



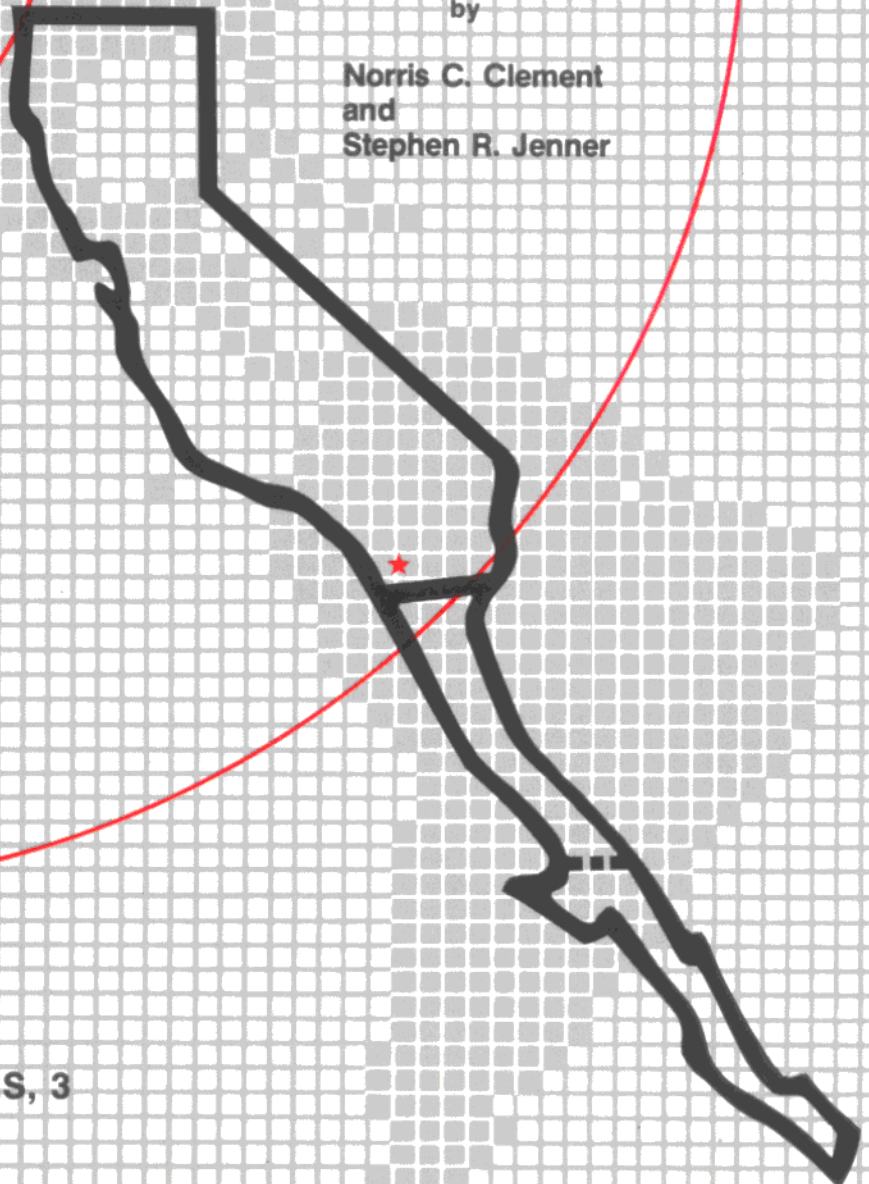
**SAN DIEGO
STATE UNIVERSITY**

**Institute for
Regional Studies
of the Californias**

**Location Decisions Regarding Maquiladora
/ In-Bond Plants Operating in Baja
California, Mexico**

by

**Norris C. Clement
and
Stephen R. Jenner**



BORDER ISSUES SERIES, 3

**Location Decisions Regarding Maquiladora/
In-Bond Plants
Operating in Baja California, Mexico**

Border Issues Series, 3

Paul Ganster, General Editor

**Other Publications Available from the
Institute for Regional Studies of the Californias**

Otay Mesa: Its Potential for Industrial Development. A summary of a conference held October 24, 1985, co-sponsored by the Institute for Regional Studies of the Californias and the County of San Diego Department of Planning and Land Use.....\$10.00

Exploring the Mexican In-Bond/Maquiladora Option in Baja California: A Resource Guide. Compiled by Norris Clement. Provides answers to most questions about setting up an assembly or manufacturing plant in Baja California, Mexico.....\$15.00

Border Studies Series

1. *Border Literature/Literatura Fronteriza*
Harry Polkinhorn, editor.....\$5.00

Border Issues Series

1. *Impacts and Undocumented Persons: The Quest for Useable Data in San Diego County 1974-1986*
Joseph Nalven.....\$5.00

2. *The Maquiladora in Tri-National Perspective: Mexico, Japan, and the United States*
Paul Ganster, editor.....\$10.00

3. *Location Decisions Regarding Maquiladora/In-Bond Plants Operating in Baja California, Mexico*
Norris Clement and Steve Jenner.....\$20.00

To Order:

**Send your check made payable to San Diego State
University Foundation to:**

**The Institute for Regional Studies of the Californias
San Diego State University
San Diego, CA 92182-0435**

**Location Decisions Regarding Maquiladora/
In-Bond Plants
Operating in Baja California, Mexico**

by

Norris C. Clement

and

Stephen R. Jenner

**Institute for Regional Studies of the Californias
San Diego State University
San Diego, CA 92182-0435**

1987

ACKNOWLEDGEMENTS

The authors wish to thank the many people who filled out the questionnaires sent to them and/or consented to be interviewed; without their responses there simply would be no "findings." We would also like to thank the Department of Commerce of the State of California for the financial support which made the project possible. We are especially thankful to Alan Gianini of that Department who served as contract manager for the State of California, for his kind, patient, and able day-to-day guidance. Deborah Fridell of the Institute for Regional Studies of the Californias who provided much of the clerical and research support for the entire project deserves special thanks for enduring the many frustrations of last minute deadlines and seemingly neverending modifications to various aspects of the project.

Finally, we are indebted to the institutions which lent their names to the project in order to increase the rate of response to our survey: the Western Maquiladora Trade Association, the American Chamber of Commerce in Mexico, the National and Pacific Coast Chapters of the United States-Mexico Chamber of Commerce, the Governor's Office of California-Mexico Affairs, the Greater San Diego Chamber of Commerce, and the World Trade Association of San Diego.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	v
INTRODUCTION	1
PART I. MEXICO'S MAQUILADORA/IN-BOND INDUSTRY.	7
Historical Background	7
Growth and Characteristics of the Industry in Mexico.	11
Prospects for the Industry.	28
PART II. A SURVEY OF FIRMS OPERATING IN BAJA CALIFORNIA	37
Characteristics of the Industry in Baja California.	38
Survey Design and Method.	46
Survey Findings	50
Special Characteristics of the Apparel and Electronics Sectors	80
PART III. IMPLICATIONS FOR PUBLIC POLICY IN THE STATE OF CALIFORNIA	93
Summary of Major Findings	94
Implications for Public Policy in California.	99
BIBLIOGRAPHY	113
APPENDIX. SURVEY INSTRUMENTS, FORMS 1 AND 2.	115

INTRODUCTION

Background to this Report

Undoubtedly the healthiest sector of Mexico's economy these days is the maquiladora, or in-bond industry. 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 by attracting foreign manufacturing firms to establish assembly operations there. Since then--especially since the devaluations of the Mexican peso in 1982--the industry has grown rapidly. Currently, there are some 1,000 plants in the industry nationwide, employing approximately 300,000 people, and generating some \$U.S. 1.6 billion in foreign exchange. About 90% of these in-bond plants are located in the north of Mexico bordering the states of California, Arizona, New Mexico, and Texas. Most of these plants are owned by, or have contracted relationships with, United States firms.

Given its relative size and rate of growth, the maquiladora is the newest glamour industry along the U.S.-Mexican border. It is often suggested that eventually the maquiladora industry will provide the same economic stimulation to depressed U.S. border economies that Mexican shoppers did during the boom period of 1977-81. This maquiladora boom can be attributed to several types of potential advantages to U.S. or other foreign firms which produce a relatively mature product and have significant labor costs:

- 1) Significant cost savings, especially with respect to labor.
- 2) 100% ownership by foreign firms, not usually possible in Mexico.
- 3) Proximity to the U.S.:
 - a) lower transportation and communications costs,
 - b) possibility of management and technical personnel living in the U.S.,
 - c) shorter downtime for repairs and new product lines, and
 - d) greater control over day-to-day operations.
- 4) A variety of fiscal incentives.
- 5) Potential access to Mexican and Latin American markets (Clement, 1986).

The available literature, although very sparse, indicates that there are benefits to U.S. border cities in terms of increased incomes, jobs, and tax revenues associated with the growth of the maquiladora industry in Mexico (Mitchell, 1985, and Ladman and Paulsen, 1972) although there is some disagreement about just how significant those benefits are under current conditions (George, 1986).

Given these potential benefits, many governmental and private agencies of U.S. border states and communities, especially in the El Paso-Ciudad Juárez area of Texas, have already implemented effective promotional campaigns designed to attract U.S. and other foreign firms to establish in-bond plants in adjacent Mexican locations. Until the present time, however,

there has been no intensive effort in the state of California, although the San Diego Economic Development Corporation and the Imperial County Private Investment Council have collaborated with Mexican agencies in promotional activities related to the maquiladora. This present report represents an important step in a decision-making process to be carried out by the Department of Commerce to determine how public policy should be modified in order to take the emerging industry into accord.

Purpose of the Report

The scope of the study was confined to the state of Baja California, the Mexican state which borders and which has the most economic interaction with the state of California. This report therefore addresses three basic questions:

- 1) What is the maquiladora industry, and what are its present problems and future prospects?
- 2) Why are U.S. and other foreign companies establishing plants in Baja California, as opposed to other offshore export processing zones (EPZ's), or other areas of Mexico?
- 3) What are the economic impacts on California of the maquiladora program, mainly as it functions in Baja California?

Outline of the Report

In designing the study it was decided that the investigation should be divided into three major parts. Part I,

to be based mainly on previously published sources, would address the following areas:

- The historical development of the maquiladora industry, together with an explanation of the relevant tariff provisions in Mexico and the U.S.
- A description of the maquiladora industry, including the types of products processed, the locations of parent firms, plant sizes, the value of aggregate industry output, growth rates, and other relevant characteristics.
- A brief assessment of the problems and prospects of the industry.

Part II of this report, based on the results of a survey of firms located in the state of Baja California, would address the following:

- A description of the Baja California maquiladora industry including firm sizes, products, employment, and location.
- The types of firms currently operating there and reasons for locating in Baja California.
- Estimates of the benefits and costs to California's economy.
- Brief profiles of the special characteristics of the electronics and apparel sectors.

Part III, based on all the information gathered in the study, would address the following areas:

- A synthesis of the major conclusions of the study.
- The implications of these conclusions for public policy in the state of California.

The Need for the Report

Studies of this kind are helpful in view of the high current and projected future growth rates of the maquiladora industry in Mexico, and the many implications its growth has for the U.S. economy generally, and the California economy specifically. It is expected that both U.S. and Mexican public agencies--at local, state, and federal levels--as well as private firms, will find this information useful not only in formulating marketing efforts, but also in resolving some of the problems noted, and in planning for the provision of infrastructure in areas that are significantly impacted by the maquiladora industry.

A Note on Terminology

The term maquiladora comes from the Spanish word maquila, which in colonial Mexico was the charge that millers collected for processing grain. Today maquiladora, or frequently maquila, is used as a generic term for those firms which process (assemble and/or transform in some way) components imported into Mexico which are then reexported, usually back into the U.S. Alternatively it can be said that the maquiladora is an economic unit for the production of goods or services based on the temporary importation of raw materials and equipment for transformation in Mexico with subsequent sales 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

Mexican markets, but are reexported for sale 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 involved in complementary phases of production and assembly of a given product. For example, Sanyo recently began construction on a large facility on San Diego's Otay Mesa just across the border from another large Sanyo plant in Tijuana's Mesa de Otay. However, this does not accurately describe the arrangement for most companies, since most of the foreign non-Mexican parent plants are not located near the border. Originally, it was thought that labor-intensive maquiladora operations in Mexico would assemble components produced in capital intensive plants in the U.S., presumably in the border region, and then distribute the final products from the U.S. border plant. Generally this has not proved to be the case, as shall be seen in Part II of this report.

The term industry in economic parlance usually refers to a group of firms producing similar products or producing for similar markets. As will be seen below, this is certainly not the case with maquiladora firms--the goods and services produced are really quite diverse. Yet in the dictionary sense of "a distinct group of productive or profit-making enterprises," (Webster's Dictionary, 1977) they do qualify as an industry.

Throughout this report, then, the terms maquiladora industry, maquila, and in-bond industry will be used interchangeably. The term twin-plant, however, will not be employed except where it specifically refers to the situation described above.

PART I. MEXICO'S MAQUILADORA/IN-BOND INDUSTRY

HISTORICAL BACKGROUND

The development of Mexico's in-bond industry can be traced back to the early 1960s. For some time the Mexican government had recognized that the northern border region of Mexico was characterized by both a high rate of population growth and strong economic links to the United States. In 1961, it implemented its "National Border Program" with measures designed to attract U.S. and Mexican tourists and shoppers to the Mexican side of the border in order to strengthen Mexico's internal market. While the program was moderately successful, it did not provide any real stimulus to Mexico's industrial sector--located mainly in Mexico City, Monterrey, and Guadalajara--nor aid in linking that sector with the border region, parts of which have enjoyed free trade status for several decades. These free trade zones, now confined to Baja California and a small part of the state of Sonora, were created in the 1930s in order to reduce living costs and attract population growth, foreign investment, and economic development.

The Border Industrial Program

The "Border Industrial Program" (BIP), which gave birth to Mexico's maquiladora industry, was implemented in 1965 as a generalized response to these long-standing notions regarding

border development. It also came as a specific response to the in 1964 of the Mexican Labor Program, usually called the Bracero Program, which allegedly left hundreds of thousands of Mexican workers unemployed at the border. Finally, it was seen as an opportunity to benefit from the proliferation of Export Processing Zones (EPZ's) in countries such as Hong Kong, Taiwan, Malaysia, Singapore, and the Philippines, which mainly performed assembly operations for multinational corporations as part of the then emerging phenomenon of "international production sharing."

The major objectives of the BIP were to generate employment for unemployed and underemployed Mexicans, upgrade workers' skills, provide for technology transfer, stimulate Mexican national industry through the use of Mexican raw materials and components, and generate taxes and foreign exchange for Mexico. The mechanism for accomplishing these objectives was simply to allow duty-free, in-bond imports of machinery, equipment, raw materials, and components into plants located inside a 20 kilometer strip (plus free zones) of the border region, as long as their entire output was exported. Hence the term "in-bond" industry emerged. Additionally, such firms were exempted from the 49% maximum equity restrictions imposed on foreigners investing in the rest of Mexican industry. And foreign-owned maquiladora firms were, in effect, partially exempted from land ownership restrictions on foreigners in border and coastal zones by the introduction of 30 year trusts.

Beginning in 1972, in-bond plants were allowed to locate in the interior of Mexico, with the exception of the major industrial cities noted above. Later, they were allowed to sell limited quantities of assembled goods that did not compete with domestically produced goods, providing that import duties were paid. At the same time, Mexican manufacturing plants were given the opportunity to dedicate part of their capacity to assembly production.

U.S. Tariff Provisions

On the U.S. side of the border, tariff regulations were already in place which permitted the development of the industry. Items 806.30 and 807.00 (henceforth, 806/807) of the United States Tariff Schedule allow the import of goods and services into the U.S. paying duty only on the "value added" in Mexico:

Essentially, 806 permits the reimport of 'fabricated' but in effect unfinished metal products into the United States for further processing; 807 permits only the 'assembly' of finished goods for reexport to the United States for final consumption through the years the definition of assembly has been expanded through a series of decisions in the U.S. Customs Courts. Imports under 807 are by far the more important of the two items; they amounted to more than \$21 billion in 1983, whereas imports under 806 amounted to less than a half billion dollars (Grunwald and Flamm, 1985, p. 13).

Criticisms of the Program

The maquiladora program became controversial during the 1970s in both Mexico and the U.S. In the U.S., organized labor attacked the program for "exporting jobs" and pushed to repeal items 806 and 807, noting that offshore export processing zones

represent a continual threat to both job security and working conditions. U.S. industry representatives, however, argued that 806/807 enabled them to maintain or improve their international competitive position and, in effect, preserve U.S. jobs. In 1976 the U.S. Tariff Commission ruled to retain 806/807 on the grounds that repeal would not have a significant effect on the cost of imported products assembled abroad given the large wage differentials between industrial and developing countries.

Mexican critics argued that with the exception of generating foreign exchange, the program has not fulfilled its original objectives. Specifically:

- 1) It has not reduced unemployment nor underemployment for most of the workers are young women who have never worked before.
- 2) It has not stimulated national industry as less than 3% of the raw materials utilized are produced in Mexico.
- 3) It has not provided for a significant transfer of technology since most of the production carried out in Mexico is unskilled assembly work, and most of the highly skilled high-technology manufacturing and research and development is carried out in the advanced industrialized countries.

Proponents of the maquiladora program in Mexico emphasize the amount of foreign exchange generated and the positive multiplier effects the industry has on the border economy through expenditures on land, buildings, utilities, and support

services. Employee expenditures for food, clothing, and shelter are also important. They also point out that there have been significant "spin-offs" in the Mexican economy as plant managers, technicians, supervisory personnel, and workers take their improved skills and experience to firms in the national economy. And, it is emphasized that maquiladoras are not just doing assembly work, but increasingly there is actual manufacturing being carried out that requires higher skill levels.

Given the current economic conditions and the marked shortage of foreign exchange that have existed in Mexico since 1981, it is not surprising that the maquiladora has received higher priority in the last few years despite its alleged deficiencies. The Mexican government issued revised guidelines for the industry in 1983 which help to explain why the government is currently promoting the industry and what it eventually wants to do with it. As one U.S. government official noted:

Although the immediate rationale for the revision was to further expand the foreign exchange capability of the industry, and to attract new investors, there were additional considerations, including Mexico's long-term objective to upgrade and to integrate its manufacturing capability.... Ultimately, the government's goal is to combine imported technology, job training and domestic content to generate non-traditional exports. (Turner, 1983, p.27)

GROWTH AND CHARACTERISTICS OF THE INDUSTRY IN MEXICO

The growth and development of the maquiladora industry in Mexico is part of a world-wide phenomenon often referred to as

global "production sharing" which has resulted in significant geographical shifts in the international distribution of industrial production. Production sharing has its origins in two major factors:

- 1) The existence of huge differences in wage rates between the advanced industrialized and the less developed countries.
- 2) Recent technological innovations leading to significant cost (and time) reductions in transport and communications.

In the last 20 years Japanese, U.S., and to a lesser extent, European firms have begun to change the traditional methods of taking advantage of international economic differences--exports/imports licensing, and foreign direct investment for resource extraction, manufacturing, and marketing activities--by utilizing what are alternatively called export platforms or export processing zones (EPZ's).

EPZ's, as typically utilized by U.S. firms, emanated from the recognition that there are qualitatively different phases of production for certain products. This may include capital and knowledge-intensive phases on one end of the spectrum and labor-intensive phases on the other. Under certain circumstances, particularly where it is technologically possible to separate these phases and where value-to-weight ratios are high, it may be profitable, or even necessary in competitive terms, to manufacture components in the U.S. where capital and knowledge requirements are high, and then export them to low

wage EPZ's. There, further processing/assembly, testing, and packaging can be carried out before reexporting the final products back to the U.S. or other countries for distribution. This process, which matches capital and technology from industrialized countries with the abundant and unskilled labor of the lesser developed world, has resulted in the rapid development of world wide production sharing, especially in the apparel and electronics industries.

Growth of Production Sharing

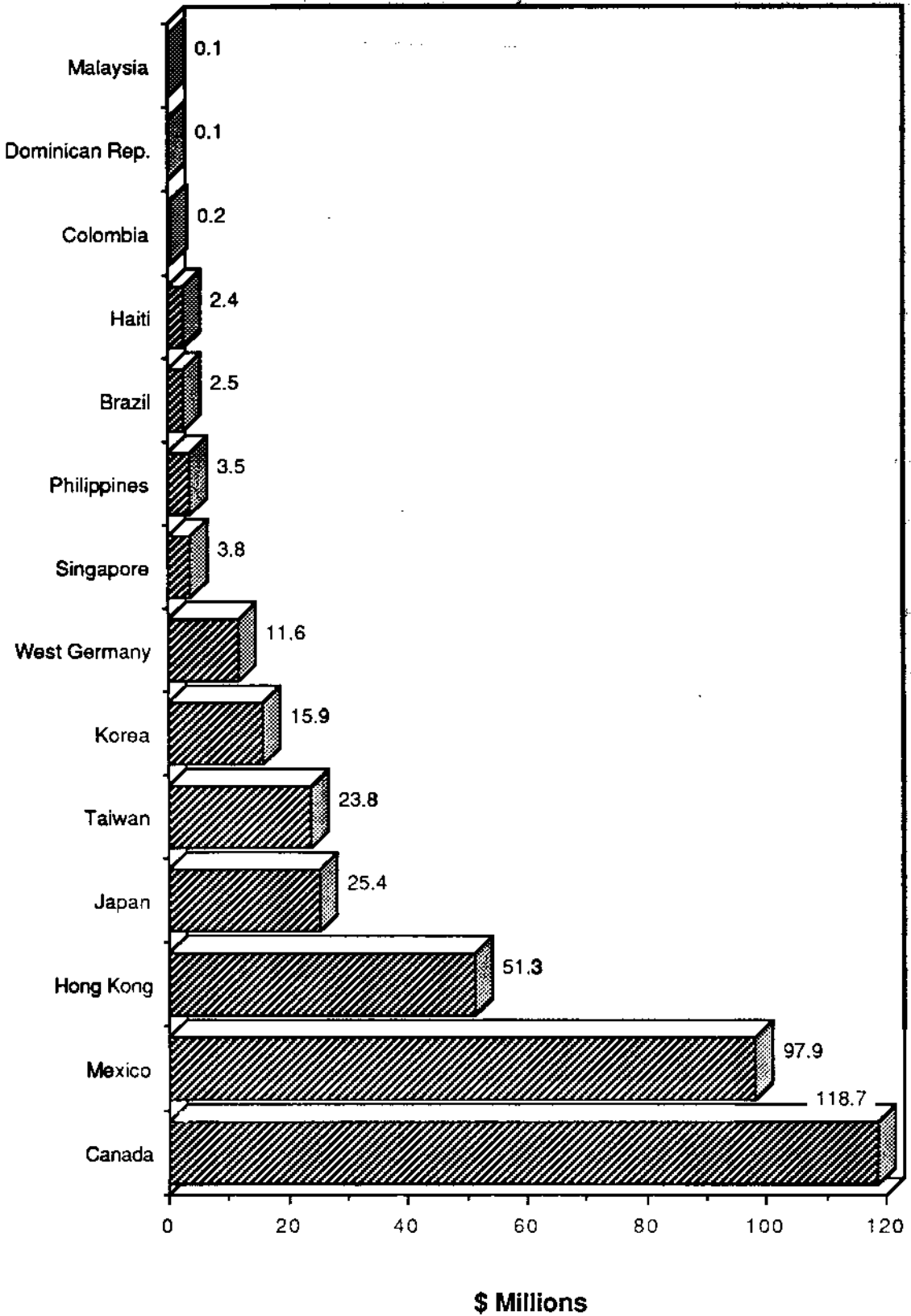
Grunwald and Flamm (p. 7) note that by 1981 about 15% of U.S. imports of manufactures were assembled components reexported to the U.S. Figures I-1 through I-4 show the main countries that participated in the production of imports brought in under items 806 and 807. Germany was the leading EPZ for the U.S. in 1969, with approximately 34% of total 806/807 imports. But, by 1983, Japan had become the leader with about 30%. Mexico's changing position is important for it went from fourth in 1969 (with about 8%) to second in 1983 (with 17%). Table I-1 more clearly highlights Mexico's dominant position vis-à-vis other less developed countries for 1985.

According to Grunwald and Flamm the principal products imported into the U.S. under items 806/807

include some relatively unsophisticated manufactures, such as apparel, footwear, pottery and simple metal products, and a number of more technologically advanced items such as textile machinery, radio and television receivers, semiconductors, automobiles and motorcycles, and watches and clocks. (Grunwald and Flamm, 1985, p. 15)

Figure I-1

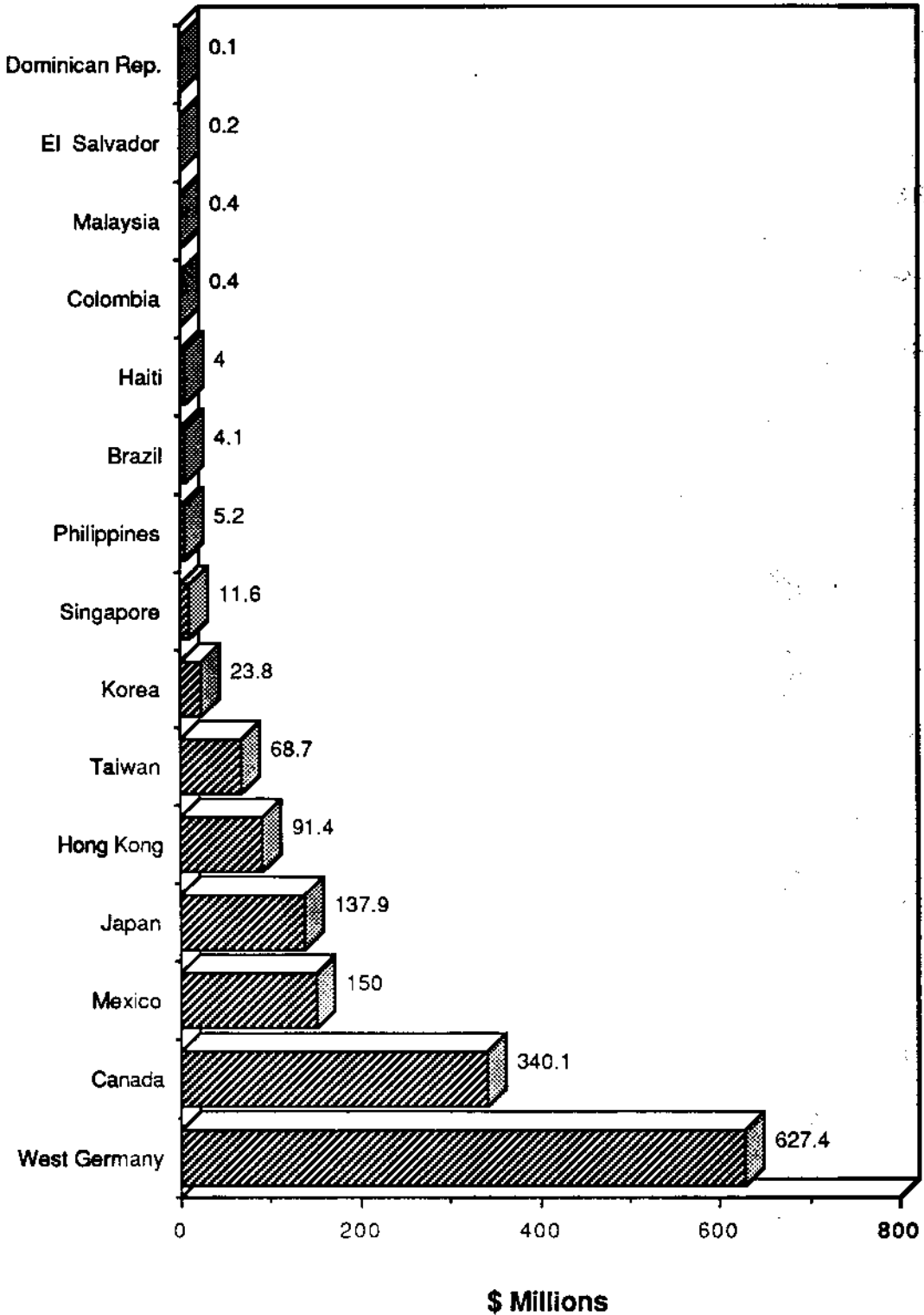
Duty-Free U.S. Components 1969



Source: Grunwald and Flamm, 1985.

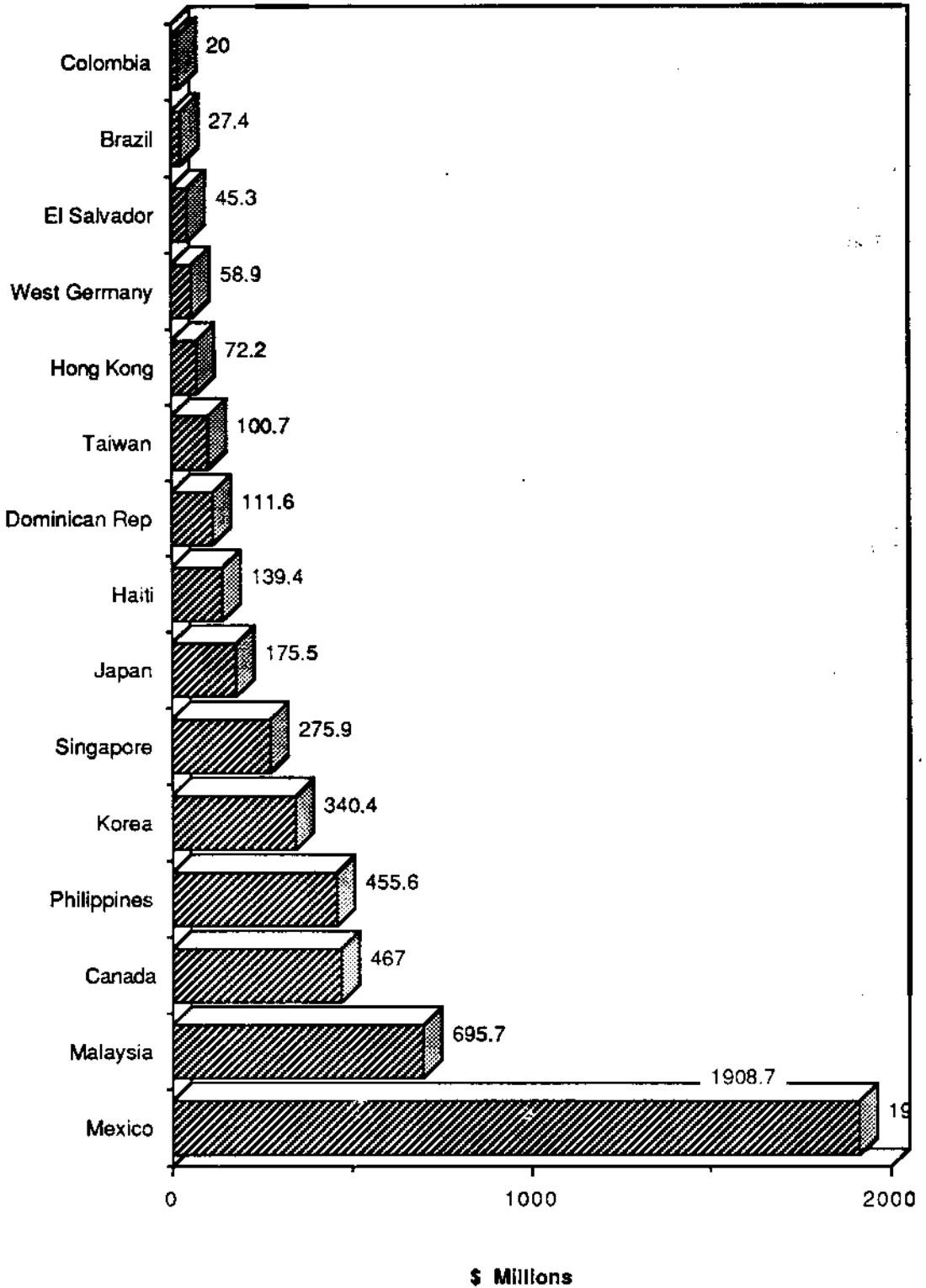
Figure I-2

U.S. 806/807 Imports 1969



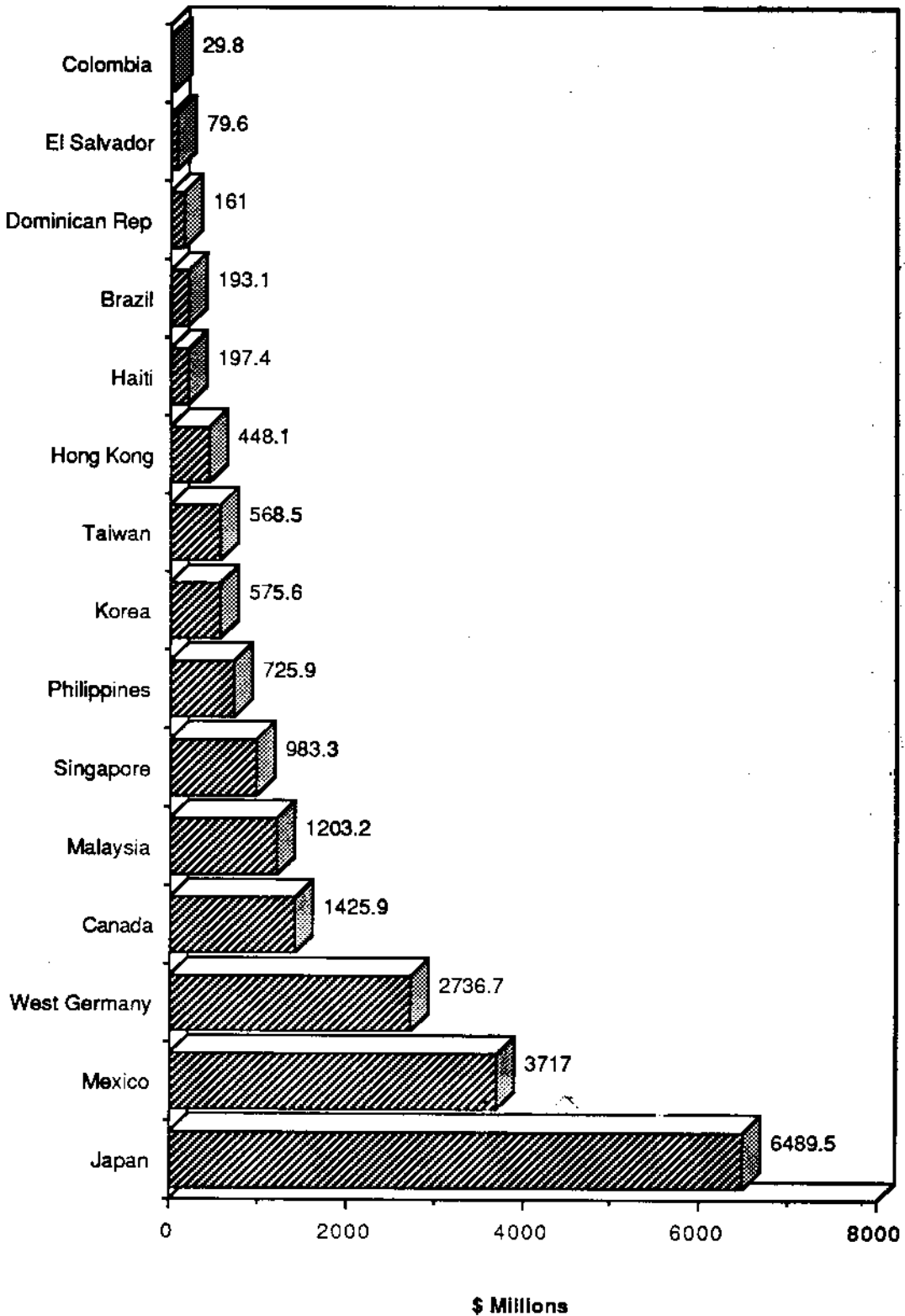
Source: Grunwald and Flamm, 1985.

Figure I-3
Duty-Free U.S. Components 1983
in Millions of Dollars



Source: Grunwald and Flamm, 1985.

Figure I-4
U.S. 806/807 Imports 1983
in Millions of Dollars



Source: Grunwald and Flamm, 1985.

Table I-1

DUTIABLE VALUE OF IMPORTS
UNDER 806/807 FROM LESS DEVELOPED COUNTRIES
1985

Country	U.S. \$ (Million)	%
Mexico	2,265	40
Singapore	938	17
Tawain	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 Flagstaff Institute as reported in The Industrial Development Commission of Mexicali, Manufacturing in Mexicali: The In-Bond or Maquiladora Industry Handbook, 8th ed., Mexicali, 1986.

The value and percentage composition of eleven product groups for 1969 and 1982 are reported in Table I-2. While almost all the motor vehicle imports come from other advanced industrial countries, almost all other 806/807 product groups emanate from developing countries. Thus, "semiconductors and parts," with 42% of the duty-free value of U.S. components, and "textile products," with 8%, were the two most important groups in 1982 in terms of value of the U.S. components.

Production Sharing in Mexico

Table I-3 provides a synopsis of the growth of Mexico's maquiladora industry from 1965 through 1985. The industry in terms of number of plants--which is actually a net figure, as some firms enter and others leave the industry--grew in each year except for the U.S. recession years of 1975-77 and 1981-82, reflecting one of the main determinants of this industry, the demand for the final products in the U.S. However, it should be noted, as indicated in the third column of this table, that total employment decreased in some of the years when the total number of plants was increasing. Similarly, value added (column 5) increased in every year except 1977, 1979, and 1983. Two of these three years were years shortly after U.S. recessions. More importantly, 1977 and 1983 immediately followed years of major Mexican capital flight, political instability, and peso devaluations.

What, then, does Table I-3 show? First, it shows a long-term trend of strong growth punctuated by brief down turns.

Table I-2

Importance of Significant Groups of Products Imported
under Tariff Items 806.30 and 807.00, 1969 and 1982

Millions of dollars; percentage composition in parentheses

Product groups	1969		1982	
	Total value	Duty-free value of U.S. components	Total value	Duty-free value of U.S. components
Motor vehicles and parts	773.1 (42)	18.9 (4)	8,360.8 (46)	176.1 (4)
Semiconductors and parts	106.2 (6)	62.4 (14)	3,131.5 (17)	1,987.1 (42)
Television receivers and parts	87.1 (5)	37.4 (8)	943.3 (5)	226.2 (5)
Office machines and parts	96.9 (5)	38.7 (9)	764.0 (4)	208.8 (4)
Radio apparatus and parts	51.1 (3)	8.5 (2)	299.7 (2)	77.7 (2)
Textile products	34.8 (2)	23.1 (5)	649.7 (4)	398.3 (8)
Equipment for making, breaking, and connecting electrical circuits	6.5 (*)	3.3 (0.7)	263.9 (1)	145.1 (3)
Electrical conductors	4.2 (*)	2.8 (0.6)	244.4 (1)	147.6 (3)
Motors and generators	7.7 (*)	2.4 (0.5)	220.2 (1)	111.6 (2)
Internal combustion engines and parts	16.1 (0.9)	5.3 (1)	212.5 (1)	79.7 (2)
Game machines and parts	0.7 (*)	0.4 (*)	211.3 (1)	29.1 (0.6)
Total, eleven product groups	1,182.6 (64)	203.2 (46)	15,301.3 (84)	3,587.3 (76)
Total, all 806/807 imports	1,838.8 (100)	422.1 (100)	18,275.5 (100)	4,703.3 (100)

*Less than 0.5 percent.

Sources: Grunwald and Flamm, 1985

Table I-3

The Maquiladora Industry in Mexico: Plants, Employment Averages and Earnings

Data Year	No. of Total Plants	% of Plants in Interior	Total Employment (yearly average)	Value Added \$
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	3.9	64,330	278
1974	455	5.7	75,974	444
1975	454	7.9	67,214	454
1976	448	9.4	74,496	536
1977	443	10.1	78,433	525
1978	457	8.1	90,704	714
1979	540	11.1	111,365	638
1980	620	11.3	119,546	773
1981	605	11.2	130,973	976
1982	585	11.7	127,048	851
1983	600	12.2	150,867	829
1984	672	12.0	199,684	1,200
1985*	786	12.3	238,523	1,300
1986	858		246,617	n.a.**

*Through May 1986

** not available

Source: Instituto Nacional de Estadística e Informática, INEGI, various publications.

These downturns roughly coincided with recessions in the U.S., peso devaluations and political instability in Mexico, and Mexico's relative attractiveness as an EPZ vis-à-vis other EPZ's throughout the world. And it also shows that there are various indicators of the industry's growth and overall health, including number of plants, number of employees, and value added.

Table I-4 provides an overview of the distribution of production among the leading product categories. The table shows, for example, that out of a total of 786 plants operating in all of Mexico during October 1985, 25% were producing electronic and electrical materials and accessories and employed 45% of the 232,523 total employees.

A number of interesting observations can be made from this table including:

- Of the eleven major product categories the three largest categories (electrical, electronics, and apparel) account for 50% of the total number of plants and 59% of the total number of employees, down from 56% and 70%, respectively, in 1982.
- The average plant size in terms of number of employees for all product categories was 295 in 1985, up from 217 in 1982. The largest average plant size was in the 4 transportation equipment and accessories plants with 644 employees per plant. The 6 furniture plants were the smallest with 99 employees per plant.

TABLE I-4

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 Employees (%)
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	<u>111 (14)</u>	<u>14,889 (6)</u>
Totals	786 (101 ^o)	232,523 (100)

*Less than 1%

^oAdds up to 101 due to rounding

SOURCE: "Estadística de la Industria Maquiladora de Exportación, Octubre, 1985." INEGI, Dirección General de Informática, México, D.F.

- Categories (1) and (2), which include all types of electrical and electronic processing accounted for 35% of the total number of plants and 45% of total employment.
- Between 1982 and 1985 the following sectors significantly increased their share of the total "value added" by the maquiladora industry (i.e., grew faster than the industry as a whole):
 - * Transport equipment (from 14.2% to 25.9%).
 - * Furniture (from 3.5% to 3.8%).
 - * Toys and sporting goods (from 1.8% to 2.9%).
 - * Other manufacturing (from 7.2% to 7.5%).
- The sectors whose share decreased were:
 - * Electronics and electrical (from 56% to 45%).
 - * Apparel (from 8.4% to 6.9%).
 - * foodstuffs processing (from 1.7% to .8%).

In short, Table I-4 indicates that Mexico's maquiladora industry is becoming more diversified and characterized by larger plants. Nevertheless, the industry still tends to be dominated by electrical/electronics products and apparel, although that dominance is becoming less marked over time.

Table I-5 shows a new dimension in the growth of the maquiladora industry--nominal wage costs in the northern border region from 1966 to January 1986. While it is easy to see that the minimum wage rate in pesos (column 1) has increased since the industry's creation, it is not so easy to generalize about the trend of wages expressed in dollar terms (column 3).

Table I-5

Minimum Wage in Mexico's Northern Border Region 1966-86

Date of Change	Daily Minimum Wage In Pesos	Peso: Dollar Exchange Rate (Controlled)	Dollar Cost Per Hour 48 Hr Week
1966-67	24.50	12.50	.2858
1968-69	29.00	12.50	.3383
1970-71	36.00	12.50	.4200
1972 - Sept. 16, 1973	42.30	12.50	.4935
Sept. 17 - Dec. 31, 1973	49.90	12.50	.5822
Jan. - Oct. 7, 1974	57.90	12.50	.6755
Oct. 8, 74 - Dec. 31, 75	70.60	12.50	.8237
Jan. - Sept. 1, 1976	83.00	12.50	.9683
Sept. 2 - Dec. 31, 1976	102.10	26.26	.5670
1977	111.30	26.26	.6181
1978	125.00	26.26	.6942
1979	143.00	26.26	.7941
1980	160.00	26.26	.8886
1981	210.00	26.26	1.1662
Jan - Oct. 31, 1982	280.00	26.64	1.5328
Nov. - Dec. 31, 1982	364.00	70.00	.7583
Jan. - June 13, 1983	455.00	96.92	.6846
June 14 - Dec. 31, 83	523.00	117.98	.6465
Jan. June 10, 1984	680.00	147.91	.6705
June 11 - Dec. 31, 84	816.00	167.54	.7103
Jan. - June 2, 1985	1060.00	195.49	.7907
June 3, 1985	1250.00	222.75	.8184
Sept. 1985	1250.00	301.75	.6041
Dec. 1985	1250.00	364.86	.4996
Jan. 1986	1650.00	368.70	.6526
June 1986	2065.00	550.00	.5475

Source: Nibbe, Don, ed. Twin Plant News, El Paso, Texas, 1986.

Basically, what this table tells us is that due to Mexican inflation and a fixed peso/dollar relationship, wage rates rose during the periods 1966-76 and 1977-82, but fell after the major devaluations of 1976 and 1982. After 1982, high Mexican inflation rates coupled with smaller wage increases and a sliding peso/dollar relationship resulted in a general downward drift of nominal wages in dollar terms. The downward tendency of wages in both dollar and peso terms would be even more dramatic if measured in real terms (i.e., deflated for inflationary effects).

The important point here is that while Mexico's economic situation has meant dramatically lower living standards over the last few years, the lower real wage rates in Mexico resulting from the devalued peso have improved its competitive position vis-a-vis other EPZ's. Whether this trend will continue in the future depends in economic terms mainly on the level of international oil prices, international debt negotiations, inflationary trends in Mexico, exchange rate policies, and in general, Mexico's own ability to manage its economy.

Table I-6 provides us with a breakdown of various indicators by city and state which will complete the overview of the Mexican maquiladora industry. Baja California, for example, with 301 plants (in August 1985) has 40% of the total number of plants but only 38,691 employees, or 19% of the industry's total employees, and 18% of the total value added. However, Chihuahua has only 25% of the total number of plants, but 42% of total

TABLE I-6

MAQUILADORA PLANTS BY PRINCIPAL CITIES AND STATES

	January-August 1985		January-August 1984	
	<u>Plants</u>	<u>Employment</u>	<u>Value*</u> <u>Added</u>	<u>Value*</u> <u>Added</u>
<u>NATIONAL TOTAL</u>	747	207,817	190,248	120,267
<u>BAJA CALIFORNIA</u>	301 (40)	38,691 (19)	34,383 (18)	21,706
Ensenada	9	418	478	444
Mexicali	75	10,863	10,572	6,621
Tecate	31	1,713	1,148	690
Tijuana	186	25,697	22,185	13,951
<u>BAJA CALIFORNIA SUR</u>				
La Paz	4	150	126	95
<u>COAHUILA</u>	50	13,140	8,154	4,802
Cd. Acuña	24	6,032	3,666	2,168
Piedras Negras	19	4,496	2,379	1,275
Others	7	2,612	2,109	1,359
<u>CHIHUAHUA</u>	193 (25)	87,951 (42)	83,644	50,159
Cd. Juárez	167	76,664	75,071	45,688
Cd. Chihuahua de Ojinaga	26	11,287	8,573	4,471
<u>JALISCO</u>				
Guadalajara	14	5,064	7,587	5,134
<u>ESTADO DE MEXICO</u> <u>and MEXICO, D.F.</u>	5	149	373	166
<u>SONORA</u>	82	22,088	16,233	10,573
Agua Prieta	24	5,699	3,676	2,384
Nogales	49	14,661	11,593	7,606
Others	9	1,728	964	583
<u>TAMAULIPAS</u>	75 (10)	36,167 (17)	35,135 (18)	23,059
Matamoros	35	20,218	22,744	14,251
Nvo. Laredo	14	3,668	3,514	2,009
Cd. Reynosa y Río Bravo	26	12,281	8,877	6,799
<u>OTHER STATES</u>	23	4,417	4,609	4,570

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

SOURCE: "Estadística de la Industria Maquiladora de Exportación, Enero, 1986"
INEGI, 1986.

employees and generates 44% of the value added of the entire industry.

Obviously, both in terms of plant size and value added per plant, maquiladora operations are larger in Chihuahua and Tamaulipas than in Baja California and other locations. This seems to stem from the fact that more large firms from the midwest and east of the U.S. have established operations in Ciudad Juárez and Matamoros, while the smaller firms from California tend to locate in Baja California.

In summary, the growth of the industry has been extraordinarily rapid during its 20 years of existence. While over the years it has been dominated by three major product lines, it is now becoming more diversified. Finally, there are considerable differences in plant size of the maquiladoras in the different border cities, with the largest plants in Ciudad Juárez and Matamoros. Other differences will be noted in Part II of this study.

PROSPECTS FOR THE INDUSTRY

It is commonly acknowledged that Mexico's dominant position as provider of U.S. 806/807 imports stems from its low cost labor and energy, proximity to the U.S., favorable ownership provisions, and stable political and business environment. The industry's very success, however, has been accompanied by certain problems. Some of these have emerged as a product of

the industry's rapid growth while others stem from Mexico's status as an emerging industrial country.

In this section, both negative and positive factors that appear to be important in determining the overall growth of the industry over the next 3 to 5 years are examined. Then the day-to-day problems of the industry from the perspective of maquiladora management are discussed. The issues treated are those highlighted in recent issues of the major trade journals of the industry (The Maquiladora Newsletter and Twin Plant News) and in selected articles in business and economic journals dealing with the maquiladora (Turner, 1983 and 1984; and Rivas, 1985). Many of these issues will again be discussed in Part II when the findings of the survey of the maquiladora administrators are presented.

Long Term Prospects

In the medium term, say 3 to 5 years, most observers agree that the prospects for the industry as a whole are very bright. The trade journals mention forecasts of 1 to 3 million jobs by the year 2000 with a value added of up to \$10 billion. Such projections assume extraordinarily high growth rates, which in turn assume a very accommodating economic and political environment both in Mexico and in the global economy. Some of the factors that are frequently mentioned as important to the industry's long term growth are:

- Expanding markets and a recession-proof economy in the U.S. without a dramatic increase in protectionism.

- An accommodating exchange rate policy in Mexico coupled with lower inflation rates and a realistic wage policy.
- Political stability and the continued movement toward a more favorable business climate in Mexico.
- Amelioration of labor and infrastructure bottlenecks in spite of an expanding industry.

Even if these factors work out favorably for the industry there are still other developments which could retard or even halt its expansion. These include:

- Dramatic technological advances in automation and robotics technologies that would permit U.S. producers to produce and assemble products at lower costs in the United States.
- The development of other export processing zones (EPZ's) close to the U.S. which might receive preferential tariff treatment, such as might occur with the Caribbean Basin Initiative.

While it is difficult to imagine an optimal scenario continuously propelling the in-bond industry to ever greater employment and value added, it is not likely that the industry will stop growing in the next 3 to 5 years unless a major recession develops in the U.S. Even if this were to occur, the industry has become so integrated into the U.S. economy it is possible that some U.S. producers might look to Mexico for their best solution to falling profit rates and market shares.

Labor and Wage Issues

Perhaps the most pressing issue in the industry today is that of employee turnover. Beginning in 1983-84, turnover rates apparently increased from around 2 to 3% per month to 6 to 10%, especially in the Chihuahua, Sonora, and Baja California. For comparison, non-exempt employee turnover in the U.S. electronics industry was less than 25% for all of 1984. A related issue, although not discussed to the same extent in the trade journals, is an increase in absenteeism.

High turnover rates seem to be related to many factors which to some extent are interrelated. First, it is clear that the decrease in the value of real wages in Mexico adversely affected the situation. The rapid growth of the industry itself is, of course, related to the fall in the dollar value of the wage rate which in turn has increased the demand for labor, especially for young women. However, the fall in the dollar value of wages has increased the incentive to work in the U.S. Thus, precisely when the demand for labor is rising, the supply seems to be falling, resulting in significantly tighter labor markets.

Other factors are important in the larger cities. As population and urban areas expand, distances between industrial parks and residential areas are growing, thereby increasing the demand for transportation services. Unfortunately, the supply of public and private transportation has not increased at the same rate due to the general shortage of capital in both the public and private sectors. There also seems to be an expanding

need for some type of day care, yet no clear solutions have emerged. Another cause of high turnover rates seems to be ineffective management practices, which in turn, stem partly from cultural factors and inadequate training of supervisory personnel.

The maquiladoras' response to the problems of high turnover and high absenteeism has focused on increasing wage-related, in-kind incentives. To illustrate how this works, it should be noted that there are usually three components of the wage in the maquiladora industry in the northern border region:

- 1) The minimum wage for the particular geographical zone which in January 1986 was \$2065 pesos per day, paid seven days per week for six days worked.
- 2) Legislated fringe benefits, including social security, the housing program, and bonuses.
- 3) Company incentives such as transportation, subsidized meals, food coupons, prizes for regular attendance, and day care.

Maquiladora firms usually increase the third component of the wage because if they raise the first component, the actual cash wage, they are required by Mexican law to incur additional accounting costs by withholding income taxes for the additional wage. This withholding tax is not required if only the minimum wage is paid.

Maquiladora firms face another problem with respect to wages and turnover/absenteeism problems. As foreign-based and multinational firms they frequently can afford to pay higher

wages, yet doing so would force Mexican firms to follow suit. This is viewed as very risky for it could lead to conflicts between national and foreign firms and eventually could upset local/regional labor and product markets.

Workers, knowing that jobs are readily available, apparently shop around, working a few days or a few weeks in different factories while seeking the optimal combination of location, agreeable management practices, incentives, and so forth. Or, they quit to have families, or to seek employment in the U.S., crossing illegally or using a border crossing card (I-186) to cross the border each day. The net result is, of course, frustration for both workers and employers, and higher costs for all firms.

Labor unions, and the issues usually associated with their presence, are apparently a constant threat to many maquiladora firms (Carrillo, 1986). However, it is generally acknowledged that labor unions are stronger and more militant in the eastern cities of the border, especially in Matamoros, and less so in the western cities, so that in Tijuana unions are almost non-existent. Nevertheless, it is also true in Mexico that the presence of labor unions in some parts of the border region is viewed as a positive factor by management in that they frequently help employers find and hire workers, and intervene in certain aspects of labor-management relations.

A shortage of middle-range technicians also appears to be a problem throughout the border region, especially in the smaller cities. Many maquiladora firms have attacked this problem by

recruiting in the interior of the country and by working with local technical schools and universities to provide training programs.

Infrastructure

Availability of infrastructure facilities including adequate buildings, telephone and other communications facilities, electricity, and water and sewage facilities are another set of issues that frequently is cited in the literature. It is generally acknowledged that one of the most difficult aspects of the start-up phase is obtaining these facilities.

The basic problem seems to be that building facilities for speculation, as is common in the U.S., is not usually done in Mexico. Increasingly, industrial parks are available, especially in Chihuahua, but that still does not mean there is an adequate inventory of industrial buildings available for immediate occupancy. The general rule is "build-to-suit" on land held in a 30-year trust by a Mexican bank, or through a 6- to 10-year lease, written in dollar terms. Not only must electrical, telephone, water, and sewage hook-up charges be paid, but frequently there are additional charges to extend lines and so forth. Often, there are unexpected delays in obtaining these services.

Transportation and Customs

Transportation of goods across the international border and in Mexico presents special problems. First, there are the usual

problems of customs documentation and inspections involved in taking the components, raw materials, and equipment into Mexico, which is compounded by the "in-bond" status of the entire industry. This imposes an additional layer of documentation and regulations upon in-bond firms. Secondly, the components going into Mexico must be driven by a Mexican driver, or at least a Mexican driver must be present, as they are transported from the border to the Mexican plant. Then, since all components and raw materials imported into Mexico are there under bond they must be reexported back into the U.S., again by a Mexican driver, through Mexican and U.S. customs. At each point there can be delays.

These complex processes must be carefully documented and orchestrated in order to avoid impoundment and/or delays which can be very costly to the U.S. firm. A good part of the learning process in the industry involves coordinating the transportation and customs processes of both countries. In recent years, however, U.S. and Mexican customs officials have begun to work together to minimize the delays most frequently encountered in earlier years. Nevertheless, it is generally acknowledged in the industry that having a good customs house broker and freight forwarder is of crucial importance, as is meticulous attention to customs documentation.

PART II. A SURVEY OF FIRMS OPERATING MAQUILADORA PLANTS
IN BAJA CALIFORNIA

In Part II, the maquiladora industry in the state of Baja California is examined. First, data compiled from directories made available by various governmental agencies in Mexico are reviewed. Then, the results of the survey carried out during the period March-June 1986 as part of this research project are described and analyzed.

The data on numbers of plants, products, employees, value added, and so forth are for late 1985 and early 1986, except where noted. The reader should also be aware that these data are taken from several different Mexican governmental directories which suffer from many deficiencies and are not necessarily in agreement; for example, firm totals may be different. Therefore, these numbers should be taken as approximations with wide margins of error and utilized for analyzing general trends. They are, nevertheless, very helpful for purposes of this report.

The decision to limit the scope of the survey to the state of Baja California was made on the basis of three factors. First, initial inspection of the various directories available indicated that most of the firms operating in Baja California were California based, while the proportion of California firms with maquiladora operations in other Mexican states was small. Second, because of geographic proximity and transportation and urbanization patterns along the common border, it appeared that

the relevant links between California and Mexico's maquiladora industry were through Baja California. Finally, because of the proximity to San Diego State University and the investigators' knowledge of and visibility in Baja California, it seemed that it would be easier to obtain a high response rate to the survey upon which the study would be based.

CHARACTERISTICS OF THE MAQUILADORA INDUSTRY IN BAJA CALIFORNIA

Number of Plants

In April of 1986, there were 388 maquiladora "programs" (permits to operate as in-bond operators) filed with the Secretariat of Commerce and Industrial Promotion (SECOFI) in the state of Baja California. It is important, however, to understand that this does not mean that there were exactly 388 maquiladora plants functioning in the state, nor that there were 388 foreign--mainly U.S.--firms with maquiladora operations in Baja California. Some maquiladora firms operating with one program have more than one plant, some maquiladora firms have several clients sharing a single plant, and some large U.S. firms have more than one maquiladora plant in Mexico. Consequently, given the data available at the time of this study, it was impossible to precisely determine exactly how many U.S. firms have maquiladora operations in Baja California. Careful analysis of the data, however, suggests that there are more than 388 U.S. firms with maquiladora operations in Baja California. Nevertheless, this report will conform with common usage and use the terms plant and program interchangeably.

In April of 1986, a total of 45,112 workers were employed in Baja California maquiladoras. Table II-1 shows the number of plants according to firm size, as determined by the number of employees and geographic location. As can be seen, Tijuana has about 64% of the total number of plants in the state and also has the largest number of large and medium size plants. Mexicali ranks second with about 25% of the plants, followed by Tecate and Ensenada. Tijuana has the most workers employed in the industry and similarly the largest average plant size.

Product Sectors

Table II-2 shows the number of plants and employees by product sector in Baja California. These sectors (ramas) are defined by the Mexican government for their own internal accounting. From this table it is clear that "electronic/electric appliances and equipment" is the most important sector while "other manufacturing" is second, "apparel" third, and "wood/cork products" fourth. The relative importance (percentages) of these four sectors is noted in parentheses. It is clear that if the groupings or categories were done differently that the relative rankings of the various sectors would come out differently; however, it would still be true that the electronics sector is the dominant sector in Baja California with about 75% of the employees in that sector located in Tijuana (not shown in tables).

TABLE II-1

PLANT SIZE AND NUMBER OF EMPLOYEES
BY LOCATION IN BAJA CALIFORNIA

Firm Size (No. of Employees)	<u>Tijuana</u>	<u>Ensenada</u>	<u>Tecate</u>	<u>Mexicali</u>	<u>Total</u>
1- 99	163	9	25	64	261
100- 499	70	0	7	33	110
500- 999	9	0	0	3	12
1000	5	0	0	0	5
	<u>247</u> (64%)	<u>9</u> (2%)	<u>32</u> (8%)	<u>100</u> (26%)	<u>388</u>
Total No. of Employees	33,087 (73%)	187 (<1%)	2,627 (6%)	9,216 (20%)	45,112
Average Plant Size	134	21	82	92	

Source: Secretaría de Desarrollo Económico del Estado de Baja California.

TABLE II - 2

NUMBER OF PLANTS AND EMPLOYEES
BY PRODUCT SECTOR IN BAJA CALIFORNIA

<u>Sector</u>	<u>Employees (%)</u>	<u>Plants (%)</u>
Electronic Appliances & Equipment	21,451 (48)	122 (31)
Other Manufacturing	9,233 (20)	80 (21)
Apparel	4,486 (10)	55 (14)
Wood/Cork Products	3,855 (9)	46 (12)
Services	1,680	14
Food	879	7
Other Metal Products	780	16
Automobile Parts & Accessories	713	16
Electronic Machinery	672	4
Transportation Equipment & Machinery	558	5
Leather/Shoes	364	11
Wood/Metal Furniture	295	7
Non-Electrical Machinery	104	3
Chemicals/Soaps	25	1
Refrigeration	<u>17</u>	<u>1</u>
	45,112	388

Source: Secretaría de Desarrollo Económico del Estado de Baja California.

Maquiladora Growth in Baja California .

Data available from the Mexican government indicate that for the period 1974-1982 the maquila in Baja California grew significantly more slowly than in Mexico as a whole. During that period the number of employees in the state grew around 20% while for the nation as a whole employees increased by 67%. However, from 1982 to 1985 the number of employees grew by 74% in Baja California and only increased by 64% in the country as a whole. The other indicators of growth such as number of plants and value added show similar patterns.

Location of Parent or Contracting Firm

Table II-3 shows another dimension of the Baja California maquiladora industry, that of the number of firms according to site (Tijuana, Mexicali, Tecate, or Ensenada) cross-tabulated by the foreign location of the parent or contracting firm. The latter are classified according to northern California, Southern California, other U.S. states, and other countries. Relatively surprising is the very high proportion of firms that come from Southern California (86%) and the small number from northern California (4%).

Three qualifiers must be registered for these data. First, only 307 firms were counted in this tally while some 371 firms were listed in the directory. The discrepancy results from 64 firms being listed in such a way as to make it difficult or impossible to determine the exact "foreign location" of the parent or contracting firm. Second, although only 2 "non-U.S."

TABLE II-3

NUMBER OF MAQUILADORA FIRMS BY MEXICAN PLANT LOCATION
AND LOCATION OF PARENT FIRM

Mexican Plant Location	Northern California	Southern California	Other U.S.	Non-U.S.	Totals
Tijuana	6	152	20	1	179
Mexicali	2	73	7	-	82
Tecate	2	26	1	-	29
Ensenada	<u>1</u>	<u>13</u>	<u>2</u>	<u>1</u>	<u>17</u>
	11	264	30	2	307
	(4%)	(86%)	(10%)	(1%)	

Breakdown on parent firm locations:

Foreign:

France - 1
Panama - 1

Other U.S. States:

New York	4	Texas	4
Illinois	3	Ohio	2
Oregon	2	Nebraska	1
Connecticut	2	Pennsylvania	1
New Jersey	1	Utah	1
Maryland	1	Georgia	1
Nevada	2	Minnesota	1
Massachusetts	2	Missouri	1
Michigan	1		

Source: Compiled from 1985 directory obtained from the Instituto Mexicano de Comercio Exterior (IMCE).

firms were listed, it is known that there are several others functioning in Baja California. The explanation is that many of these "non-U.S." corporations have U.S. subsidiaries which direct the maquila operations in Baja California. Thus, the U.S. subsidiary is listed as the parent firm.

A third reason is that some of the firms listed in the directory were not operating at the time of the present study; they had already gone out of business or had not yet begun to operate. The directory, compiled from the records of the Secretariat of Commerce and Industrial Promotion (SECOFI) on the basis of those firms which are registered as in-bond/maquiladoras, is difficult to keep up-dated because of the high entry-exit rate in the industry and inadequate staffing of SECOFI for maintenance of such records.

Ownership

Table II-4 reflects yet another dimension of the structure of the industry, the patterns of ownership. There are many ways that a maquiladora operation can come into existence, including:

- A U.S. (or other foreign) firm can establish a Mexican corporation and run the in-bond plant like a subsidiary.
- A U.S. (or other foreign) firm or individual(s) can enter into a joint venture relationship with (usually) Mexican partners, establish a Mexican corporation to operate an in-bond plant to do sub-contracting to one or more U.S. or other foreign firms.

TABLE II-4

PATTERNS OF OWNERSHIP IN BAJA CALIFORNIA
MAQUILADORA FIRMS

Column No.	1 100% US	2 Majority US	3 Ownership 50%/50%	4 Majority Mexican	5 100% Mexican	6 Majority Other	Totals
Tijuana	38	40	3	11	99	8	199
Tecate	4	9	2	4	11	1	31
Ensenada	1	2	0	0	11	1	15
Mexicali	<u>27</u>	<u>7</u>	<u>0</u>	<u>8</u>	<u>47</u>	<u>1</u>	<u>90</u>
Totals	70 (21%)	58 (17%)	5 (1%)	23 (7%)	168 (50%)	11 (3%)	335

Source: Compiled from 1985 directory obtained from the Instituto Mexicano de Comercio Exterior (IMCE).

- A Mexican firm can establish or utilize an existing Mexican corporation to perform sub-contracting operations for U.S. (or other foreign) firms, dedicating all or a part of its productive capacity to the in-bond operation.

Based on the data available for early 1985, Table II-4 was compiled to show the most important characteristics of this aspect of the industry. Only 21% (of 335 total) of the Mexican corporations having in-bond operations in Baja California were owned solely by U.S. firms or individuals (column 1), while 50% were solely owned by Mexican firms or individuals (column 5). Columns 2, 3, and 4 show the various kinds of joint ventures between U.S. and Mexican investors. Column 6 indicates that joint ventures between Mexican and other foreign (non-U.S.) investors comprised some 3% of the total.

SURVEY DESIGN AND METHOD

In order to better understand the maquiladora industry vis-à-vis California's economy, a survey of U.S. firms with production facilities in Baja California was conducted during the period March-July of 1986. Three forms of a basic questionnaire were developed and tested in early 1986 and subsequently used to collect data (see Figure II-1, Schematic of Sampling Plan). The basic questionnaire is reproduced in the appendix to this report.

Form 1 represents the basic questionnaire for U.S. companies with maquiladoras in Baja California. This

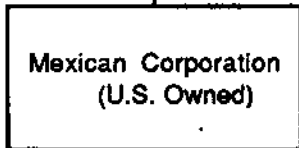
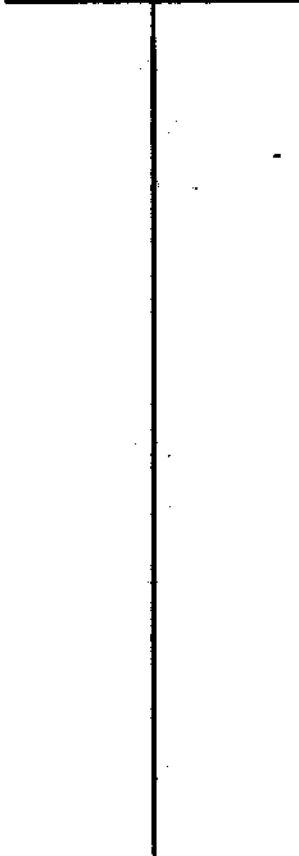
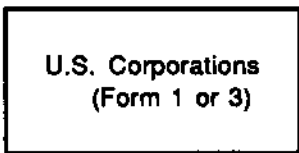
Figure II-1

Schematic of Sampling Plan

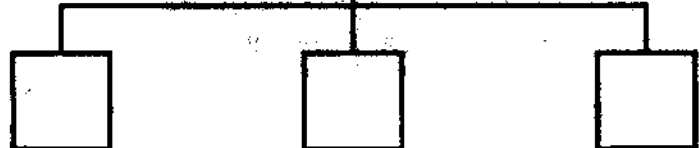
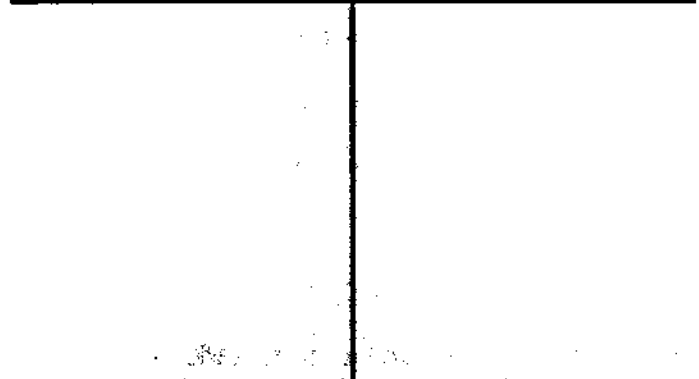
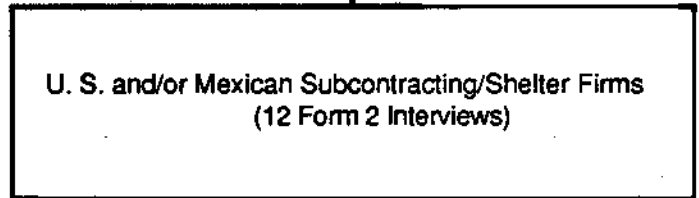
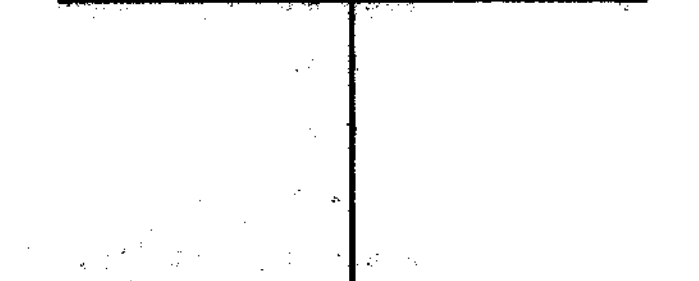
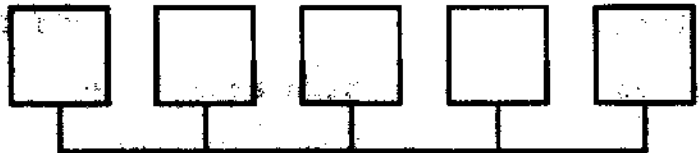
Total = 164 Firms

65 Parent/Subsidiary Firms

99 Subcontracted/Sheltered Firms



U.S. Client Corporations
(Forms 1 or 3)



Mexican Corporations
(U.S./Mexican Owned)

questionnaire was mailed to executive officers in the U.S. who had direct responsibility for their company's Mexican operations. These contacts were initiated using various directories of maquiladora firms provided by various agencies of the Mexican government and, to a lesser extent, a directory obtained from Mexico Communications of El Paso, Texas.

A large percentage of the U.S. firms listed in these directories, perhaps as high as 20%, were no longer doing business as maquiladoras, which provides some indication of the frequency of entry and exit. Additionally, incomplete addresses in the available directories made it impossible to contact many U.S. firms. Other firms flatly refused to participate in the survey due to concerns about publicity. Most of these companies were apparently concerned that their competitors or labor force in the U.S. might learn of their activities in Mexico.

Form 2 is a modified version of the Form 1 questionnaire which was developed for sub-contractors and shelter operators with U.S. or foreign client firms utilizing a maquiladora in Baja California. A single response to Form 2 represents between 3 and 25 client firms.

Form 3 was developed primarily for use by the Western Maquiladora Trade Association (WMTA), an industry group with 55 member firms. The WMTA kindly agreed to distribute the questionnaires directly and anonymous responses were sent directly to the researchers. Respondents were generally U.S. managers with direct responsibility for their company's Mexican facilities. Sub-contractors and shelter operators also distributed Form 3 to their clients.

Forms 1 and 3 differed only in that Form 1 included questions on the identity of the respondent, while Form 3 protected the anonymity of respondents. The questions address the type of firm utilizing the maquiladora, the type of facility in Mexico, the amount of experience with maquiladoras, countries considered as alternatives to Mexico, Mexico's rating on various location factors, other regions of Mexico considered alternatives to Baja California, Baja California's rating on various location factors, various measures of the benefits to the state of California in terms of employment and business activity, problems with using maquiladoras, plans for future expansion in California and Mexico, the use of Mexican inputs other than labor, and the net effect on the firm's U.S. employment.

Form 2 identified the shelter/sub-contractor firm in the U.S. or Mexico, the number of clients represented, the number and reasons for past clients' discontinuation of maquiladora activity, type of client firms, benefits to California, alternatives to Mexico, Mexico's rating on key location factors, alternatives to Baja California location within Mexico, problems with maquiladoras for client firms and shelter/sub-contracting firms, use of Mexican and Asian inputs, U.S. Tariff Codes utilized, and plans for future expansion in California and Mexico.

All of the questionnaires were accompanied by a cover letter and a February 22, 1986, article in The San Diego Union newspaper explaining the nature and purpose of the study.

Respondents were instructed to omit any questions they could not answer, and were advised that their responses would remain confidential.

Most of the responses to Forms 1 and 3 were obtained by mail with telephone follow-ups to remind the respondents of the importance of the survey. However, all of the responses to the Form 2 questionnaires and approximately 15 of the Form 1 responses were obtained through personal interviews in the firms' U.S. or Mexican offices.

SURVEY FINDINGS

The results from the survey are presented below by subject area in the approximate order in which they appear in the questionnaires. It should be noted that the total number of firms reporting in each category varies from item to item. This occurs because not all firms responded to all questions in the survey instrument.

Responses: Sample Size

Approximately 178 U.S.-based firms with maquiladora operations in Baja California were identified and sent questionnaires or were interviewed personally. Of those 178 firms, 91 (51%) responded using either Form 1 or 3.

Additionally, 14 subcontractor/shelter firms operating in Baja California were identified. Thirteen assisted with the

survey by distributing Form 3 to their clients. Twelve consented to be interviewed using Form 2 to summarize data on those same clients, thereby supplying information on an additional 99 firms. However, of the 91 direct responses to Form 1 and 3, 25 were identified as clients of the 12 subcontractor/shelter firms responding to Form 2. In order to avoid double counting, these 25 firms were deleted when the responses from Forms 1, 2, and 3 were aggregated. This occurred in Figures II-2, 3, 7, 9, 10, 12, and 13. In these figures, responses from the 66 firms using Forms 1 and 3--91 minus the 25 "overlaps"--are aggregated with the 99 firms covered by the 12 Form 2 interviews.

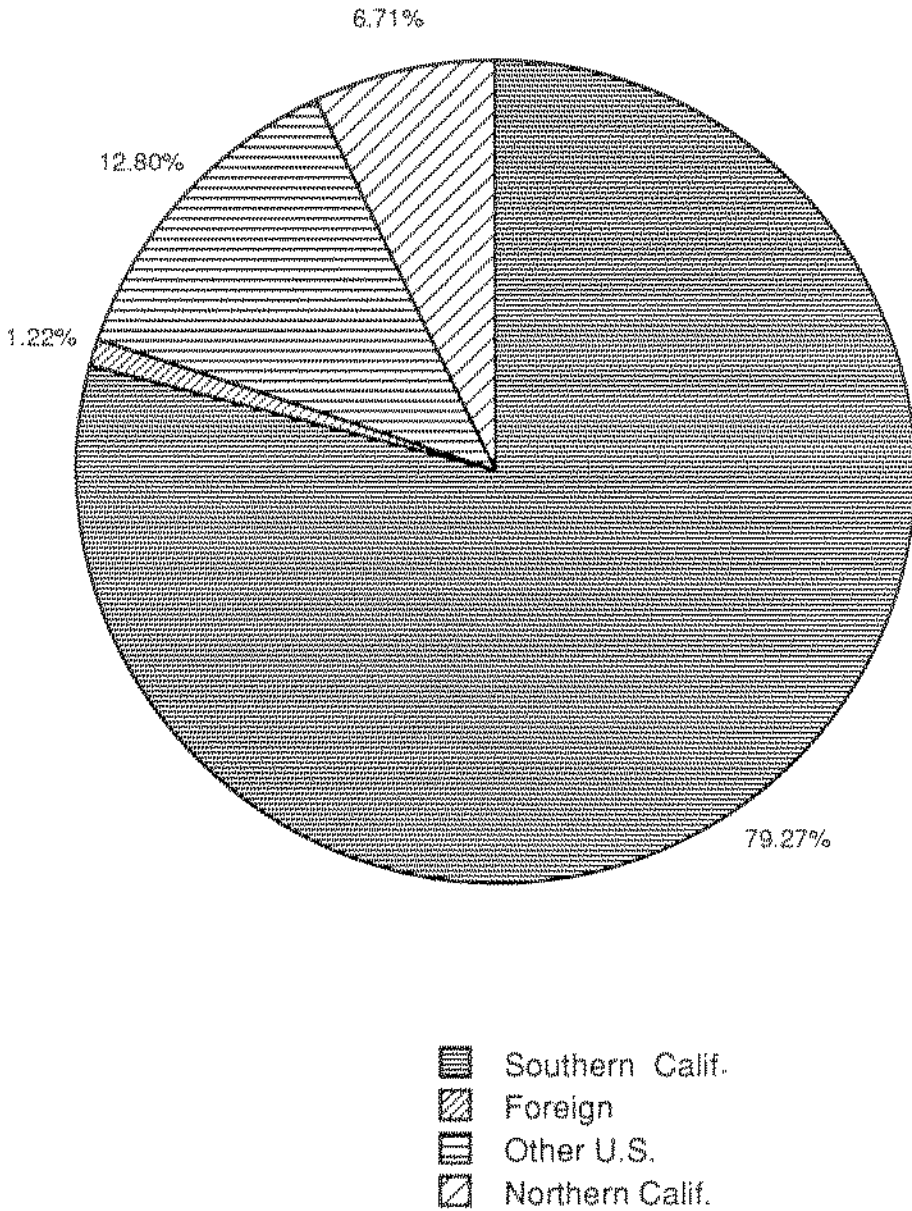
Thus, information was gathered directly or indirectly on a total of 165 firms, or 43% of the approximated 388 operating in Baja California as of April 1986. The total number of Mexican workers employed by the 91 firms responding to Forms 1 and 3 was 31,092 (69% of the 45,112 employees in Baja California maquiladoras).

Location of U.S. Plants

Figure II-2 shows the number of maquiladora plants in the sample according to geographic location in the U.S. Southern California firms account for 79% (130) of the firms, northern California ranks next with 7% (11) of the U.S. parent corporations, while several other states in the U.S. and two foreign firms account for the remainder. It should be noted that a U.S. affiliate of a Japanese or European multinational is treated as a U.S. company.

Figure II-2

Location of U. S. Parent Corporations with Maquiladoras in Baja California



Source: C/J Maquiladora Survey, 1986 (Forms 1, 2, 3)

Location of Maquiladora Plants in Baja California

Figure II-3 shows the number of maquiladora plants according to geographical location in Baja California. Tijuana has 65% of the maquiladoras in the sample, Mexicali 25%, Tecate 3%, and Ensenada 2%.

Size of U.S. Plants

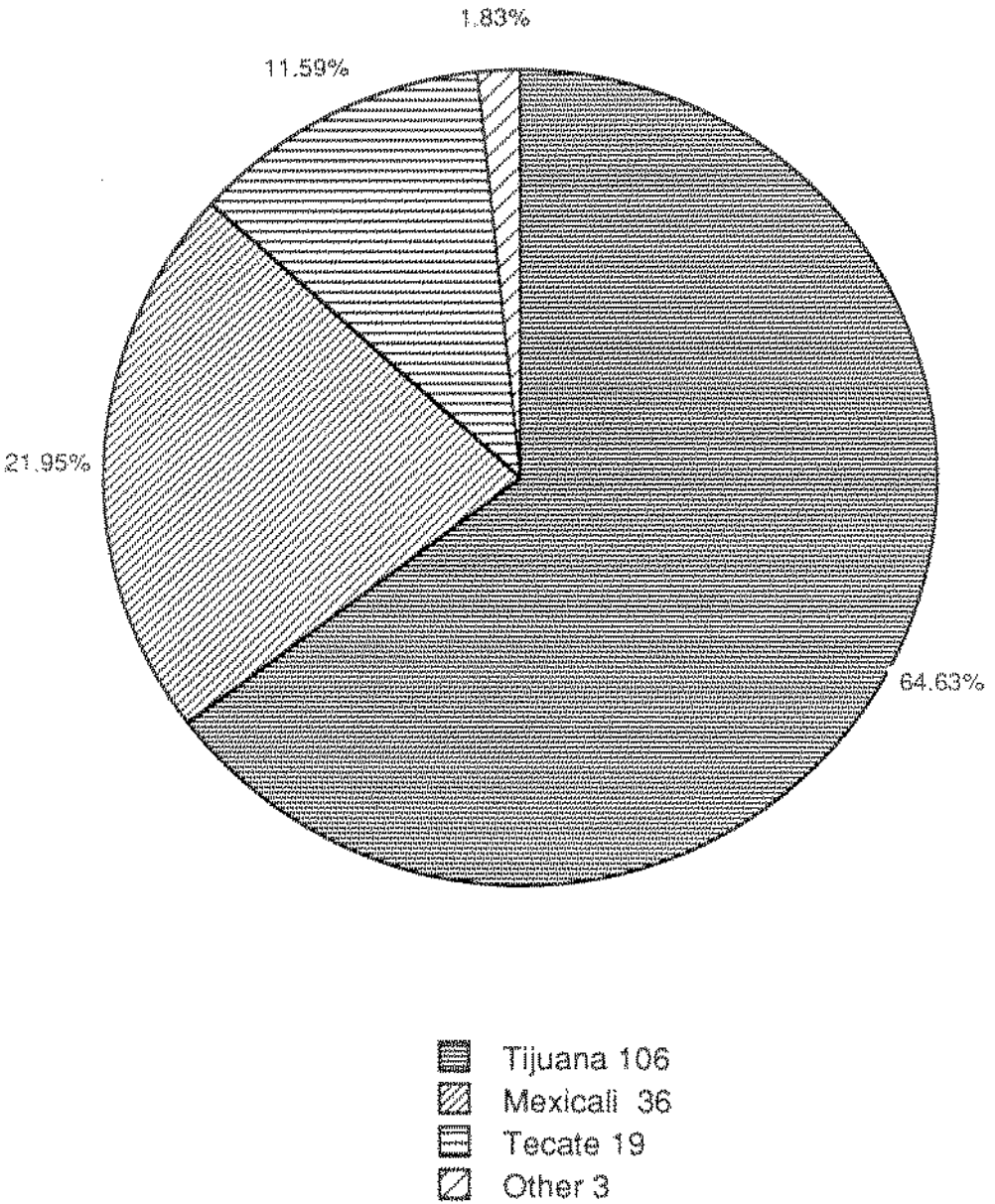
Figure II-4 shows the number of U.S. parent corporations according to size as measured by number of employees. Many of these companies are part of larger organizations in the U.S. and other countries; however, the size of the division associated with the Mexican maquiladora operation was used. About 24% of the U.S. parent companies had fewer than 100 employees in the U.S., 29% had from 100 to 499 employees, only 9% had 500-999, and 38% had over 1,000 employees (3 respondents omitted this question). The largest firms are U.S., Japanese, or European multinational corporations with worldwide manufacturing and marketing operations. The inclusion of this small group of giant firms explains the gap between the sample mean of 3,797 U.S. employees and the median of 400 employees.

Analysis of the larger firms revealed some interesting relationships:

- Those larger firms (with more than the median number of U.S. employees) were located in Tijuana or Mexicali, and they were more likely than smaller companies to be based outside California in another U.S. state.

Figure II-3

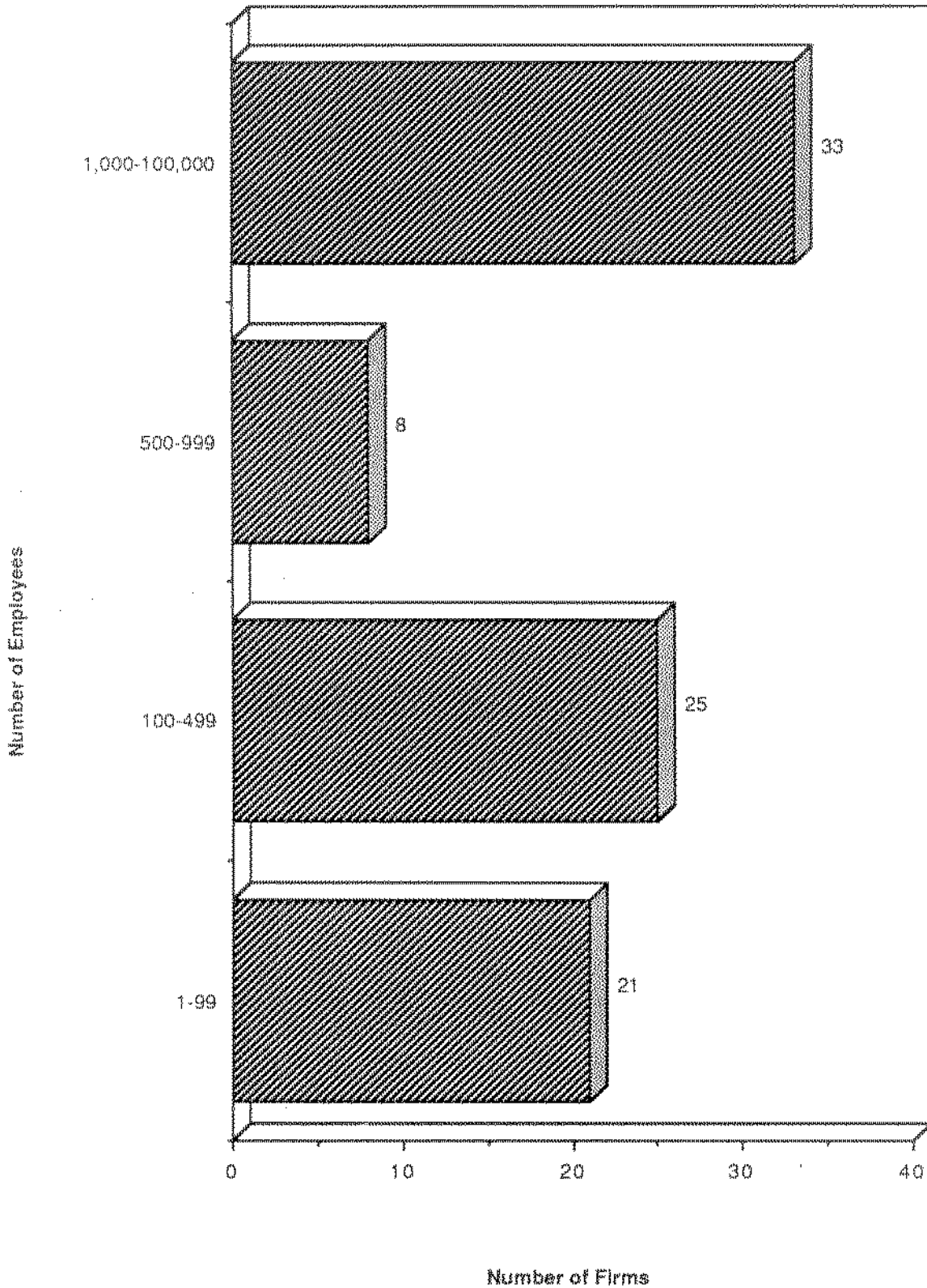
Location of Mexican Facilities in Baja California



Source: C/J Maquiladora Survey, 1986 (Forms 1, 2, 3)

Figure II-4

Size of U.S. Companies with Maquiladoras in Baja Ca.



Source C/J Maquiladora Survey, 1986 (Forms 1 and 3)

- They tend to employ more Mexican workers in their maquiladoras, and they are more likely to produce electronic components; 68% of the larger firms were concentrated in this product category versus 42% of the smaller firms.
- Larger firms are less likely to use subcontractors, and more likely to have had past experience in Mexico.
- Surprisingly, the larger firms were not any more likely to have considered other countries as alternatives to Mexico. However, they were somewhat more likely to recognize Mexico's lower energy cost as a positive factor. A few (about 25%) of the smaller firms were attracted by Mexico's weaker enforcement of environmental regulations.
- The larger firms were much more likely than the smaller firms to have considered areas of Mexico other than Baja California, especially Ciudad Juárez and Nogales.
- The larger firms were more likely to have employees who reside in California but work in Mexico, although they were no more likely to have California facilities or large expenditures in California to support their maquiladora.
- The larger firms experienced greater problems with deficient voice and data communications technology and, to a lesser extent, Mexican employee turnover.
- A greater proportion of the larger firms--53% versus 37% of smaller firms--experienced cuts in U.S. employment.

- There was a significant correlation between the size of the U.S. company and the size of the corresponding maquiladora.

Size of Maquiladora Plants

Figure II-5 shows the size of maquiladora plants as measured by number of employees. Eighty percent of these plants have fewer than 500 employees. The mean number of employees of a maquiladora in the sample is 345, while the median is 175. The operations in Baja California typically are smaller than those of their U.S. parent companies.

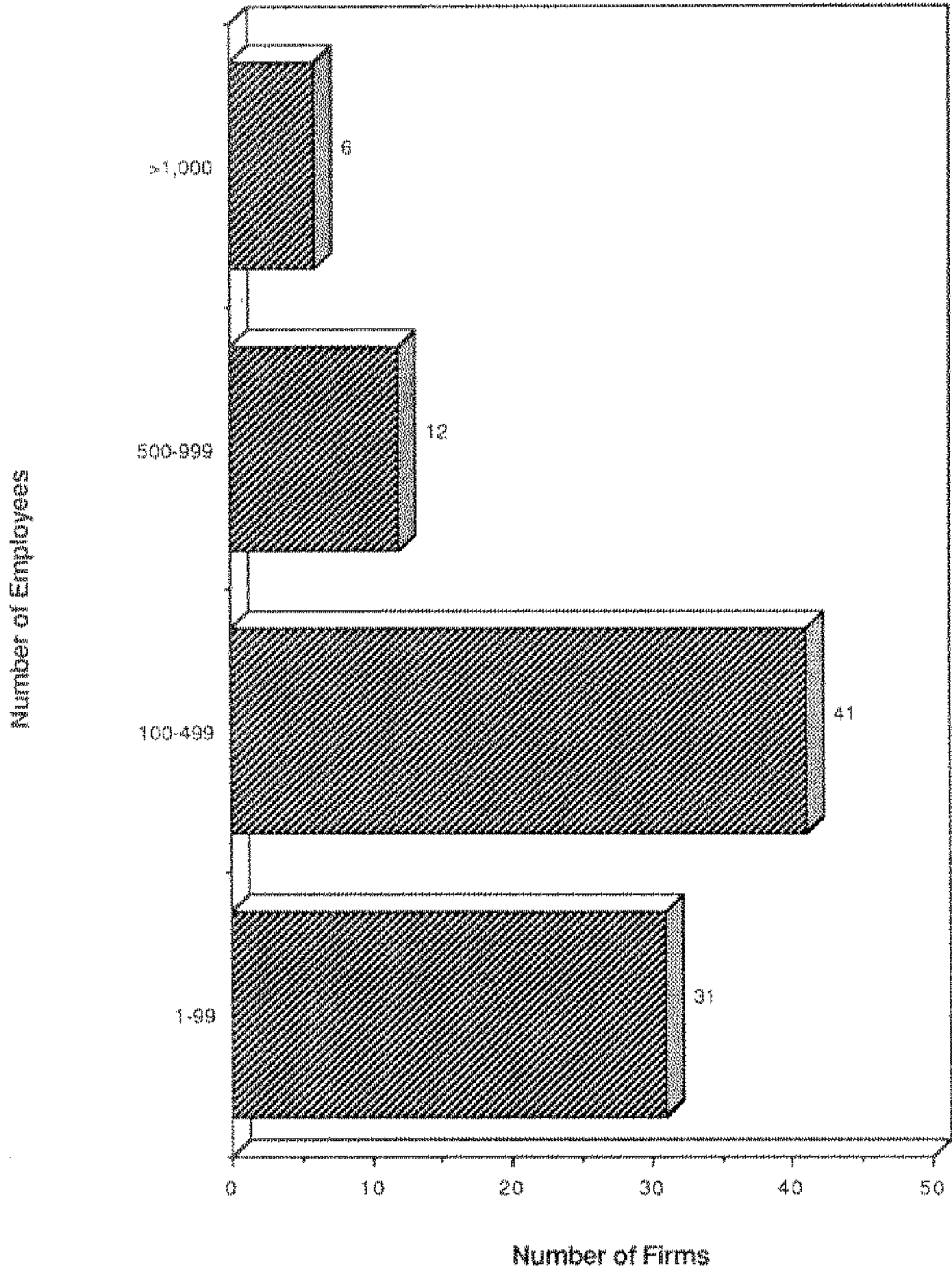
Figure II-6 shows the size of the combined employment of all plants for sub-contractor/shelter firms. Again, most of these firms have fewer than 500 Mexican employees.

Products

Figure II-7 shows the categories of products processed in the Baja California firms that were listed by the questionnaire respondents. These categories are also those reported to U.S. Customs for purposes of duty calculation (Standard Industrial Classification, or SIC codes). The majority of products, 53%, are classified as electronic components and accessories and are produced by 48 firms. Thirty-eight of these (79%) are located in Southern California, 2 (4%) are in northern California, and the remaining 8 (17%) are from other U.S. states. A related category, electric and electronic equipment, accounts for another 10% of the survey sample. Apparel represents 10%,

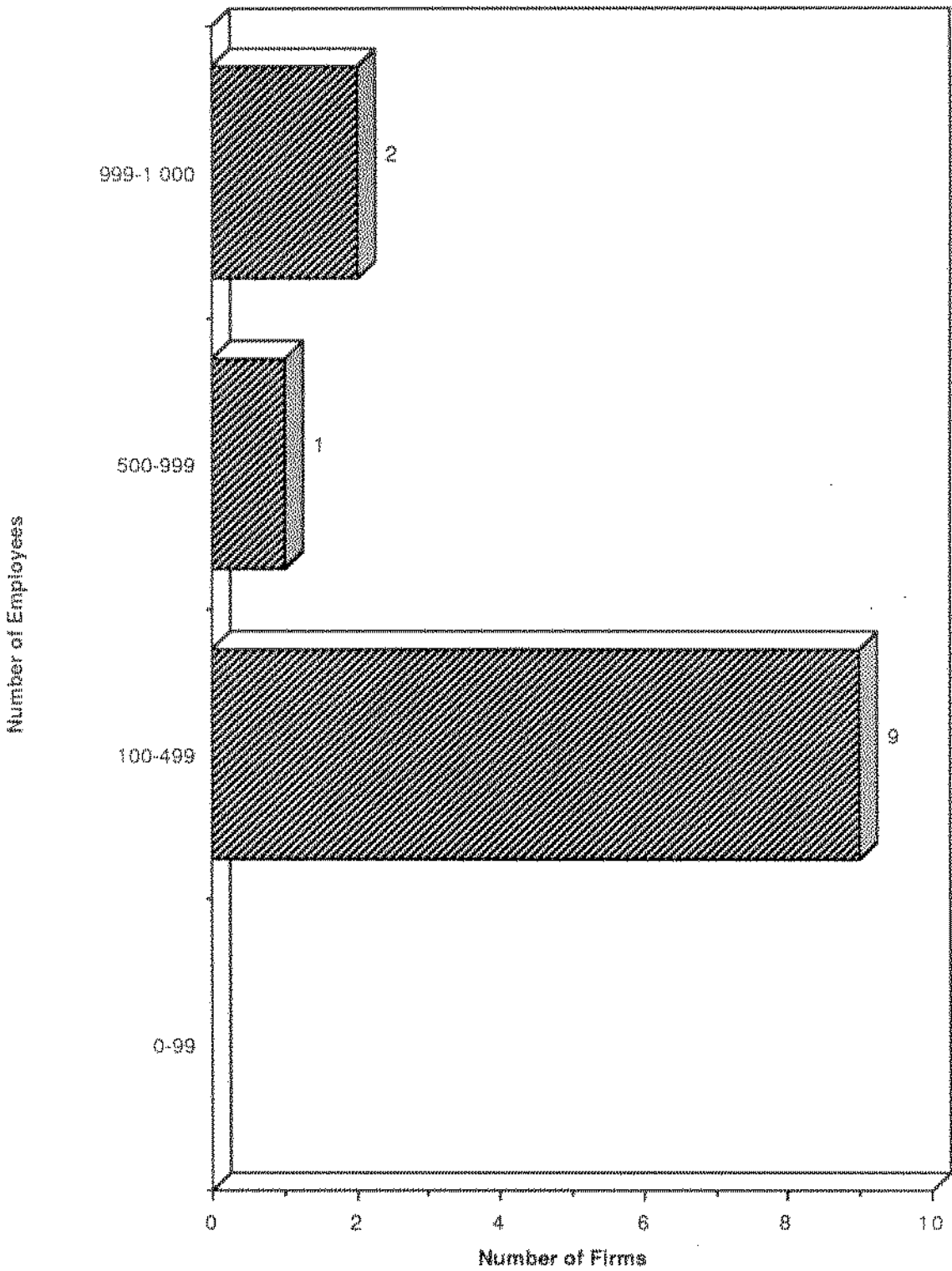
Figure II-5

Size of Mexican Facilities



Source C/J Maquiladora Survey, 1986 (Forms 1 and 3)

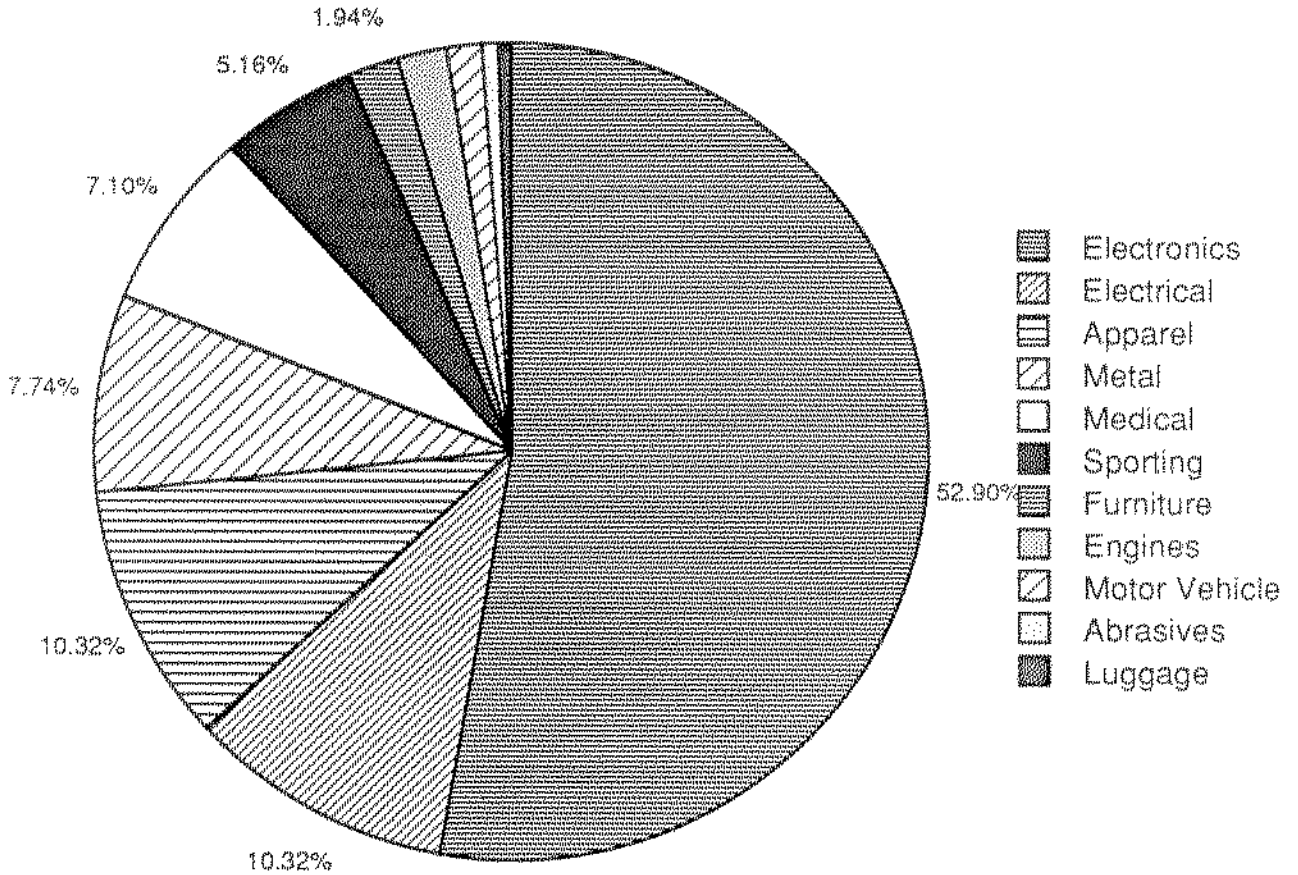
Figure II-6
Size of Mexican Facilities



Source C/J Maquiladora Survey, 1986 (Form 2)

Figure II-7

Products of Maquiladoras



Source: C/J Maquiladora Survey, 1986 (Forms 1, 2, 3)

fabricated metal products and foundries represent 8%, while medical instruments and supplies account for 7%. Toys and sporting goods account for 5%.

Ownership

Figure II-8 depicts ownership of production facilities according to type of maquiladora. Collectively, the 12 subcontractor/shelter firms interviewed have 99 U.S. client firms, while another 10 firms surveyed were currently operating through subcontractors not among the 12 interviewed. Thus, 109 (66%) of in our sample of 165 firms did not directly own their Mexican operations, while only 34% of the surveyed firms owned and operated their maquiladora facilities.

Experience in Mexico

Figure II-9 indicates years of experience of U.S. companies with maquiladoras. A large proportion of these firms, 59%, have no more than 5 years of maquiladora experience.

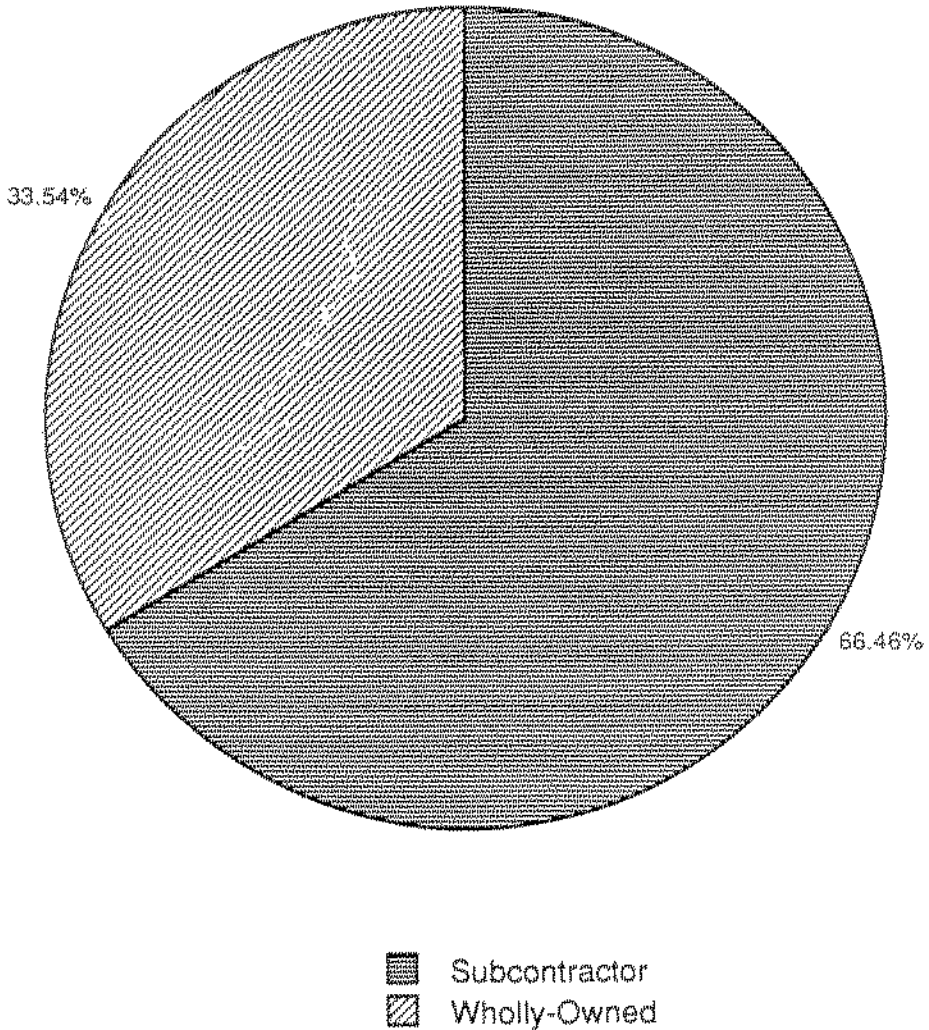
Figure II-10 shows the proportion of U.S. firms with previous maquiladora experience by size of current maquiladora in terms of number of Mexican employees. About 29% of the firms responding to Forms 1 and 3 did have previous experience.

Alternate Locations

Figure II-11 shows the countries most frequently considered as alternatives to Mexico for offshore production. Respondents listed up to five countries they considered as alternatives to

Figure II-8

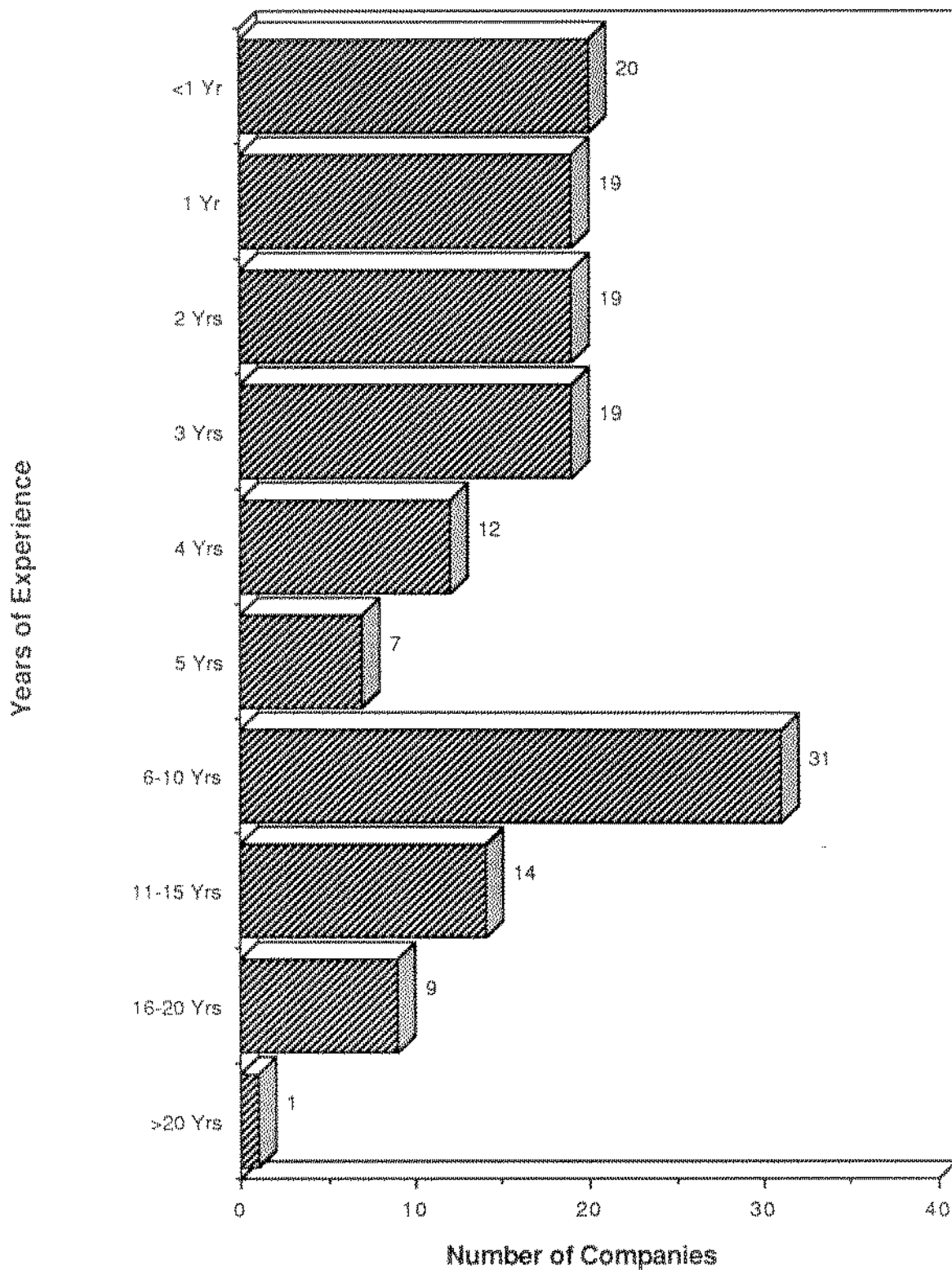
Ownership of Production Facilities in Baja California



Source: C/J Maquiladora Survey, 1986 (Forms 1, 2, 3)

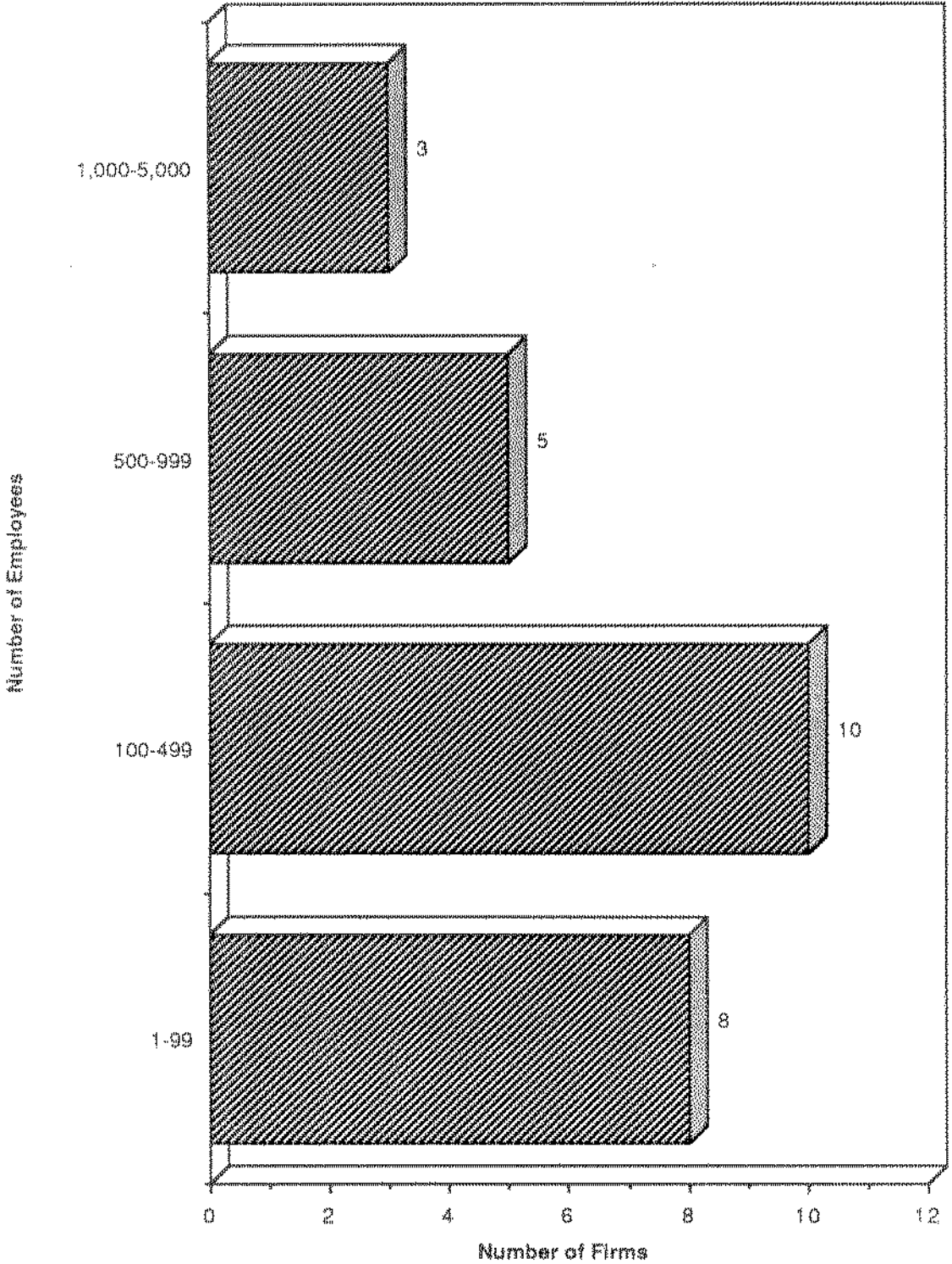
Figure II-9

Years of Experience with Production Facilities in Mexico



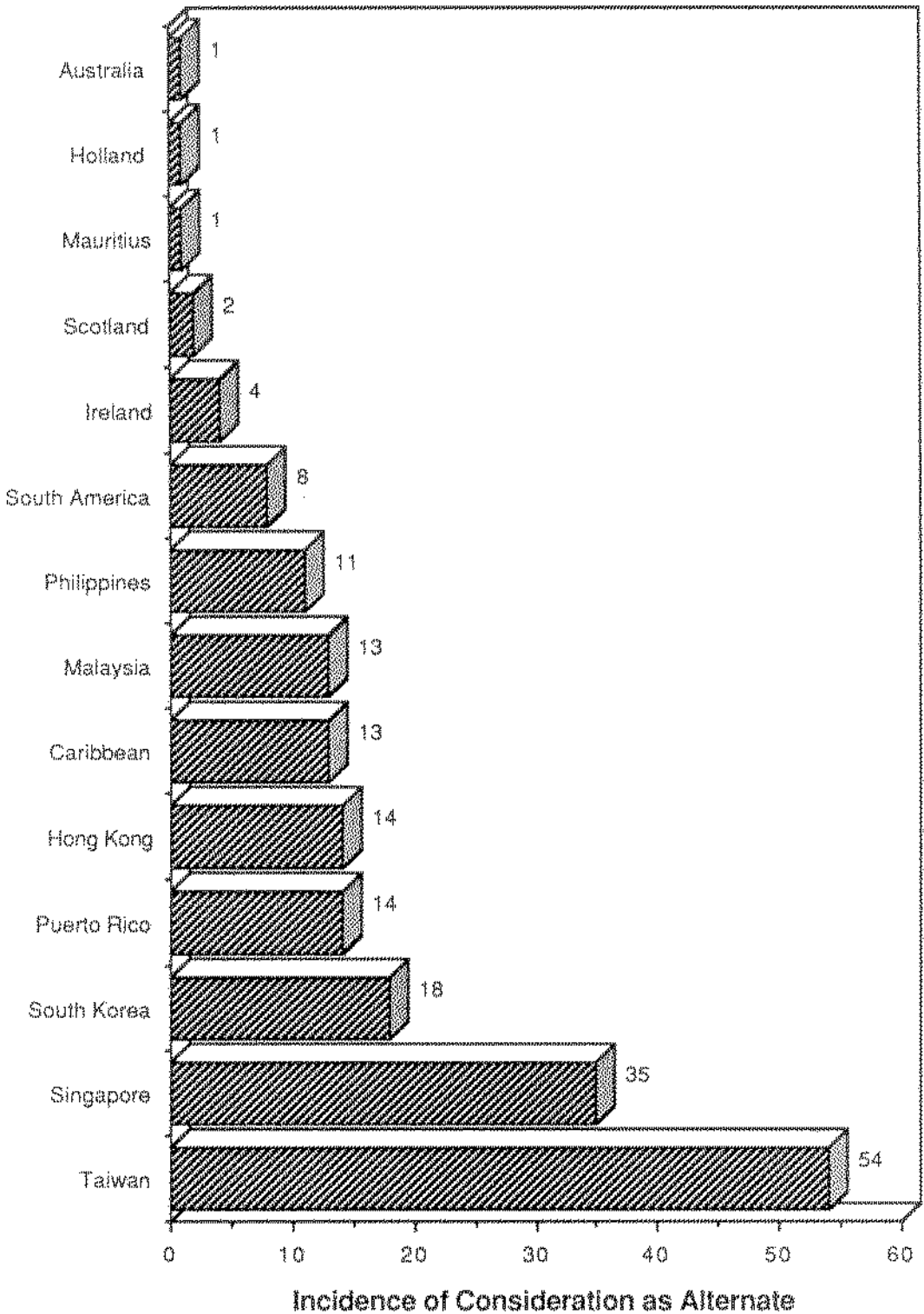
Source C/J Maquiladora Survey, 1986 (Forms 1, 2 and 3)

Figure II-10
Number of Firms with Previous Maquiladora
Experience by Size



Source C/J Maquiladora Survey, 1986 (Forms 1 and 3)

Figure II-11
Countries Considered as Alternate
Locations for Maquiladoras



Source C/J Maquiladora Survey, 1986 (Forms 1, 2 and 3)

Mexico. As many of these firms are producing electronic components and accessories, the preference for Taiwan is to be expected. Singapore is second, followed by South Korea, Hong Kong, Malaysia, and the Philippines. Puerto Rico and other Caribbean countries were also noted as alternatives to Mexico, followed by Ireland and the U.K.

However, half of the respondents to Forms 1 and 3 did not consider any country other than Mexico. These firms were generally smaller, with a median size of 315 U.S. employees, versus the median of 400 for the overall sample.

Location Determinants

Table II-5 shows ratings by U.S. firms of Mexico according to various plant location criteria in comparison with other countries. The measurement scale ranges from -3, "a most important negative factor against Mexico," to a +3, "a most important positive factor in favor of Mexico." A "0" or mid-point score implies that a particular location factor is of no importance.

The consensus of the majority of the respondents is that Mexico is attractive compared to other countries, such as Taiwan, in terms of the following factors listed (in descending order of importance):

- Lower transportation costs.
- Better quality of life in California.
- Lower cost of labor.
- Better opportunity for control of day-to-day operations.
- Better availability of labor.

The low energy cost, environmental regulations, favorable business climate, and high productivity of labor were also rated

Table II-5

RATINGS OF MEXICO AS A LOCATION FOR OFFSHORE PRODUCTION FACILITIES

Rank	Location Factor	Mean Rating		
		Form 1,3 N=90	Form 2* N=99	Form 1,2,3 N=164***
1	Transportation Costs	1.95	2.51	2.27
2	Quality of Life in California	1.21	2.89	2.31
3	Cost of Labor	2.11	2.01	2.01
4	Availability of Labor	1.85**	1.87	1.83
5	Opportunity for Control	1.97	1.56	1.66
6	Cost of Energy	1.00	1.25	1.17
7	Environmental Regulations	0.58	1.02	0.83
8	Business Climate	1.14	-0.11	0.48
9	Productivity of Labor	1.51	-0.43	-0.32
10	Stability of Government	0.92	-0.46	0.11
11	Militancy of Organized Labor	0.54	-0.53	-0.05

*Subcontractor/Shelter firms' responses are weighted by size (number of clients).

**Note: None of the ten largest firms responding to Forms 1 and 3 rated Mexico negatively on availability of suitable labor.

***The 25 firms which responded directly and were represented by subcontractor/shelter firms were deleted for this aggregate column.

"slightly important positive factors in favor of Mexico."

Stability of government and militancy of organized labor were not significantly negative factors for Mexico.

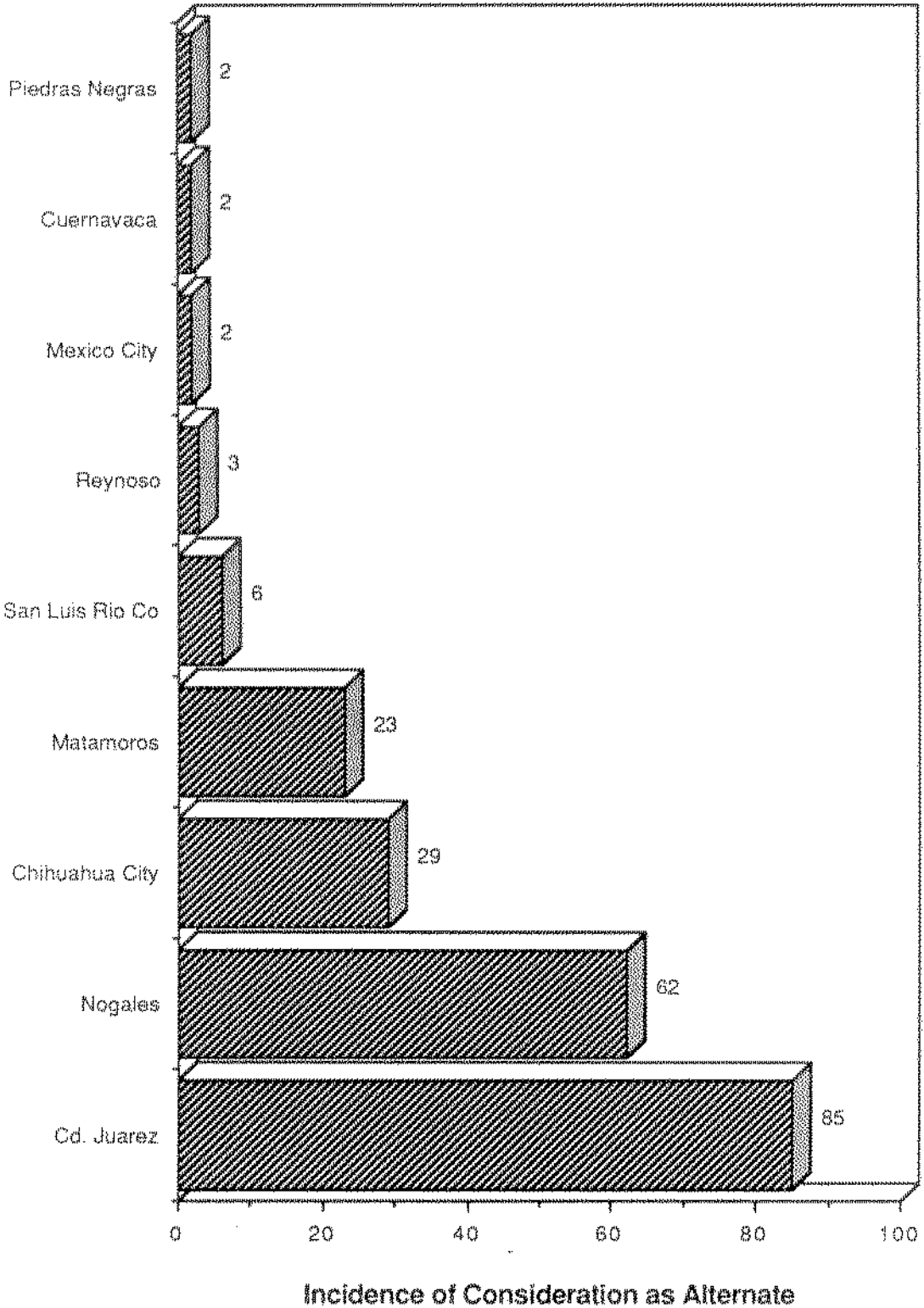
Figure II-12 shows the Mexican locations most commonly considered as alternatives to Baja California. Importantly, 51 of 91 firms (56%) responding to Forms 1 and 3 did not consider any alternative to Baja California. The firms which did not consider another region of Mexico tended to be smaller, with a median of 300 U.S. employees versus 400 for the overall sample. Of these 51 firms, only 19 (37%) indicated that they had considered other locations in Mexico. For those firms which did, however, the most important alternatives within Mexico were Ciudad Juárez, Nogales, Chihuahua City, and Matamoros.

Table II-6 shows the ratings of Baja California compared to other regions of Mexico according to various location factors. Overall, these data suggest that while Mexico received many high average ratings, Baja California is only slightly better than other regions within Mexico, with one notable exception; respondents rated the quality of life in California as an important positive factor in favor of Baja California. Other slightly important positive factors were the better opportunity for day-to-day control of operations, lower level of militancy of organized labor, and lower transportation costs.

California Benefits from Maquiladoras

One measure of economic benefits associated with maquiladoras is the fact that about one-third (32%) of the U.S.

Figure II-12
Mexican Locations Considered as
Alternatives to Baja California



Source C/J Maquiladora Survey, 1986 (Forms 1, 2 and 3)

TABLE II-6

RATINGS OF BAJA CALIFORNIA AS A LOCATION FOR MAQUILADORAS

Overall Rank	Location Factor	Form 1,3 (N=90)	Form 2 (N=74)	Form 1,2,3 (N=139)**
1	Quality of life in California	1.53	2.86	2.47
2	Militancy of organized labor	0.57	2.30	1.63
3	Opportunity for control of day-to-day operations	1.98	0.63	1.20
4	Transportation costs	1.76	0.48	1.11
5	Cost of labor	0.80	0.56	0.63
6	Availability of labor	0.94	-0.15	0.39
7	Productivity of labor	0.80	-0.11	0.38
8	Environmental regulations	0.50	0.06	0.30
9	Cost of energy	0.31	0.27	0.29
10	Business climate	0.94	-1.79	-0.30
	Availability of sites		0.51	NA*
	Availability of water		0.22	NA*
	Cost of sites		0.17	NA*

*Subcontractor/shelter firms were not asked to rate these factors.

**Subcontractor/shelter firms representing 25 firms did not respond to this question.

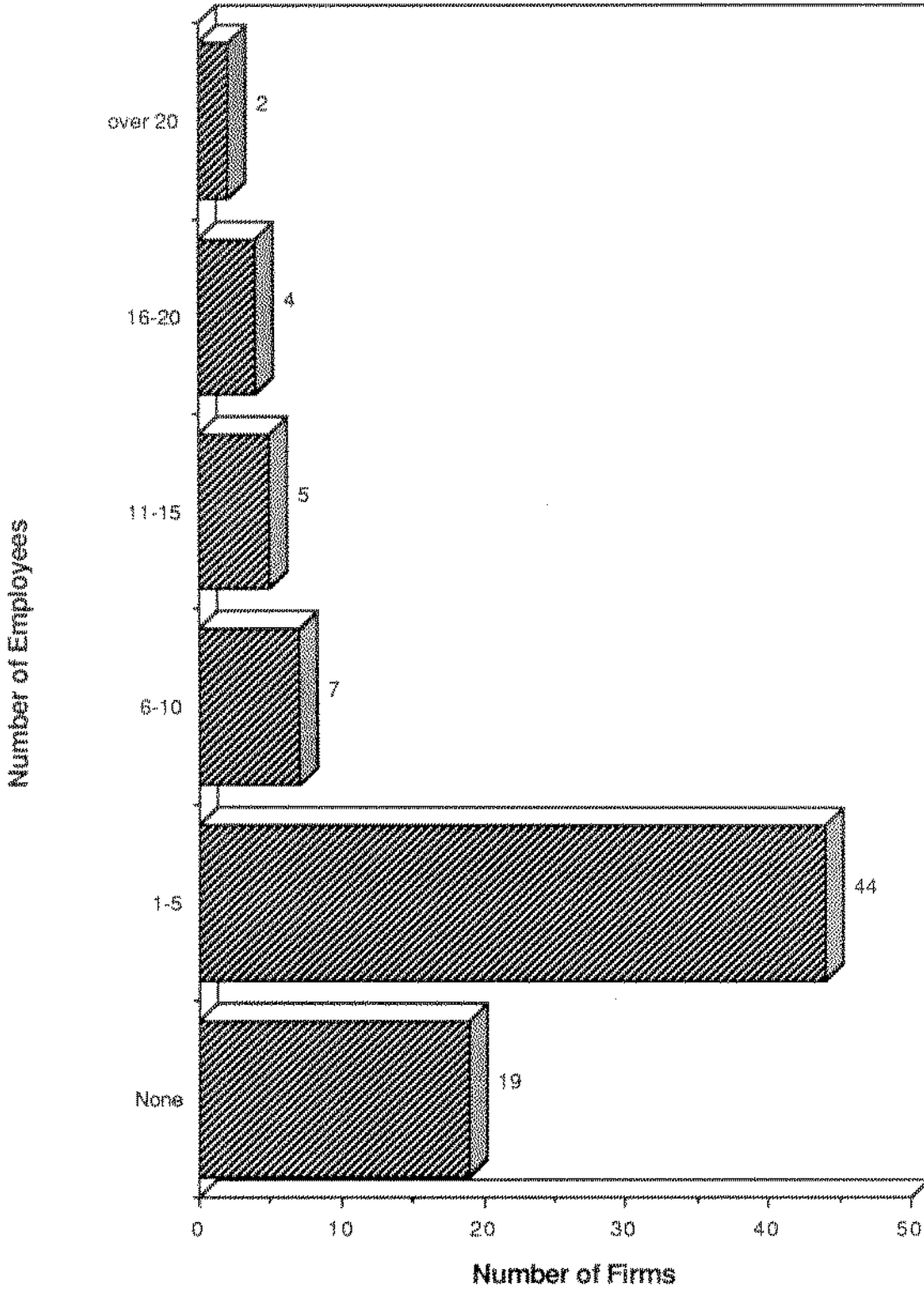
companies in the sample established special facilities on the California side of the U.S.-Mexican border in order to service their Mexican production facilities. The additional benefits from these U.S. staging, assembly, and distribution facilities include a total of 1,274 full time jobs and \$11,564,000 in expenditures for lease rent. And eight of the twelve subcontractor/shelter firms had office and/or warehouse facilities in Southern California.

Figure II-13 shows the number of employees who work in maquiladoras but reside in the state of California. Associated with these employees' residence in California are expenditures for food, clothing, shelter, and so forth. About 76% of maquiladoras have at least one such employee--the median number of California resident employees is two, and the mean is 5 employees for firms responding to Forms 1 and 3. Nine firms did not respond to this question.

Figure II-14 shows estimated annual expenditures in California associated with maquiladora operations for 1985 for firms responding to Forms 1 and 3. These expenses included supplies, services, hosting business visitors, and costs associated with supporting the maquiladora. About half of the firms gave specific estimates while the others merely indicated a range of values. Five firms did not respond at all to this question. Twelve companies gave specific estimates of at least a million dollars, and one company reported spending 20 million dollars. The mean of the 39 estimates was \$1,986,523 and the median was \$250,000. For the remaining companies, another

Figure II-13

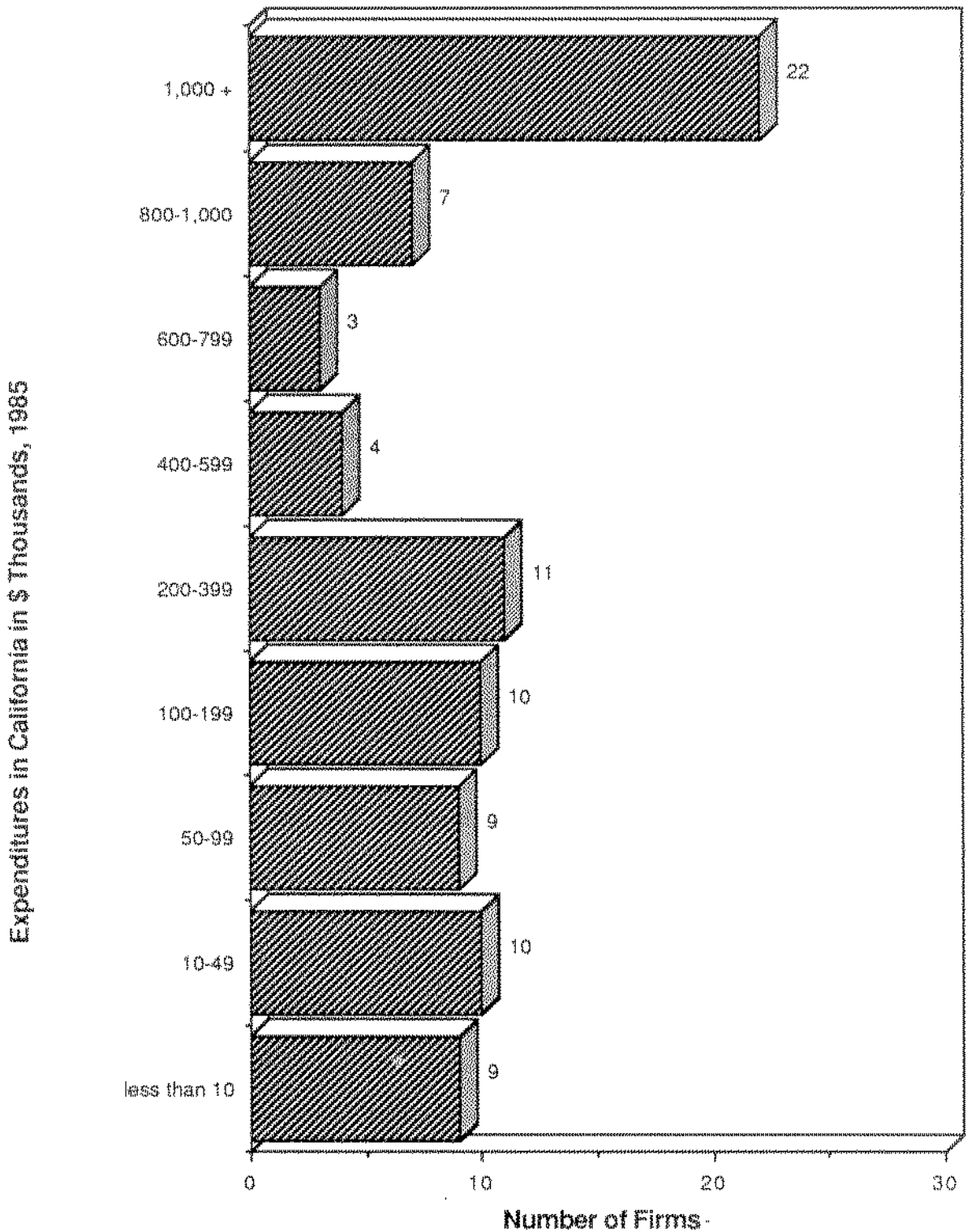
Maquiladora Employees Who Reside in California



Source C/J Maquiladora Survey, 1986 (Forms 1, 2 and 3)

Figure II-14

Expenditures in California



Source: C/J Maquiladora Survey, 1986 (Forms 1 and 3)

twelve spent over a million dollars, and the mean and median range was \$200,000-\$399,000 (which has a mid-point of \$300,000). Thus, the median expenditure of the 90 firms responding to Forms 1 and 3 was about \$275,000 per firm in 1985. Subcontractor/shelter firms spent an average of \$1,467,313 per firm in California.

Another benefit to California's economy is from Mexican maquiladora workers spending a part of their wages in U.S. border communities. According to preliminary calculations based on 1986 survey data provided by El Colegio de la Frontera Norte (COLEF) in Tijuana, Mexican workers spend some of their maquiladora wages in the U.S. However, the 1985 estimate of 50% that was reported in Comercio Exterior and was widely accepted seems excessive (Rivas, 1985). The COLEF data indicate that the actual proportion of maquiladora wages that are spent in the U.S. is likely to be in the range of 5% to 15%.

Problems Encountered by Maquiladoras

Table II-7 shows the relative importance of the problems typically encountered by the maquiladora firms in Baja California. The most important problems in descending order of importance, are employee turnover, availability of suitable labor, deficient communications technology, and transportation for Mexican workers to and from the maquiladora. The biggest difference between subcontractor/shelter firms (Form 2) and other respondents (Forms 1 and 3) is associated with the problem of delays at the border. Significantly, subcontractor/shelter

TABLE II-7

PROBLEMS ENCOUNTERED BY MAQUILADORAS

Rank	Problem	Mean Rating on 5-Point Scale		
		(Forms 1,3) (N=90)	(Form 2) (N=99)	(Forms, 1,2,3) (N=164)*
1	Employee turnover	3.72	3.72	3.69
2	Availability of suitable labor	3.21	3.07	3.13
3	Deficient communications technology	2.80	3.03	2.94
4	Transportation for workers to and from the plant	2.72	2.68	2.70
5	Cultural differences	2.30	1.85	2.02
6	Delays in transporting finished products into the U.S. due to waiting at border crossing	2.81	1.46	1.96
7	Militancy of organized labor	1.86	1.97	1.93

* The 25 firms which responded directly and were represented by subcontractor/shelter firms were deleted for this aggregate column. None of the ten largest firms responding to Forms 1 and 3 rated Mexico negatively on availability of suitable labor.

firms do not consider this to be an important problem, while the others generally do experience problems with delays.

Expansion Plans

Table II-8 shows maquiladora expansion plans for operations in California and Mexico. A very high percentage of maquiladoras have plans for expansion, especially in Mexico. For firms responding to Forms 1 and 3, about 76% of firms plan to increase employment, 57% plan to expand facilities, and 59% plan to add or improve equipment in their maquiladoras. About 28% plan to utilize more Mexican components for inputs, and 24% plan to create more sales in the Mexican market. On the U.S. side of the border, about 39% of firms plan to increase employment, 20% plan to expand facilities, and 25% plan to add or improve equipment. Only 3% plan to utilize more Mexican components or other inputs on the U.S. side. Similarly, only 3% plan to create sales in the Mexican market for their U.S. facilities. Two of the subcontractor/shelter firms are planning joint ventures with firms in Taiwan, while another plans to expand to a different Baja California location.

Mexican Suppliers

About 46% of the firms responding to Forms 1 and 3 utilize no Mexican components or inputs, while the median for those which do is only 1.6% Mexican inputs according to value, and the mean is 8.4%. About 44% of the subcontractor/shelter firms (weighted by size in terms of number of clients) utilized no Mexican components or inputs, and the mean is only 2.3%.

TABLE II-8

EXPANSION PLANS FOR COMPANIES WITH OPERATIONS
IN CALIFORNIA OR MEXICO

Response Percentages of Sampled Firms

	(Forms 1 and 3) (N=90)	(Form 2) (N=12)	(Forms 1,2,3) (N=77*)
Companies with Expansion Plans for Operations in California or Mexico	84%	100%	84%
Companies Expanding Maquiladora Operations			
Employment	76	83	75
Facilities	57	67	53
Equipment	59	75	62
Mexican inputs	28	25	32
Mexican Sales	24	25	24
Companies Expanding California Operations			
Employment	39	67	39
Facilities	20	42	23
Equipment	25	42	29
Mexican inputs	3	0	3
Mexican Sales	3	0	3

*The 25 firms which responded to Forms 1 and 3 and were represented by subcontractor/shelter firms were deleted from the 90 leaving 65, which were then aggregated with the 12 responses to Form 2.

The primary reasons cited for using less than 5% Mexican inputs include lack of availability, poor quality, untimely delivery, high prices, and ineffective marketing efforts by Mexican firms. Many respondents said that Mexico is still relatively unsophisticated and poorly prepared in terms of competing in the worldwide marketplace, although they also expressed a strong desire to find good Mexican suppliers.

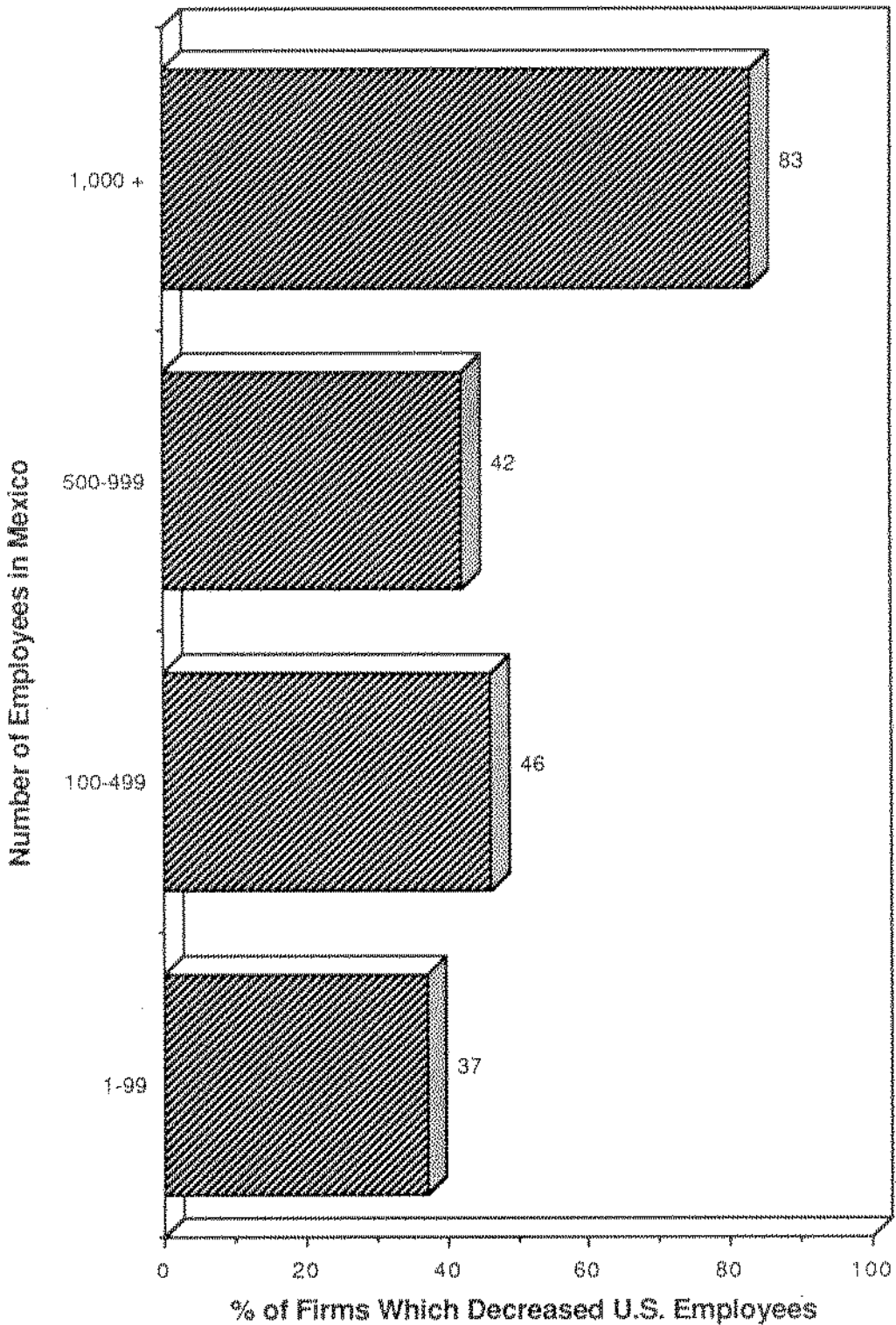
Subcontractor/shelter firms reported substantial utilization of Asian inputs; the mean proportion of value (weighted by size in terms of number of clients) was 22%, and two of the biggest users (in electronics) plan increases in the future. Another subcontractor/shelter firm plans to purchase used equipment from Japan.

Employment Effects

Figure II-15 shows the percentage of firms by size of Mexican operation for which the use of maquiladoras resulted in a net decrease in their U.S. employment. About 43% reported a decrease. The firms which reported cuts in U.S. employment tended to be larger, with a median of 592 U.S. employees, versus 400 for the overall sample; 55% of the firms which cut U.S. employment had at least 500 employees, versus 38% of those firms which did not cut U.S. employment. (Differences between small and large firms were discussed above.) Only 11 of the 37 firms which reduced U.S. employment were among the 45 which did not consider an alternative to Mexico. Alternatively, 65% of the firms which cut U.S. employment considered another country

Figure II-15

Cuts in U.S. Employment by Size of Maquiladora



Source C/J Maquiladora Survey, 1986 (Forms 1, 2 and 3)

besides Mexico; only 41% of the firms which did not cut U.S. employment looked at another country. And more of the firms which decreased U.S. employment considered Ciudad Juárez, although they were no more likely to look at alternative regions of Mexico.

Those firms which cut U.S. employment were more likely to have a California facility related to their maquiladora (38% versus 29% for firms which did not cut U.S. employment). And they were less likely to have experienced problems with availability of labor. The firms which reduced U.S. employment were less likely to plan future expansion of California employment; only 27% versus 49% of those firms which did not cut U.S. employment. And they were also less likely to plan to expand California facilities--only 11% versus 27% of those firms which did not cut U.S. employment. 57% reported no net decrease in U.S. employment.

Many respondents commented that their maquiladora facilities enabled them to more effectively compete both with imports and U.S. competitors utilizing off-shore sourcing. Therefore, they maintained that even though they had decreased the number of U.S. employees, other U.S./California jobs were preserved by utilizing the low cost Mexican plant.

SPECIAL CHARACTERISTICS OF THE APPAREL AND ELECTRONICS SECTORS

Given the relative importance of the apparel and electronics firms in the maquiladora industry in both Mexico and

Baja California, it was decided that a brief sketch of these two sectors might be helpful for understanding the larger context within which these maquiladora firms must operate.

Apparel

Textile and apparel trade throughout much of the western world is regulated by multilateral and bilateral agreements. The primary reason for such agreements has been to prevent serious disruptions of employment in the U.S. caused by low cost imports.

Because the industry requires relatively little capital, is labor intensive, and can be carried out with relatively low skill levels and technology, many developing countries have established export-oriented textile and garment industries in order to generate both jobs and foreign exchange. The U.S. market is the largest in the world and since the 1950s has felt the pressure from foreign competition in this area. Currently it is estimated that imports account for around one-third of the apparel consumed in the U.S.

The history of multilateral textile agreements began with the Agricultural Act of 1956 which:

provided the authority to negotiate textile restraint agreements....In 1962 Congress added the authority to restrain disruptive imports from countries with whom we have not negotiated a textile import restraint program, provided a multilateral agreement exists, covering the majority of textile trade from major textile producing nations.

The first multilateral textile agreement, called the Long-Term Agreement Regarding Trade in Cotton Textiles was negotiated in 1962 under the General Agreement on Tariffs and Trade (GATT)....In December 1973, again under GATT, the

Multifiber Arrangement Regarding International Trade in Textiles was negotiated to provide for an orderly expansion of the world's textile trade. The Multifiber Arrangement (MFA) came into force on January 1, 1974 for a 4-year period. It was renewed for 4 years in 1977 and again for 4 years and 7 months in 1982 to continue in force through July 31, 1986.

Under the MFA, the U.S. may enter into a bilateral textile agreement with another country in order to eliminate risk of market disruption and ensure the expansion and development of textile trade with that agreements with 36 nations. They permit the U.S. to regulate textile imports by providing for consultation levels, growth rates and base levels. Generally they are more liberal than minimum MFA guidelines but give the U.S. government an important mechanism to restrict textile imports and control textile trade. (Department of State, 1986)

With respect to the apparel sector of the maquiladora industry, it is important to note that the quota allocated to Mexico is actually a detailed set of quotas broken down by specific types of fibers and garments (e.g., cotton blouses or nylon shorts). Moreover, specific allocations to individual firms in Mexico--both manufacturing and assembling firms--are assigned as "visas" by the Secretariat of Commerce and Industrial Promotion (SECOFI) and must be requested and approved before a maquiladora program (i.e., permit) is granted. Since Mexico uses most categories of its quota to their limits, visas are relatively difficult for new firms to obtain in most areas.

Although Mexico grants these visas on the basis of quota allocations negotiated with the U.S. government, up-to-date records of exports and quotas to the U.S. already used are apparently kept only by U.S. customs. As the goods are presented for inspection and clearance at the border, along with the Mexican visas, the information is fed into the U.S. Customs

computer system and the lower tariff rate is applied only if the quota on those specific articles has not been exhausted.

Finally, Mexico has for some time claimed that garments imported into the U.S. under item 807.00 should not be deducted from Mexico's quota since such articles were really manufactured in the U.S. and only assembled in Mexico. This position has not, however, been accepted by the U.S. and thus U.S. goods assembled in Mexico are treated the same as goods manufactured in Mexico. The Mexican government, understandably, has not been enthusiastic about granting visas to garment maquiladora firms, especially in those categories which are customarily used by Mexican national producers. The reasoning, of course, is that manufacturing per se creates more jobs and incomes in Mexico than does simple assembly.

In view of this environment it is not surprising that between 1979 and September of 1985 in all of Mexico the number of textile/garment maquiladora firms fell from 122 to 110 while the total number of maquiladora firms increased from 540 to 785. Interestingly, the number of garment firms in the interior of Mexico (non-border states) actually increased from 18 to 30 during the same time period. This probably occurred because of a combination of factors including lower wage rates and lower turnover rates in the interior.

According to Mexican data in early 1986, the apparel sector in Baja California had some 55 plants, which was almost one-half of the national total, and employed about 4,500 people. Twenty-nine of these were in Tijuana, 23 in Mexicali, 1 in

Ensenada, and 2 were in Tecate. About 10% of the total maquiladora employment in the state were in the apparel sector. Most of the firms were small (i.e., less than 100 employees), but 11 had between 100 and 500, while one plant had more than 500 employees. Baja California is much more important in textiles than other Mexican states. This is undoubtedly linked to the apparel industry in California which is expanding in spite of the fact that the U.S. industry as a whole is shrinking.

In conclusion, it is clear that the apparel sector of the maquiladora industry could obviously be more dynamic in Baja California were it not for the institutional restrictions imposed by the Multifiber Arrangement. However, with tariffs ranging from 14% to 32% on the items most frequently produced for the California market it seems unlikely that this sector will change dramatically in the near future. In fact, most California firms are constantly looking for other offshore EPZ's such as Peru which have not filled parts of their quotas, which have low wages, and which are able to fulfill orders within the appropriate time frame of this fast-moving, globally integrated industry.

Given the importance of this industry to California and its enormous complexity it surely deserves more study than was possible in this project.

Electronics

The electronics sector of the Baja California maquiladora industry is the largest single sector, accounting for almost

one-third (31%) of the plants and one-half (48%) of the employment. Most of the U.S. firms in the sample from this sector are located in Southern California, while only a few are in northern California or other U.S. states. Given the fact that over half of California's employment in electronics is in northern California--in 1984 Santa Clara County alone had 245,000 of a total of 592,000 electronics jobs for the state--it is somewhat surprising that so few firms in northern California have maquiladora operations in Mexico.

Interviews with knowledgeable people in the Silicon Valley revealed that there are many possible explanations for such underrepresentation, including:

- During the late 1970's and early 1980's several large firms from the Silicon Valley opened maquiladora operations in different parts of Mexico. Some of these "experiments" were unsuccessful and as a result a whole generation of engineers and executives from northern California have become "soured" on Mexico.
- The common perception of Mexico in northern California is that Mexican workers are unskilled and perhaps untrainable, and there is widespread ignorance of both Mexican culture and business environment. Thus, the basic perception is that the quality of work is low, as is worker efficiency, and that the business environment is hostile at worst, unfathomable at best.
- There are some significant differences in the structure of the electronics industry in northern and Southern California:

- * The industry tends to be more capital intensive in the north, reflecting the different products developed and produced there (e.g., semi-conductors and computer peripherals).
 - * Firms tend to be larger in terms of sales and there are relatively more "public" firms.
 - * There is a more utilization of local subcontractors resulting in relatively fewer in-house employees.
- Many northern California firms are already tied into Asian subcontractors and sources, and therefore benefit from the low wage rates there on both components and fabrications as well as from the low duty rates associated with 807, GSP, and a relatively perverse set of U.S. tariff rates (i.e., frequently tariffs are lower for fabrications than for components).
 - Many firms do not wish to lose control over day-to-day operations and therefore will pay more for the services of local (U.S.) subcontractors, which allegedly use undocumented aliens, many of whom were originally trained in Mexican maquiladoras.

Whether or not these northern California firms represent a potential market for Mexico is yet to be determined. Interviews in Mexico City, however, suggest that the Mexican government is aware of the potential of Silicon Valley for generating jobs and foreign exchange.

Figure II-16 provides a schematic outline of the various stages of production in the California electronics industry, from research and development (R & D) through distribution. As conceptualized here, there are 5 main stages, all of which can be performed outside of the U.S.; Mexican maquiladora firms tend to be concentrated in Stage 3, or assembly. Nevertheless, there are many possible scenarios or "models." The three most common are:

- 1) California firms perform R & D in California and use a "mix" of U.S. and Asian components. Assembly and fabrication is carried out by local subcontractors with final product assembly, testing and distribution being performed in-house in California. This we call the Northern California Model. A frequent variation is that components are sourced mainly in the Far East with sub-assemblies done there as well, arriving in California for final product testing, assembly, and distribution.
- 2) California firms, using a mix of U.S. and Asian components send the components to Mexico for assembly and testing. They are then brought back to California for final product assembly, testing, and distribution. This we call the Southern California Model.
- 3) Japanese firms develop the product in Japan, manufacture components in Japan and/or Asian EPZ's (e.g., Taiwan), then bring them to Mexico for assembly with a mix of U.S. components and fabrications. These

FIGURE II -16
Production Phases in the California Electronics Industry

Stage 1 Research and Development	Stage 2 Components	Stage 3 Assemblies	Stage 4 Final Products	Stage 5 Distribution
- applications of basic science to developing new products	- active components (semi-conductors)	- fabrications - cables and harnesses	- Consumer Goods - TV's, Games - stereos	- inspection
- redesigning old processes to cut cost	- diodes	- PCB's	- computers	- packaging
	- transistors	- sheet metal casing and shields	- other appliances	- distribution to U.S. and foreign markets
	- integrated circuits			
	- SSI-LSI-VLSI		- non-consumer goods	
	- passive components	- miscellaneous hardware	- defense	
	- capacitors	- power supplies	- testing & measurement devices	
	- resistors	- tariffs less than 10%		
	- inductors			
	- tariffs 8-12% (except on semi-conductors)			
- performed mainly in Japan and California	- sourced in both Asia and California	- performed in California Asia and Mexico	- performed in California and Mexico	- mostly in California

are then brought to the U.S. for final product assembly, testing, and distribution. A variant is performing the final assembly and packaging in Mexico with distribution taking place from the U.S. twin plant in San Diego. These variations we refer to as the Japanese Model.

The factors determining just where manufacture, assembly, testing, and distribution are carried out are both subjective and objective. The main factors here are:

- Knowledge and perceptions of the quality and efficiency of various options available in the global factory.
- The scale of operations--defense and specialty items tend to consist of short runs and tend to be done in California, while large batches are frequently performed offshore.
- The relative position on the product life cycle curve--mature products are more likely to be sent to foreign EPZ's with Asian EPZ's getting the more sophisticated items than Mexico, while local U.S. subcontractors tend to work on the newer, most sophisticated products which require more day-to-day supervision, and frequently, higher skill levels.
- Relative costs of labor in the U.S. and off-shore EPZ's in comparison to the cost of automated, capital-intensive processes in the U.S.
- The level of import tariffs on the various inputs.
- The relative strengths of currencies.

Finally, it should be noted that the California electronics components industry has suffered serious problems in the last few years due to the slowdown of the growth of computer sales, and alleged dumping of semiconductors by Japanese firms. Yet because of the growth of sales in the telecommunications area employment has apparently stabilized (see Table II-9). Some of the persons interviewed in the surveys felt that the maquiladora has played a positive role in maintaining California employment levels in that the maquila operations have enabled California firms to remain competitive with foreign competition.

Again, it must be noted that this industry deserves more study in relation to the maquiladora. It is clearly a growing sector of maquiladora industry; however, whether it will grow as fast as, say, the automotive or medical sectors in Mexico as a whole remains to be seen. It does seem clear, however, that one of the major determinants of its growth in Baja California is the growth of the electronics industry in Southern California.

TABLE II-9

EMPLOYMENT IN CALIFORNIA ELECTRONICS INDUSTRY 1982-1985

1982	June	485,000
	December	523,000
1983	June	538,000
	December	557,000
1984	June	592,000
	December	606,000
1985	June	598,000
	December	598,000

Source: American Electronics Association.

PART III. IMPLICATIONS FOR PUBLIC POLICY IN
THE STATE OF CALIFORNIA

Before drawing any conclusions from the data presented in Parts I and II above, it is necessary to clarify certain methodological difficulties encountered in the course of this study which in turn will enable the reader to better understand the strengths, weaknesses, and usefulness of the data upon which these conclusions are based. Given the deficiencies of the available directories of maquiladora firms, it has been difficult to estimate the exact size and characteristics of the universe of maquiladora firms in Baja California. For reasons noted above, many U.S. firms were reluctant to respond to the survey questionnaire, possibly resulting in some sort of unknown, yet systematic, bias to the sample. For these reasons, it is difficult to generalize from the sample to the total universe of maquiladora firms in the state of Baja California and argue that these generalizations are somehow "scientifically" based. Another methodological deficiency is that firms which have shut down their maquiladora operations and those firms which considered entering the industry and did not do so were not interviewed. Given the scope, time frame, and budget of the study, it was not possible to explore all interesting and potentially useful aspects of the industry.

Finally, no attempt was made to rigorously measure and compare the total costs with the total benefits of maquiladora

operations in Baja California to individual firms nor to the state of California. This would have required a much larger effort than was attempted here. It is also doubtful that firms are either able or willing to provide the detailed information required to carry out such a gargantuan task. Instead, what was accomplished here was a relatively systematic exploration of the broad issues involved in this industry which is becoming increasingly important to the California and U.S. economy.

Nevertheless, the validity of the conclusions as presented here should not be discarded. Given the large number of responses that were obtained and the relatively large number of personal interviews that were conducted with knowledgeable people in the industry, the data reflect reasonably well the wide range of experiences and opinions within the industry. Similarly, it is reasonable that certain inferences can be made from them which will be helpful to those firms, agencies, and individuals interested in the development of this industry.

SUMMARY OF MAJOR FINDINGS

The findings of the study can be classified as concerning either the entire Mexican maquiladora industry or just the industry in Baja California. The study yielded the following findings with respect to the maquiladora industry in Mexico:

- The industry's growth has been very rapid. In 1966 there were some 57 plants with approximately 4,000 workers while today there are over 1,000 plants with some 300,000 workers.

- Although the industry has always been dominated by electronics and apparel firms it is becoming more diversified to include transportation equipment, services, toys and sports equipment, and medical supplies. Concomitantly, the percentage of female employment is declining as product mix and skill levels change.
- The maquiladora/in-bond industry is not the same in all parts of Mexico. While some 90% of maquiladora plants are located along the border, the maquila in Ciudad Juárez is very different than in Tijuana--the two border cities with the largest concentration of in-bond plants. In Ciudad Juárez the presence of large, well-established industrial parks and the city's strategic geographical location have attracted many large Fortune 500 firms from the eastern part of the U.S.. Tijuana tends to attract smaller, west coast firms, with a smattering of Japanese giants.
- The future of the industry in all parts of Mexico, depends on a complex group of driving and limiting forces including:
 - * How well Mexico resolves the problems that have arisen with the acceleration of the growth of the industry in the last few years (i.e., high turnover rates, shortages of trained technical and supervisory personnel, and physical infrastructure).

- * Continued political stability in Mexico which in turn implies some measure of success with reducing inflation and increasing economic growth and employment while maintaining realistic wage and exchange rate policies.
- * Expanding markets and a recession-proof economy in the U.S. without a dramatic increase in protectionism.
- * The application in the U.S., Japan, and Europe of the new generation of computer integrated manufacturing (CIM) technologies to the products now being processed in the Mexican industry.
- * The development of other export processing zones close to the U.S. which might receive preferential tariff treatment, such as might occur with the Caribbean Basin Initiative.

The following are findings of the study of maquiladora firms in Baja California which was carried out during the period February-July of 1986:

- Comparison of information gathered from recent directories obtained from the Mexican government with that of the sample shows some of the important characteristics of the universe and sample set of firms.
 - * 91 (51%) of the 178 U.S.-based firms with maquiladoras in Baja California which could be identified and contacted responded to our survey, information on an additional 74 firms was gathered

by interviewing 12 subcontractor and shelter firms which also responded to our survey. Thus, a total of 165 firms out of 388 (43%) operating maquiladoras in Baja California in early 1986 are represented in our survey.

- * 64% of the 388 firms in Baja California and 60% of our respondents have maquiladora operations in Tijuana while 26% of all the Baja California firms, and 25% of the sample, are located in Mexicali.
- * 86% of the companies which have maquiladoras in Baja California (78% of the sample) are themselves located in Southern California.
- * The total number of Mexican workers employed by the firms responding directly to our sample (excluding subcontractors and shelter operators) was 31,092 or 69% of the 45,112 workers officially registered in Baja California. The average size of plants in our sample was much greater than the average for Tijuana. Thus, our data tend to come from the larger maquiladoras.
- * 50% of the maquiladoras in Baja California are wholly owned by Mexicans, according to official government data.
- * Nearly one-third of the maquiladoras in Baja California (63% of the sample) produce electronic components or electrical equipment; apparel represents 14% (10% of the sample).

The major results of the survey of firms with maquiladora operations are as follows:

- Many firms responding to our survey considered countries other than Mexico as locations for off-shore production; Taiwan, Singapore, South Korea, Hong Kong, and other southeast Asian countries, as well as Puerto Rico and other Caribbean countries, were frequent second and third choices.
- Important positive location factors in favor of Mexico relative to the other countries listed above include: lower transportation costs, better quality of life in California for expatriate managers and technicians, lower cost of labor, better availability of labor, and better opportunity for control of day-to-day operations.
- Many firms considered other parts of Mexico as alternatives to Baja California, especially Ciudad Juárez, Nogales, Chihuahua City, and Matamoros. Baja California's most important positive location factor is the quality of life in the state of California for expatriate managers and technicians. Other slightly important positive location factors for Baja California include better opportunity for control, lower transportation costs, and the lower level of militancy of organized labor.
- The median of California parent firm expenditures in 1985 in support of a Baja California maquiladora was approximately \$275,000. About one-third built support

facilities in California, and over three quarters have at least one employee who resides in California and works in Mexico.

- A small proportion, 5% to 15%, of the wages of maquiladora employees return to California in terms of retail purchases.
- The most important problems of maquiladoras are: employee turnover, availability of suitable labor, deficient communications technology, and transportation of Mexican workers to and from the maquiladora.
- Most firms plan to expand their maquiladoras, and over one-third plan to increase California employment.
- Slightly less than half of the firms responding to our survey experienced a net decrease in U.S. employment as a result of using a maquiladora; the firms which cut back were generally larger than those represented in the sample as a whole.

IMPLICATIONS FOR PUBLIC POLICY IN CALIFORNIA

It is clear from the findings presented in this report that the maquiladora industry in Baja California is growing rapidly and that California-based, U.S. and Japanese firms are the major actors there. Additionally, it is clear that there are certain benefits and costs to California's economy associated with the industry that will undoubtedly grow as the industry itself grows. If the Mexican maquiladora industry continues to grow as

fast as it has in the recent past--somewhere around 10% per year--within a few years certain key sectors of California's industrial base could be significantly integrated with Mexico's maquiladora industry. Finally, the evidence suggests that in general the maquiladora/in-bond industry represents a significant long-term opportunity for the state of California and an important tool for attracting new firms to the state as well as for strengthening the competitive position of existing California firms.

These findings deserve the attention of private and public officials on both sides of the international boundary line and public policy in California should be shaped to reflect the realities of increased industrial interdependence along our common border. The state of California has no jurisdiction over what occurs in Mexico and therefore is faced with the option of either ignoring the maquila or trying to manage its impact on the state by attempting in some way to maximize the benefits and minimize the costs.

On the benefit side are maquiladora expenditures on transportation and customs facilities, taxes, and special staging facilities such as land, buildings, insurance, personnel, and so forth. Many California-based vendors of supplies and equipment, accountants, lawyers, bankers, consultants, and shelter/subcontracting firms generate jobs and incomes through selling goods and services to maquiladora firms. Mexican maquiladora employees also spend a small proportion of their wages in California.

On the cost side are the jobs lost in California by some of the firms which are trying to maintain and/or improve their competitive and/or profit positions in their respective industries by moving their labor intensive operations to Baja California. Significantly, however, slightly more than half of the firms in our survey reported that they did not reduce employment as a consequence of undertaking a maquiladora operation. And there is some evidence that large foreign and out-of-state firms have been attracted to Southern California and Baja California by the opportunities presented by the in-bond/maquila option, thereby creating more jobs in the state.

The benefits and costs of the maquila are not shared equally in specific cases by labor and management. It is certainly true that when a Southern California plant reduces its employment and transfers those jobs to Mexico, the workers in that plant are at least temporarily displaced. It is also true, however, that some firms are able to save jobs--usually the more highly skilled ones--by transferring the labor intensive tasks to Mexico and thereby cutting overall production costs. And in this case, there are likely to be more benefits to California than if that same firm had exported the jobs to Asia.

Given the almost inevitable growth of the maquila, at least in the short run, and the likely integration especially of Southern California firms into that industry, there are a number of policies that would allow the state of California to manage the industry's impact on the state's economy.

First, it is recommended that the appropriate state agencies initiate a dialogue, perhaps in the form of regular but informal consultations, with appropriate maquiladora-related public and private agencies and organizations on both sides of the border. Those that come to mind immediately are the two delegations of the Mexican Secretariat of Commerce and Industrial Promotion (SECOFI) located in Mexicali and Tijuana. Additionally, the state should consult with the Western Maquiladora Trade Association, which meets in San Diego, as well as with the Private Investment Council in Imperial County, and the San Diego Economic Development Corporation, which are involved in marketing the maquiladora in Southern California. These efforts must also be coordinated at the federal level, especially on the Mexican side.

Second, it is recommended that an appropriate vehicle be established for monitoring the growth and development of the maquiladora industry in Mexico generally and in Baja California specifically. This could be done by occasionally funding an update of this study and/or sponsoring workshops, seminars, or small conferences at academic institutions where knowledgeable people from industry, labor, government, and universities could come together on neutral ground. In fact, such forums could provide a convenient vehicle for both establishing a dialogue and monitoring the industry's development.

What would be the objectives of these dialogue and monitoring activities? In view of the rapid growth of the maquiladora and the accompanying integration of California

industry with that industry across an international boundary, it is increasingly likely that some sort of currently unforeseen event could occur in either Mexico or the U.S. that could seriously interrupt the normal flow of goods and services between the two countries or the two states. For example, enormous disruptions occurred in the retail sector of many U.S. border communities when the peso was sharply devalued first in 1976, and then again in 1982. Is it not possible that there are similiar events (e.g., increased protectionism in the U.S., or an abrupt closing of the border by the Mexican government in response to our militarization of the border) that could disrupt California's industrial sector which, 5 years from now, could be significantly more dependent on low cost Mexican labor? Knowledge of the industry and the nature and extent of the integration could make successful management of such a crisis more feasible. Prior consultation might even prevent such events from occurring or could suggest new opportunities for business to successfully adapt to changing conditions.

While it is recognized that the state's role is not to conduct foreign policy, it is clear that ongoing dialogue with key industry and government officials on both sides of the border might be instrumental in resolving some of the problems noted in this report in order to help make transborder industry a more attractive business. Some of the areas where an enlightened governmental agency might play a useful role include the following suggestions from respondents to our survey:

- Assistance in reducing delays at the border.

- Assistance in obtaining permission to install communications systems for various types of data transmission.
- Assistance in obtaining financing for facilities construction or expansion.

A third recommendation centers around a selective marketing strategy utilizing the maquiladora industry in Baja California as an additional positive factor for both attracting new firms to California and retaining those already here. While it is true that the California economy currently is much stronger and recession proof than the U.S. economy in general, it is also true that other U.S. states, particularly along the U.S.-Mexican border, are doing a great deal to attract foreign-based and out-of-state corporations, including promoting the Mexican maquiladora locations closest to their borders.

The survey findings suggest that the state of California could target its marketing efforts by focusing on certain countries and other U.S. states, in certain industry sectors, with certain product/market characteristics and production technologies. The state could seek to attract the large, foreign-based multinational corporations which would establish authentic twin plants in San Diego and Tijuana, or Calexico and Mexicali. The most likely candidates for such ventures would be Asian firms, or firms using a high level of Asian components, producing electrical or electronic components or accessories. Such firms are likely to find a Baja California-California location attractive because of the low cost Mexican labor, the

immediate access to the affluent California market, use as a North American distribution center, the high quality of California life for its managerial and executive personnel, and the access to the high tech environment for research and development facilities. The dollar devaluation and the continuing threat of U.S. protectionism make such investments increasingly attractive to foreign firms.

A convergence of recent events emphasizes the potential importance of the Southern California-Baja California region especially in relation to Asian firms. First, several large Japanese firms have recently announced plans to locate or expand their operations in the region, and Taiwanese business groups have made several visits to the area. Second, the California legislature was finally able to forge a compromise revision of the state's unitary tax which allegedly was a significant obstacle to foreign multinationals locating here. The legislation was signed by Governor Deukmejian on Sept. 5, 1986, and is scheduled to take effect January 1, 1988. While most welcome to British and Japanese multinationals, the legislation does not go far enough to suit the Reagan administration, so Federal legislation may be forthcoming.

And finally, the long-awaited federal immigration reform bill--containing employer sanctions--has passed and has been signed by the president. Most informed observers of the maquiladora industry have long held the view that employer sanctions will drive many firms' labor intensive operations south of the border and that the sectors most likely to be impacted will be electronics, garments, and furniture.

These factors, along with a sharp appreciation of the Japanese Yen in the last two years, and an announcement that Japan's export-import bank has agreed to extend Mexico \$1 billion worth of credit, signal the attention that Mexico and the California-Baja California region are receiving in Asia. These developments suggest that Asian firms should receive high priority in any marketing plan for the region.

Industry sectors that appear to be increasingly attracted to the Mexican maquiladora are medical instruments and hospital supplies, toys and sporting goods, woodworking, metal fabrication, and transportation-related products.

One of the sectors least likely to grow significantly is apparel. Although it has been an important in-bond industry for many years, its relative importance has declined because of several factors. First, apparel companies have other well developed assembly/production sources worldwide and there is intense competition between them due to the low barriers to entry. Second, although there are still many apparel subcontractors in Baja California they apparently pay lower wages than many of the other maquiladora sectors. Therefore, they are gradually moving to the interior of Mexico while the higher-paying activities, requiring higher skill levels, are gradually replacing them in the border area. Third, Mexican apparel producers and their workforce apparently are less able to deal with the demands of sophisticated international markets than their counterparts in other foreign EPZ's. Not only do the U.S. buyers demand quick turnaround times and on time

deliveries, but many Mexican apparel plants are so small and fragmented that the carefully coordinated production runs required for matching garments (e.g., two piece suits) are difficult to properly manage. Finally, the institutional restrictions of the multifiber arrangement and associated quotas appear to severely limit the growth of the apparel sector, at least in the immediate future.

Other industry sectors, or firms within certain sectors, less likely to be attracted to the maquiladora are those which have elected to utilize computer integrated manufacturing (CIM) techniques, those whose production runs are relatively short and specialized, and those which are in the very early stages of the product life cycle.

Firms positioned in highly cost competitive markets are, for obvious reasons, frequently attracted to the maquila. It has been suggested that there may also be a herd instinct at work here in that once a few firms introduce a certain innovation such as opening up a Mexican plant their competitors will be more inclined to follow.

Some subcontractor/shelter operators argue that seasonality is a potential problem, especially for parent/subsidiary plants, due to Mexico's labor laws which severely limit layoffs by requiring substantial severance pay. This suggests that a shelter or subcontracting arrangement might be more attractive for firms with special problems and/or little experience in off-shore production.

The traditional heavy smokestack industries--usually based in the U.S. midwest or eastern regions--do not tend to locate in Baja California although companies desiring to avoid U.S. environmental regulations often consider Mexico because of the current low level of enforcement of such regulations. Obviously firms with low labor costs as a proportion of total costs--less than 20%--are not good candidates for maquiladora operations either, nor are firms which are involved only with research and development activities.

There are a variety of vehicles that could be used to market the maquiladora. Contacts with multinational firms in Asia and Europe would be consistent with the California state trade offices in those regions. Sending a joint delegation of California and Baja California officials to certain key cities in Europe and Asia to present seminars on the advantages of twin plants in the binational border region could also inspire confidence among potential investors who might have certain reservations about investing in Mexico, because of the alleged political instability, or in California, because of the state's reputation as a high cost area in which to do business.

Most important, however, is to generate detailed, practical promotional materials which accurately portray the advantages and disadvantages of the twin-plant/in-bond industry in the California-Baja California area. These can be sent to banks, accounting firms, and other business service companies throughout the U.S. Such materials can also be used selectively in the state of California in order to keep firms in California

and to tempt those California firms which are now sourcing in other offshore EPZ's to explore the Mexican maquiladora option.

Conclusions

At the outset of this report it was stated that the study would address three basic questions.

- 1) What is the maquiladora industry, and what are its present problems and future prospects?
- 2) Why are U.S. and other foreign companies establishing plants in Baja California, as opposed to other offshore export processing zones (EPZ's), or other areas of Mexico?
- 3) What economic benefits does California derive from the maquiladora program, mainly as it functions in Baja California?

Question 1 is addressed in Part I of this report while questions 2 and 3 are covered in Part II and the first section of Part III.

The evidence presented in this report demonstrates that the maquiladora industry in Mexico is rapidly growing and that certain sectors of California's economy are becoming more integrated with that industry. The major conclusion of this report is that this integration does present a significant long-term opportunity for California by strengthening the competitive position of firms already operating in the state and by attracting new firms which make additional expenditures on facilities, intermediate goods, and personnel. Yet it must be

acknowledged that there are both costs and benefits associated with this integration and the state must act prudently in shaping policies in this area.

As noted above, on the one hand, a prudent policy requires information and dialogue with California-based firms and Mexican governmental agencies involved with the maquila in order to insure increasing efficiency and uninterrupted operation. In interviews with industry leaders, the point was frequently made that the participation of the state of California was welcome mainly as a way of deepening a dialogue with the Mexican government. Such a dialogue, they felt, should cover the relaxation of what they consider to be obstacles and the problems associated with Mexican infrastructure (e.g. the lack of a network of Mexican suppliers such as that which exists in Taiwan). What they did not welcome, however, would be another layer of governmental regulation on either side of the border. In fact, many of them expressed the view that the success of the maquiladora industry has been due at least partially to the lack of governmental participation and regulation in Mexico.

On the other hand, public policy should also include the formulation of a marketing strategy carefully targeting key industrial sectors in other states and other nations which are likely to find the Southern California-Baja California area desirable. However, since a large proportion of the firms currently operating in Baja California are California based, the state should maintain a careful watch over the negative employment effects of the industry's growth. In periods of a

healthy, expanding economy, long-term dislocations of large numbers of workers are less likely and, as noted above, it is possible that off-shore operations in Mexico may actually save many California jobs. That is, it does not appear that for every job created in Baja California that a job is lost in California. Nevertheless, the state of California already has established mechanisms for monitoring the effects of plant closures and providing affected workers and communities assistance. These mechanisms should be employed where appropriate in relation to California firms moving their labor intensive operations to Mexico.

The careful formulation and implementation of the above actions can result in a balanced and equitable set of policies vis-á-vis the Mexican maquiladora industry which will enable the state to increase the benefits and decrease the costs associated with this foreign based industry.

BIBLIOGRAPHY

- American Chamber of Commerce in Mexico
Maquiladora Newsletter, México, D.F. (various issues, 1982-86).
- Carrillo, Jorge
1986 "Conflictos laborales en la industria maquiladora de exportación," Comercio Exterior, 36 (Num I): 46-57.
- Clement, Norris C., comp.
1986 Exploring the Mexican In-Bond/Maquiladora Option in Baja California: A Resource Guide. San Diego: Institute for Regional Studies of the Californias, San Diego State University, and San Diego Economic Development Corporation.
- Culley, Harriet, editor.
1986 "Textile Import Control Program," GIST (March) Washington, D.C.: Bureau of Public Affairs, Department of State.
- El Colegio de la Frontera Norte
1986 "Third Annual Socio-Economic Survey of the Border: October, 1985." Tijuana, Baja California, Mexico.
- Friend, Joseph H., and David B. Guralnik
1977 Webster's New World Dictionary: College Edition, Cleveland and New York: The World Publishing Company.
- George, Edward Y.
1986 "Impact of the Maquilas on Manpower Development and Economic Growth on the U.S./Mexico Border", Paper presented at North American Economics and Finance Association (July) Montreal, Quebec, Canada.
- Grunwald, Joseph, and Kenneth Flamm
1985 The Global Factory: Foreign Assembly in International Trade. Washington, D.C.: The Brookings Institution.
- Instituto Nacional de Estadística, Geografía e Informática
1985 "Estadística de la industria maquiladora de exportación, Octubre, 1985." México, D.F.: Dirección General de Informática.
- Journal of the Flagstaff Institute
1986 Manufacturing in Mexicali: The In-Bond or Maquiladora Industry Handbook, 8th ed., Mexicali. The Industrial Development Commission of Mexicali.

- Ladman, Jerry R., and Mark D. Paulson
 1979 Economic Impact of the Mexican BIP: Agua Prieta, Sonora. Tempe, Arizona: Arizona State University, Center for Latin American Studies.
- Mitchell, William L.
 1986 "Economic Impact of Maquila Industry in Juarez, Mexico on El Paso, Texas and Other Sections of the United States for 1985." Ciudad Juárez: Grupo Bermudez Industrial Parks.
- Nibbe, Don, editor
 1985-86 Twin Plant News. El Paso, Texas (various issues).
- Rivas F., Sergio
 1985 "La industria maquiladora en México: realidades y falacias." Comercio Exterior, 35 (Num. 11): 1071-84.
- Stoddard, Ellwyn R.
 1985 "Maquila Operations in Mexico's Northern Region: A Scientific Reassessment of Mexico's Frontier Economic Development." El Paso: Center for Inter-American and Border Studies, University of Texas at El Paso. Pre-publication draft.
- Turner, Roger
 1983 "Mexico Turns to Its In-Bond Industry as A Means of Generating Exchange." Business America (Nov. 28): 27-33.
- 1984 "Mexico's In Bond Industry Continues Its Dynamic Growth". Business America (Nov. 26): 26-30.

QUESTIONNAIRE FOR U.S. PARENT CORPORATIONS WITH MAQUILADORAS IN BAJA CALIFORNIA

- A. Your name: _____
- B. Your position: _____
- C. Name of U.S. parent corporation: _____
- D. Name of U.S. subsidiary: _____
- E. Your address: _____

- F. Your telephone: (____) _____
- G. Location of company in Mexico (nearest city): _____
- H. What is the approximate total number of employees in your U.S. organization, both here and elsewhere?
_____ number
- I. What is the approximate total number of employees in your Mexican facilities?
_____ number
- J. Description of product(s) processed or assembled in Mexico:
- K. Please indicate the (3 or 4 digit) SIC (Standard Industrial Classification) Code(s) of your product(s):

If you do not know the code(s), please select from the partial list below:

- | | |
|-----|---|
| 231 | Men's and Boy's Suits and Coats |
| 232 | Men's and Boy's Furnishings |
| 233 | Women's and Misses' Outerwear |
| 243 | Millwork, Plywood & Structural Members |
| 244 | Wood Containers |
| 251 | Household Furniture |
| 252 | Office Furniture |
| 311 | Leather Tanning and Finishing |
| 319 | Leather Goods |
| 346 | Metal Forgings and Tappings |
| 349 | Miscellaneous Fabricated Metal Products |
| 351 | Engines and Turbines |
| 353 | Construction and Related Machinery |
| 363 | Household Appliances |
| 367 | Electronic Components and Accessories |
| 371 | Motor Vehicles and Equipment |
| 374 | Railroad Equipment |
| 384 | Medical Instruments and Supplies |
| 394 | Toys and Sporting Goods |

L. How many of each of the following types of production facilities does your company have in Mexico?

1. _____ Owned and operated totally by parent company
2. _____ Sub-contract (bid-to-print)
3. _____ Shelter operation
4. _____ Other (please describe):

M. How many years has your company had production facilities in Mexico?

_____ number of years
_____ if less than one year, how many months.

N. Has your company operated another Mexican production facility in the past?

1. _____ No
_____ Yes
2. If yes, briefly explain: _____

O. When making the decision to locate in Mexico, what other countries did your firm consider for "offshore" production? Place a "2" next to any second choice country(ies), and a "3" next to any third choice country(ies) in the list below:

- | | |
|----------------------------------|--|
| 1. _____ Hong Kong | 8. _____ Scotland |
| 2. _____ Indonesia | 9. _____ Singapore |
| 3. _____ Ireland (Eire) | 10. _____ Spain |
| 4. _____ Malaysia | 11. _____ South Korea |
| 5. _____ Northern Ireland (U.K.) | 12. _____ Taiwan |
| 6. _____ Philippines | 13. _____ One of the Caribbean countries |
| 7. _____ Puerto Rico | _____ Please specify: _____ |
| | 14. _____ OTHER |
| | _____ Please specify: _____ |

P. When making the decision to locate in Mexico, how did Mexico compare to your second choice country(ies) on the factors listed below?

- | | |
|----|---|
| +3 | a most important positive factor in favor of Mexico |
| +2 | an important positive factor in favor of Mexico |
| +1 | a slightly important positive factor in favor of Mexico |
| 0 | a factor of no importance |
| -1 | a slightly important negative factor against Mexico |
| -2 | an important negative factor against Mexico |
| -3 | a most important negative factor against Mexico |

You may also supply other reasons below.

PLEASE CIRCLE ONE NUMBER FOR EACH REASON BELOW:

- | | | | | | | | | |
|-----|----|----|----|---|----|----|----|--|
| 1. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Availability of labor |
| 2. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Cost of labor |
| 3. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Productivity of labor |
| 4. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Stability of government |
| 5. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Favorable business climate |
| 6. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Transportation costs |
| 7. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Cost of energy |
| 8. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Opportunity for control of day-to-day operations |
| 9. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Quality of life in California |
| 10. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Militancy of organized labor |
| 11. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Environmental regulations |
| 12. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | OTHER--Please specify: _____ |

Q. What other sites in Mexico outside Baja California did your firm consider? Please place a "2" next to any second choice Mexican cities outside Baja California listed below:

1. _____ Agua Prieta
2. _____ Ciudad Acuna
3. _____ Ciudad Juarez
4. _____ Matamoros
5. _____ Nogales
6. _____ Nuevo Laredo
7. _____ Piedras Negras
8. _____ Reynosa
9. OTHER--Please specify: _____

R. When making the decision to locate in Baja California, how did Baja California compare with your second choice site(s) on the factors listed below, as opposed to a second choice location? Please rate each of the following factors on a scale as follows:

- +3 a most important positive factor in favor of Baja California
- +2 an important positive factor in favor of Baja California
- +1 a slightly important positive factor in favor of Baja California
- 0 a factor of no importance
- 1 a slightly important negative factor against Baja California
- 2 an important negative factor against Baja California
- 3 a most important negative factor against Mexico

You may also supply other reasons below.

PLEASE CIRCLE ONE NUMBER FOR EACH REASON BELOW:

- | | | | | | | | | |
|-----|----|----|----|---|----|----|----|--|
| 1. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Availability of labor |
| 2. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Cost of labor |
| 3. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Productivity of labor |
| 4. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Favorable business climate |
| 5. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Transportation costs |
| 6. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Opportunity for control of day-to-day operations |
| 7. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Availability of water |
| 8. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Cost of energy |
| 9. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Availability of various types of sites |
| 10. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Cost of sites |
| 11. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Quality of life in California |
| 12. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Militancy of organized labor |
| 13. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Environmental regulations |
| 14. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | OTHER--Please specify: _____ |

EXPENDITURES IN CALIFORNIA:

S. Has your firm established any new facilities on the U.S. side of the border in order to service the Mexican facility?

1. _____ NO
2. _____ YES Please describe the new facilities as follows:
 Type of facility: _____
 (such as a warehouse, office, subassembly operation or R & D facility)
 Location (nearest city): _____
 Number of employees: _____
 Approximate annual cost of facilities: \$U.S. _____

- T. Why were these new facilities necessary? _____
- U. How many of your employees who work in your Mexican facilities reside in California? _____
- V. Please estimate the company's approximate annual expenditures in California associated with the Mexican production facilities (including equipment, repairs, supplies, components, and all costs associated with visits to your Mexican plant, such as car rentals, hotel rooms, meals, and entertainment, etc.): \$U.S. _____

If you cannot make an estimate, please choose one of the categories below: (all amounts below shown in \$U.S.):

- _____ Less than \$10,000
- _____ \$10,000-49,000
- _____ \$50,000-99,000
- _____ \$100,000-199,000
- _____ \$200,000-399,000
- _____ \$400,000-599,000
- _____ \$600,000-799,000
- _____ \$800,000-1,000,000
- _____ Over \$1,000,000

- W. Please rate the following major problems on a scale from "1" (least important) to "5" (most important) based on your firm's experience with Mexican facilities:

PLEASE CIRCLE ONE NUMBER FOR EACH OF THE FOLLOWING PROBLEMS:

	LEAST				MOST		
	IMP.				IMP.		
1.	1	2	3	4	5		Availability of suitable labor
2.	1	2	3	4	5		Employee turnover
3.	1	2	3	4	5		Transportation for workers to and from the plant
4.	1	2	3	4	5		Delays in transporting finished products into the U.S. due to waiting at the border crossing
5.	1	2	3	4	5		Cultural differences
6.	1	2	3	4	5		Deficient communications technology
7.	1	2	3	4	5		Militancy of organized labor
8.	1	2	3	4	5		OTHER--Please specify: _____

- X. Please circle the phrase below that best describes your firm's overall experience with Mexican production facilities.

"In utilizing maquiladoras, our firm has encountered:"

1	2	3	4	5	6
Very Serious Problems	Serious Problems	Some Problems	Few Problems	Very Few Problems	No Problems

Y. Does your company have plans to expand your operations in California or Mexico?

1. NO

2. YES Please check the type of anticipated changes below for both California and Mexico:

CAL		MEX		
3. <input type="checkbox"/>		4. <input type="checkbox"/>		Adding more employees
5. <input type="checkbox"/>		6. <input type="checkbox"/>		Enlarging the facility
7. <input type="checkbox"/>		8. <input type="checkbox"/>		Adding or improving equipment
9. <input type="checkbox"/>		10. <input type="checkbox"/>		Utilizing more Mexican components or inputs
11. <input type="checkbox"/>		12. <input type="checkbox"/>		Creating sales in the Mexican Market
13. <input type="checkbox"/>		14. <input type="checkbox"/>		OTHER--Please specify: _____

Z. What percentage of the value of your finished product, excluding labor, is of Mexican origin?

_____ % If less than 5%, please indicate why: _____

AA. Did the use of Mexican production facilities result in a net decrease in the total number of your U.S. employees?

1. YES

2. NO

BB. Please make two comments that best describe how your Mexican facilities have worked out for your company?

1.

2.

CC. Would you like to receive a copy of our report?

1. YES

2. NO

DD. Would you or another company executive consider participating in a more in-depth survey on the future of "maquiladoras" or in-bond production in Mexico?

1. NO

2. Yes, name of contact person: _____

Title: _____

Telephone: (_____) _____

THANK YOU VERY MUCH FOR YOUR COOPERATION.

QUESTIONNAIRE FOR SHELTER/SUB-CONTRACTING CORPORATIONS
WITH PLANTS IN BAJA CALIFORNIA

Your name: _____

Your position: _____

Name of corporation: _____

Your address: _____

Your telephone: (____) _____

A. How many client firms do you have now? _____

B. Since your firm's establishment approximately how many firms have discontinued working with you? _____
What were their most common reasons for discontinuing?

C. How many of your current clients sent back the questionnaires we asked your firm to distribute? _____

How many were sent out? _____

D. Could you tell us what products the missing firms assemble or process in Mexico (SIC codes)?

Firm 1 _____
Firm 2 _____
Firm 3 _____
Firm 4 _____

Firm 5 _____
Firm 6 _____
Firm 7 _____
Firm 8 _____

Firm 9 _____
Firm 10 _____
Firm 11 _____
Firm 12 _____

E. U.S. location(s) of those firms which did not respond?

Firm 1 _____
Firm 2 _____
Firm 3 _____
Firm 4 _____

Firm 5 _____
Firm 6 _____
Firm 7 _____
Firm 8 _____

Firm 9 _____
Firm 10 _____
Firm 11 _____
Firm 12 _____

F. How long have these firm(s) been operating in Mexico?

Firm 1 _____
Firm 2 _____
Firm 3 _____
Firm 4 _____

Firm 5 _____
Firm 6 _____
Firm 7 _____
Firm 8 _____

Firm 9 _____
Firm 10 _____
Firm 11 _____
Firm 12 _____

G. Do any of these firms have special facilities on the U.S. side of the border in order to service their Mexican operations?

Yes _____ No _____ How many? _____

If so, give some details (their use, expenditures, employees).

Firm 1 _____
Firm 2 _____
Firm 3 _____
Firm 4 _____

Firm 5 _____
Firm 6 _____
Firm 7 _____
Firm 8 _____

Firm 9 _____
Firm 10 _____
Firm 11 _____
Firm 12 _____

H. In your opinion what are the 2 or 3 countries most commonly considered alternatives to Mexico by your clients?

I. Do certain countries tend to specialize in particular product lines? _____

If so, explain: _____

J. In making the decision to locate in MEXICO, how do you think Mexico compares to those countries in terms of the factors listed below? Use the following scale to rate them:

- +3 a most important positive factor in favor of Mexico
- +2 an important positive factor in favor of Mexico
- +1 a slightly important positive factor in favor on Mexico
- 0 a factor of no importance
- 1 a slightly important negative factor against Mexico
- 2 an important negative factor against Mexico
- 3 a most important negative factor against Mexico

PLEASE CIRCLE ONE NUMBER FOR EACH REASON BELOW:

- | | | | | | | | | |
|-----|----|----|----|---|----|----|----|--|
| 1. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Availability of labor |
| 2. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Cost of labor |
| 3. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Productivity of labor |
| 4. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Stability of government |
| 5. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Business climate |
| 6. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Transportation costs |
| 7. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Cost of energy |
| 8. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Opportunity for control of day-to-day operations |
| 9. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Quality of life in California |
| 10. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Militancy of organized labor |
| 11. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Environmental regulations |
| 12. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | OTHER--Please specify: _____ |

K. In your opinion what are the 2 or 3 sites in Mexico outside of Baja California that your clients most commonly consider?

L. In making the decision to locate in BAJA CALIFORNIA, how do you think Baja California compares to other Mexican locations those countries in terms of the factors listed below?

- +3 a most important positive factor in favor of Baja California
- +2 an important positive factor in favor of Baja California
- +1 a slightly important positive factor in favor of Baja California
- 0 a factor of no importance
- 1 a slightly important negative factor against Baja California
- 2 an important negative factor against Baja California
- 3 a most important negative factor against Mexico

PLEASE CIRCLE ONE NUMBER FOR EACH REASON BELOW:

- | | | | | | | | | |
|-----|----|----|----|---|----|----|----|--|
| 1. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Availability of labor |
| 2. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Cost of labor |
| 3. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Productivity of labor |
| 4. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Stability of government |
| 5. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Business climate |
| 6. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Transportation costs |
| 7. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Cost of energy |
| 8. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Opportunity for control of day-to-day operations |
| 9. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Quality of life in California |
| 10. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Militancy of organized labor |
| 11. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | Environmental regulations |
| 12. | +3 | +2 | +1 | 0 | -1 | -2 | -3 | OTHER--Please specify: _____ |

EXPENDITURES IN CALIFORNIA

M. Please describe your facilities in California.

Type of facility: _____

Location: _____ Number of employees: _____

N. Please describe your facilities in Mexico.

Number of plants: _____ Size (total sq. footage) _____

Location: _____ Number of employees: _____

O. Are there any employees who work in your Mexican facilities who reside in California? _____

If so, how many? _____

Approximate annual cost of your California facilities (in \$U.S. for 1985) _____

P. Are there any other expenditures in California associated with your Mexican production facilities (including equipment, repairs, supplies, components, taxes, and all costs associated with visits to your Mexican plants, such as care rentals, hotel rooms, meals, and entertainment, etc.)?

If so, please estimate them for the year 1985: \$U.S. _____

Q. Please rate the following major problems on a scale from "1" (least important) to "5" (most important) based on your firm's experience with Mexican facilities:

PLEASE CIRCLE ONE NUMBER FOR EACH OF THE FOLLOWING PROBLEMS:

	LEAST				MOST		
	IMP.				IMP.		
1.	1	2	3	4	5		Availability of suitable labor
2.	1	2	3	4	5		Employee turnover
3.	1	2	3	4	5		Transportation for workers to and from the plant
4.	1	2	3	4	5		Delays in transporting finished products into the U.S. due to waiting at the border crossing
5.	1	2	3	4	5		Cultural differences--Please specify: _____
6.	1	2	3	4	5		Deficient communications technology
7.	1	2	3	4	5		Militancy of organized labor
8.	1	2	3	4	5		OTHER--Please specify: _____

R. Overall, what percentage of the value of the products produced in your plants, excluding labor, is of Mexican origin?

_____ % If less than 5%, please indicate why: _____

S. Approximately what percentage of your sales are in Mexico? _____ %

T. Approximately what percent of your firm's products come back into the U.S. under article 806.30 of the U.S.T.C.? _____ under 807.00? _____

under provisions of the G.S.P.? _____

How does that compare with 5 years ago? 806.30? _____ under 807.00? _____

under provisions of the G.S.P.? _____

Do you think that "mix" will change in the future? Yes _____ No _____ If so, how? _____

U. Approximately what percentage of the value of inputs in your plants is currently sourced from Pacific Rim (Asian) countries? _____ Do you see this changing in the future? Yes _____ No _____ If so, explain how. _____

V. Does your company plan to expand its operations in California or Mexico within the next year?

1. _____ NO

2. _____ YES Please check the type of anticipated changes below for both California and Mexico:

	CAL	MEX	
3.	_____	4. _____	Adding more employees
5.	_____	6. _____	Enlarging the facility
7.	_____	8. _____	Adding or improving equipment
9.	_____	10. _____	Utilizing more Mexican components or other imports
11.	_____	12. _____	Creating sales in the Mexican market
13.	_____	14. _____	OTHER--Please specify: _____
