imports Under 806/807 from Less Developed Countries, 1985.

Country	U.S. $ (millions)	Percent
Mexico	$2,265	40
Singapore	938	17
Taiwan	586	10
Hong Kong	431	8
Malaysia	618	11
Philippines	375	7
Korea	349	6
Haiti	61	1
TOTALS	$5,642	100%

Source: *Journal of the Flagstaff Institute* 1986, as reported in *The Industrial Development Commission of Mexicali*, MANUFACTURING IN MEXICALI: THE IN-BOND OR MAQUILADORA INDUSTRY HANDBOOK, 8th ed., Mexicali, 1986.

5. William L. Mitchell, *Economic Impact of Maquila Industry in Juarez, Mexico in El Paso, Texas and other sections of the United States for 1985*, CIUDAD JUAREZ, GRUPO BERMUDEZ INDUSTRIAL PARKS, 1986; and Clement & Jenner, *supra* note 3.

6. *See supra* note 1.

year lifespan. Table 3[7] illustrates the wide diversity of goods that are processed in the industry. These tables demonstrate that various types of electrical and electronic goods are clearly the most important group of products to pass through the maquiladora process, with apparel being the next most important product group.

Table 4[8] shows that despite Baja California's dominance in terms of number of plants (40%), the State of Chihuahua clearly generates the most jobs and the most value added. Larger "Fortune 500" firms from the mid-west and eastern United States tend to fill Chihuahua's roster of U.S. firms, while Baja California seems to attract smaller, less well-known firms, mainly from Southern California.

Nevertheless, Baja California may just now be coming into its own in the sense that several large Japanese companies have located "twin plants" in the Southern California-Baja California region in the belief that it will, in the medium and long term, provide the best possible environment for capitalizing on some key developments including:

1. Increased sourcing from Far East EPZ's;

7.

Table 3. In-bond Manufacturing Plants in Mexico. Number of Plants and Number of Employees According to Product Categories (October 1985).

Plants	Number of Plants	(%)	Number of Plants	(%)
1. Electronic and electrical materials and accessories	198	(25)	56,907	(25)
2. Electronic and electrical machinery and appliances	86	(11)	45,816	(20)
3. Apparel	110	(14)	32,149	(14)
4. Transportation equipment and accessories	69	(9)	44,441	(19)
5. Services	44	(6)	14,075	(6)
6. Furniture	72	(9)	7,168	(3)
7. Toys and sporting goods	24	(3)	7,418	(3)
8. Shoes and leather	36	(5)	4,896	(2)
9. Food process	12	(2)	2,149	(1)
10. Tools	21	(3)	2,516	(1)
11. Chemical products	3	(-)*	99	*(-)
12. Other industries	111	(14)	14,889	
TOTALS	786	(101**)	232,523	(100)

* Less than 1%.
** Adds up to 101 due to rounding.

Source: "Estadística de la industria maquiladora de exportación, Octubre 1985." INEGI, Dirección General de Informática, Mexico, D.F., 1985.

Source: "Estadistica de la industria maquiladora de exportacion, Octubre 1985." INEGI, Direccion *General de Informatica, Mexico, D.F., 1985.*

8. See Table 4 on following page.

2. The possibility of distributing to U.S. markets from west to east;

3. Favorable wage and utility rates in Baja California;

4. A growing California market;[9]

5. A growing protectionist mood in the U.S. Congress; and

6. The tendency for the U.S. dollar to be devalued with respect to the Japanese yen.

These and other factors are attracting other Asian countries to opportunities that many industry observers believe are fantastic. However, there are problems in the industry. High employee turnover rates, worker absenteeism, lack of physical infrastructure, and

Table 4. Maquiladora Plants by Principal Cities and States
January-August 1985

	Plants	Employment	*Value Added
NATIONAL TOTAL	747	207,817	190,248
BAJA CALIFORNIA	301(40)	38,691(19)	34,383(18)
Ensenada	9	481	478
Mexicali	75	10,863	10,572
Tecate	31	1,713	1,148
Tijuana	180	25,697	22,185
BAJA CALIFORNIA SUR			
La Paz	4	150	126
COAHUILA	50	13,140	8,154
Ciudad Acuña	24	6,032	3,666
Piedras Negras	19	4,496	2,379
Others	7	2,612	2,109
CHIHUAHUA	193(25)	87,951(42)	83,644
Ciudad Juárez	167	76,664	75,071
Ciudad Chihuahua and Ojinaga	26	11,287	8,573
JALISCO			
Guadalajara	14	5,064	7,587
ESTADO DE MEXICO AND MEXICO, D.F.	5	149	373
SONORA	82	22,088	16,233
Agua Prieta	24	5,699	3,676
Nogales	49	14,661	3,676
Others	9	1,728	964
TAMAULIPAS	75(10)	36,167(17)	35,135(18)
Matamoros	35	20,218	22,744
Nuevo Laredo	14	3,668	3,514
Ciudad Reynosa y Rio Bravo	26	12,281	8,877
OTHER STATES	23	4,417	4,609

* Value added in millions of pesos. Percentages in parentheses.

Source: "Estadística de la industria maquiladora de exportación, Enero, 1986" INEGI, 1986.

9. *See supra* note 1.

shortages of trained technical and supervisory personnel are most frequently mentioned as being potential bottlenecks over the next three to five years. Yet most estimates see the industry expanding at a 10% to 12% rate for some time.

II. THE MAQUILADORA DEBATE IN CONGRESS

It seems appropriate to comment on the debate on the maquiladora in the U.S. Congress during the last year. While I have presented my views on this debate in some detail elsewhere,[10] a short summary of the debate in view of the findings of our study might prove useful.

The main issue must be seen in the larger context of U.S. "competitiveness." It focuses mainly on whether or not to retain articles 806/807 of the United States Tariff Schedule.[11] These articles permit the importation of products that have been assembled or somehow "processed" abroad while duties are levied only on the "value added" to the (mainly) U.S.-manufactured components in the foreign country, as opposed to paying duties on the entire value of the imported product.

This issue reemerged in October 1986 (it has already been debated extensively in the 1970s) when the Department of Commerce used federal funds to promote the Mexican maquiladora program among U.S. corporations at the "Expo Maquila" trade fair in Acapulco, Mexico.

The congressional hearings, questioned both the propriety of using federal funds for such a purpose and the wisdom of preserving articles 806/807. Representatives from mid-western and eastern states are calling attention to the millions of U.S. jobs that have been lost, and to the economic and social damage to affected communities in recent years as a consequence of all types of imports. Their major point is that production sharing has not been employed by U.S corporations as a defensive measure to maintain competitiveness, but as another way of increasing profits and exacting "givebacks," at the expense of U.S labor and the health of the entire U.S. economy.

Nevertheless most corporations, with assembly plants in Mexico, assert that they had to "go offshore" in order to maintain market

10. Clement & Jenner, *Maquiladora: Do More Jobs for Mexico Benefit America as Well?*, San Diego Union, Feb. 22, 1987.
11. *See* U.S.T.S.A. (1987).

share, and that production sharing actually saves the many higher skilled manufacturing jobs in the U.S. which produce the components assembled abroad. They also claim that using plants in Mexico is much better for the U.S. economy than using similar facilities in more remote areas such as Taiwan because many of the dollars spent in Mexico and in support of Mexican facilities come right back to the United States in the various forms noted above. Thus, eliminating articles 806/807 would cause firms to either completely relocate their production facilities off shore or to increase their sourcing to EPZ's which are able to increase domestic value added to the required 35% in order to minimize tariffs.

The findings of our study cannot be used to support conclusively either of these two positions. The study was not designed to test such propositions. Information gathered in the course of the study, mainly in face-to-face interviews with maquiladora administrators on both sides of the border, can, however, be helpful in understanding the dynamics of this industry and how those dynamics are likely to affect U.S. and Mexican competitive standing and jobs in the interim.

First, it should be noted that there is ample evidence to support both sides of the debate. Clearly, the Mexican plants both maintain and improve profitability and market share. However, sourcing in Mexico has some negative effects on U.S. (especially California) employment which may weaken unions or individual workers' bargaining positions. The major U.S. question concerning the Mexican maquiladora industry is, whether the elimination of articles 806/807 would save U.S. jobs and compel U.S. industry to act more responsibly with respect to the overall health of the economy. Given the fact that most U.S firms operating in Mexico use a high proportion of U.S. inputs, it would seem that eliminating 806/807 would not save jobs or benefit the U.S. economy.

Additionally, it must be acknowledged that any answer to this question must be given within the context of the present complex configuration of tariff laws. These laws include a General System of Preferences (GSP) which allows certain developing nations to export limited quantities of goods (with at least 35% of the value added in the developing country) *duty free* to developed countries such as the United States. Thus U.S. companies, involved in off shore sourcing, have two alternatives for minimizing costs related to import duties, articles 806/807 of the U.S. Tariff Schedule and the GSP. And, for such firms the GSP alternative is the more desirable of the two.

Moreover, U.S. firms involved in international production sharing are more likely to be able to get GSP tariff breaks through Asian EPZ's than Mexican. Interviews carried out in conjunction with this study indicated that very few firms operating in Mexico are able to increase the domestic (Mexican) content of their products sufficiently to reach the required 35%. Thus, U.S. firms operating Mexican maquilas are increasingly using Asian inputs in order to lower overall costs. When asked if they would prefer to use Mexican inputs, virtually all responded that they would, but inferior quality, high prices and unreliable delivery had kept them from doing so.

The Mexican government is very concerned about this situation and has carried out a number of studies to determine both the potential demand for, and supply of, inputs into the maquiladora industry. One of the major objectives of the Mexican government over the last decade or so has been to integrate border industry, (and specifically the maquiladora industry) into the national economy which is mainly located in the interior of Mexico (i.e., in Mexico City, Monterrey and Guadalajara). Thus, the government is now actively promoting Mexican manufacturing firms, which currently have a large excess capacity, to gear up to the requirements of the maquiladora firms in order to respond to what appears to be a golden opportunity. This seems to be the most important new development with respect to the Mexican maquiladora industry and could have significant impacts on the 806/807 debate.

Currently U.S. proponents of the maquiladora industry lobbying for the continued existence of articles 806/807, build their case mainly on the claim that those provisions save U.S jobs which produce U.S. components utilized in EPZ's throughout the world, but mainly in Mexico. In other words, articles 806/807 save U.S. jobs by utilizing U.S. components in Mexico that otherwise would be lost to Asian suppliers that tend to utilize the provisions of GSP.

However, the current situation is changing rapidly. Not only are U.S. firms increasing their use of Asian inputs in their Mexican plants, but pressure is building for Mexican manufacturing firms to increase their sales to maquiladora firms. Thus, it is possible that within a few years, articles 806/807 will be less significant than they are today, despite the rapid growth of the maquiladora industry. This could make claims that articles 806/807 save U.S. jobs, less valid and less applicable than they are today.

A dramatic increase in the use of Mexican inputs in U.S.-based maquiladoras would significantly advance the Mexican economy and would satisfy U.S. policy-makers who fear that Mexico's current economic crisis could be a source of future political instability. But, Mexico's gain, resulting in the increased export of U.S. jobs, will imply our loss. Thus, the maquiladora debate could reemerge. The debate will probably disappear permanently only when the U.S. economy has moved closer to full employment.