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U.S.-MEXICO MERCHANDISE TRADE AND
THE MAQUILADORA INDUSTRY

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William G. Moller, Jr.
The University of Michigan

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The University of Michigan
School of Business Administration
Ann Arbor, Michigan 48109-1234

The seeming difference between U.S. and Mexican merchandise trade data (exports and imports) essentially disappears when Maquiladora industry trade is recognized. Maquiladora industry trade is an important part of trade between the two countries. Maquiladora value-added by all industries falls into the range of 22 to 25 percent of export sales. The value-added ratios, however, vary by industry and in terms of their trends.

U.S.-Mexico Merchandise Trade and the Maquiladora Industry

The recent commitments by Mexico, Canada and the United States to enter into negotiations for the creation of a North American Free Trade Area have generated a great amount of interest in the extent and characteristics of merchandise trade between the three countries. This analytical note focuses only on the United States-Mexican trading relationship and seeks to address several questions:

1. The comparability of U.S. and Mexico merchandise trade data.
2. The Maquiladora Industry and its role in U.S.-Mexico trade.
3. Some economic characteristics of the Maquiladora Industry and their changes over time.

The Seeming Trade Data Discrepancy

A simple comparison of the U.S. government's presentation of export and import trade with Mexico and that of the Mexican government's presentation shows significant differences (Table 1). For example, the U.S. statement of 1989 exports to Mexico was \$24.671 billion whereas the Mexican statement of 1989 imports from the U.S. was \$16.801 billion thereby suggesting a difference of \$7.870 billion. In a similar fashion, U.S. 1989 imports from

Table 1
 U.S. - Mexico Merchandise Trade, 1985-89
 millions of U.S. dollars

Trade Category	1985	1986	1987	1988	1989
<u>U.S.-sourced data¹</u>					
U.S. exports to Mexico	13,386	12,310	14,558	20,582	24,671
U.S. imports from Mexico	<u>19,104</u>	<u>17,664</u>	<u>20,289</u>	<u>23,312</u>	<u>27,009</u>
Balance	-5,718	-5,354	-5,731	-3,054	-2,338
<u>Mexico-sourced data²</u>					
Mexican imports from U.S.	8,954	7,574	8,100	12,465	16,801
Mexican exports to U.S.	<u>13,341</u>	<u>10,424</u>	<u>12,606</u>	<u>12,534</u>	<u>15,675</u>
Balance	4,387	2,850	4,506	69	-1,126

¹S.C.B. June 1990, Table 2

²IMF, Direction of Trade Statistics

Mexico were stated as \$27.009 billion and Mexican 1989 exports to the U.S. were stated as \$15.675 billion which suggest a difference of \$11.334 billion. Comparable differences exist for the reports of trade for the years 1985-1988.

Mack Ott posed the question about the accuracy of U.S. reports on export trade.¹ The study compared official reports of U.S. exports to other countries and other-country reports of imports from the United States. These comparisons of U.S. and other country data revealed that only 16 developed countries provided import data of a perceived validity which would permit an analysis of the accuracy of U.S. export data. His analysis indicated that U.S. reports of exports were understated.

The Ott study further stated that "the reported level of world exports to Mexico exceeded by 28.5 percent the level of FAS imports from the world by Mexico." On the surface, then, the differences noted between U.S. and Mexico trade data appear so large to suggest non-comparability. Ott further added in a footnote that "(t)he full discrepancy between the U.S. and Mexican data is further complicated by the U.S. Commerce Department's rough estimate that exports to Mexico are underreported by about 10 percent."² It is not the intent of this analytical note to retrace Ott's research path. The following parts of this paper will indicate, however, that the seemingly large differences in the trade data can be almost

¹Mack Ott, "Have U.S. Exports Been Larger Than Reported?" Federal Reserve Bank of St. Louis, September-October, 1988, pp. 3-23.

²Ibid., p. 17.

completely accounted for by data reporting rules which differ between the two countries.

Trade Data and Maquiladora Industry Trade

U.S. merchandise trade data count all reported exports³ to Mexico whether bound for domestic consumption (in Mexico) or the Maquiladora industries and imports from all sources in Mexico.⁴ In contrast, the Mexican trade data exclude Maquiladora imports and exports from trade reports because of their temporary nature: imported, processed and exported. The trade flows and the points at which they are recognized are illustrated by Figure 1. In an ideal world, any researcher would prefer direct measures of U.S. exports to and imports from the Maquiladora industries. Unfortunately, the utopian world has not been obtained and one must look elsewhere for information.

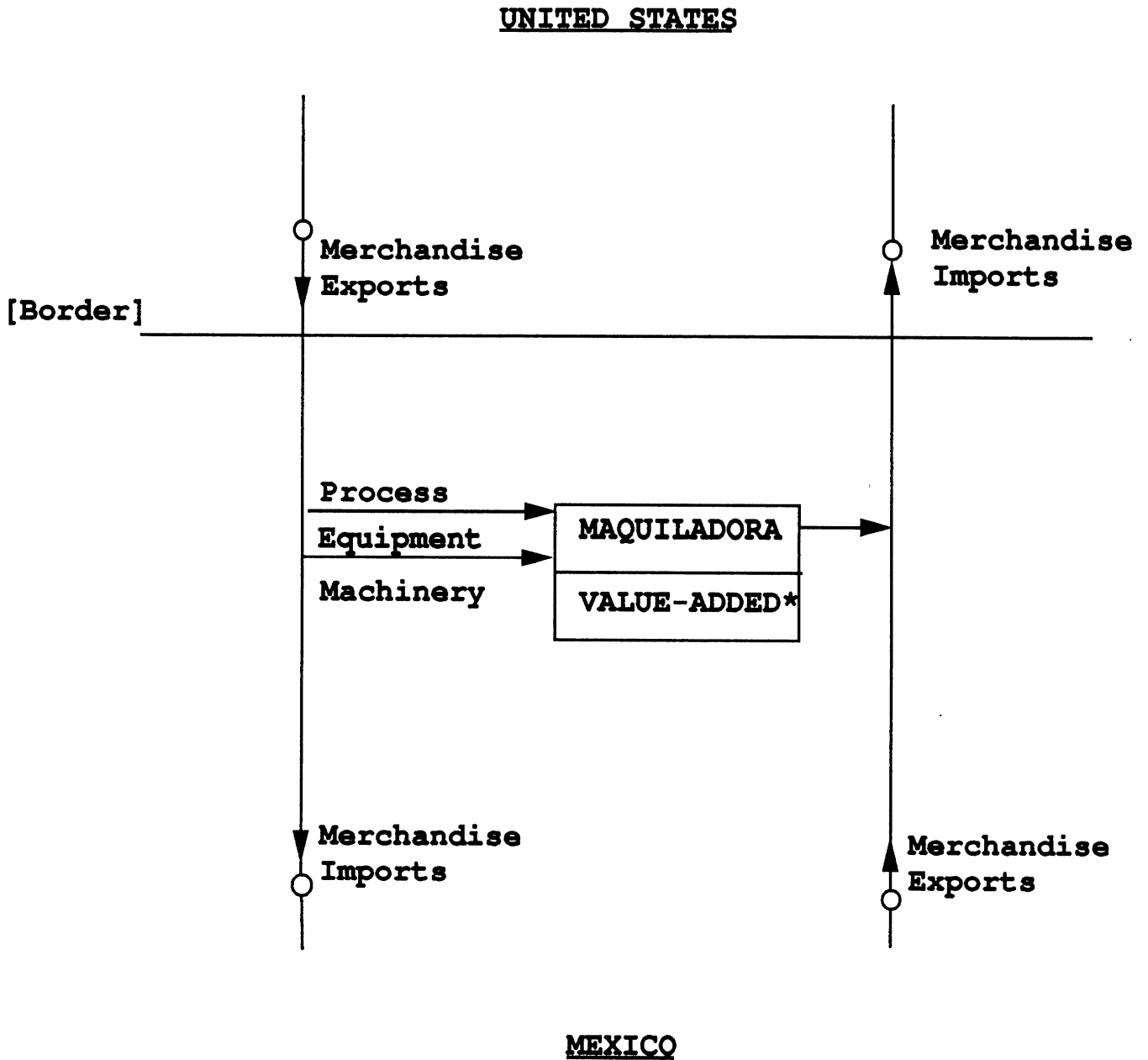
The following sections of this paper will show that there is a measure of U.S. imports from Maquiladora industries, no clear measure of U.S. exports to Maquiladora industries, and a measure of the value-added created by the Maquiladoras. Because there are two measures of three, the third measure (U.S. exports to Maquiladoras) can be estimated and the merchandise trade data of both countries can be compared.

³Again, recognizing that U.S. exports may not be completely reported. See Ott.

⁴Merchandise imports from Maquiladora Industries receive special tariff treatment and special analyses make it possible to estimate the extent of these imports.

FIGURE 1

Bi-Lateral Model of Merchandise Trade Flows
and Maquiladora Industries



○ Merchandise Trade Reporting Point

* Value-Added Reported as a Service Export

Table 2 presents trade and other data which allow estimates of both inter country and Maquiladora trade.

1. U.S. import data. An agreement between the U.S. and Mexico provides that U.S. exports to Maquiladora industries will be dutied only to the extent of value-added in Mexico when those original exports are reimported to the United States. These reexports to the U.S. fall into harmonized schedule (HS) categories of 9802.00.60 and 9802.00.80 and are separately reported in U.S. import trade data (Table 3 and Appendix A). Assuming that such reexports are essentially only Maquiladora products, a net U.S. import figure can be calculated which is in close agreement with the Mexican government's report of its exports to the United States.
2. Maquiladora Industry Value-Added. The Mexican government (SECOFI) closely monitors the operations of the Maquiladora Industries and provides reports of value-added by those industries. If we assume that the Maquiladora Industries are completely a U.S.-Mexico phenomenon (but see below) then Maquiladora exports to the U.S. (U.S. imports falling into the special HS classification) less value-added activities of the Maquiladoras should provide an estimate of U.S. merchandise exports to the Maquiladoras.
3. U.S. export data. Total U.S. exports to Mexico, when reduced by the estimates of U.S. exports to the

Table 2
U.S. - Mexican Merchandise Trade, Estimated Maquiladora
Merchandise Trade, and Trade Data Comparisons, 1985-89
millions of U.S. dollars

Category	1985	1986	1987	1988	1989
U.S. Imports ¹	19,104	17,664	20,289	23,312	27,009
Imports from Maquiladora (9802.00.60 & 0.80) ²	5,567.6	6,456.6	8,688.7	10,785.5	11,947.8
Net U.S. imports	<u>13,536.4</u>	<u>11,207.4</u>	<u>11,600.3</u>	<u>12,526.5</u>	<u>15,151.2</u>
Mexican exports ³	13,341	10,424	12,606	12,534	15,675
Diff: U.S. M - Mex. X	195.4	783.4	-1,005.7	-7.5	-523.8
Maquiladora Industry Exports and Imports; Estimated Value					
U.S. Imports from Maquiladora ²	5,567.6	6,456.6	8,688.7	10,785.5	11,947.8
Maquiladora Value-Added ⁴	<u>1,267.2</u>	<u>1,294.5</u>	<u>1,596.1</u>	<u>2,337.4</u>	<u>3,048.5</u>
Estimated U.S. Exports to Maquiladora	4,300.4	5,162.1	7,092.6	8,448.1	8,899.3
U.S. Exports ¹	13,386	12,310	14,558	20,582	24,671
Estimated Exports to Maquiladora ⁵	4,300.4	5,162.1	7,092.6	8,448.1	8,899.3
Net U.S. Exports	<u>9,085.6</u>	<u>7,147.9</u>	<u>7,465.4</u>	<u>12,133.9</u>	<u>15,771.7</u>
Mexico Imports ³	8,954	7,574	8,100	12,465	16,801
Diff: Mex. M - U.S. X	-131.6	426.1	634.6	331.1	1,029.3

¹S.C.B. June 1990, Table 2

²U.S.I.T.C. Review of Trade and Investment Liberalization Measures by Mexico and Prospects for Future United States-Mexico Relations, Phase II: Summary of Views ...

³Investigation No. 332-282), Appendix D, Table D-1.

⁴IMF, Direction of Trade Statistics

⁵SECOFI Committee for the Promotion of Investment in Mexico, An Overview of the Maquiladora Industry in Mexico (October 1990); Table: Value Added by the Maquiladora Industry, p. 11.

⁶From Previous Calculation.

Table 3

U.S. Imports from Mexico entered under HTS
Items 9802.00.60 and 9802.00.80, 1985-89
millions of dollars

	1985	1986	1987	1988	1989
HTS 9802.00.60	30.3	89.9	112.3	131.0	181.1
HTS 9802.00.80	<u>5,536.7</u>	<u>6,366.7</u>	<u>8,576.4</u>	<u>10,653.5</u>	<u>11,766.7</u>
Total	5,567.0	6,456.6	8,688.7	10,784.5	11,947.8

Source: Compiled from official statistics of the U.S. Department of Commerce

Maquiladora, provide an estimate of net exports to Mexico for non-Maquiladora consumption. Comparison of the U.S. net exports to Mexico with the Mexican reports of imports from the U.S. reveal close agreements between both sets of data.

At this juncture, it seems appropriate to observe that U.S. and Mexico data describing the bilateral trading relationship are in close agreement when adjustments are made for the activities of the Maquiladora Industries .

Some Caveats

The foregoing analysis does not recognize Ott's comment that U.S. merchandise exports may be understated because not all U.S. exports are documented at the U.S. customs point. If such is the case, there continues to be an undefined gap between U.S. exports and (adjusted) Mexican imports.

Maquiladora industries are allowed duty-free imports of process inputs and equipment/machinery which are required by the Maquiladora industry. The analytical process used in comparing U.S. and Mexican trade data started with the estimate of U.S. imports from Maquiladoras, and adjusted this value with the statement of value-added created by the Maquiladoras to obtain an estimate of U.S. exports of process materials to the Maquiladoras. Any U.S. exports of equipment/machinery to the Maquiladoras would be outside this calculation. Further, Mexican equipment/machinery imports to the Maquiladoras would not be counted in the Mexican import data. The net result is that U.S.

equipment/machinery exports to the Maquiladoras can only be defined by a direct measure of this trade flow.

Finally, the analytical process presumed that the Maquiladora industry phenomenon is a strict bilateral relationship between the two countries. The existence of Maquiladora industry imports from third countries or the directing of Maquiladora outputs to third countries or to the domestic Mexican economy will affect the calculated values of U.S. exports to the Maquiladoras.

In summary, the foregoing analyses brings U.S. and Mexican trade data to a close proximity, but it leaves unanswered the question whether there is an additional gap in the data caused by the lack of a direct report on U.S. equipment/machinery exports (Mexican imports) to the Maquiladora industries.

The Maquiladora Industry

The agreement between the U.S. and Mexico provide that only the value-added created by the Maquiladora industry would be subject to tariffs for U.S. exports which made the return trip across the common border. Two broad categories of dutiable trade are defined: (1) articles of metal manufactured in the U.S... exported for further processing...and returned to the U.S. for further processing (HTS 9802.00.60) and (2) articles fabricated in the U.S. which are (only) assembled without further fabrication and returned to the U.S. (HTS 9802.00.80) (Appendix A). Table 3 presents data describing the extent of these

reimported U.S. exports. Both import categories show significant increases over the five trade year period, but most of this special trade (over 98 percent by value in 1989) falls into the assembly category. Further, the extent of this trade is very large relative to the total trade between the two countries: approximately 40.5 percent of U.S. imports and 39.6 percent of U.S. exports over the five year's of trade.

The Maquiladora industries continue to grow at a rapid rate and by 1989 cumulative investment in Mexico was \$26.5 billion⁵ and total employment was 437.064.⁶

Table 4 presents data describing Maquiladora industry exports and value-added (total and by selected industry segments). Overall, Maquiladora industry exports increased by 144.8 percent from 1985 to 1989 and value-added increased by 140.6 percent. The value-added relationship to export value ranged between 22.5 and 24.9 percent for the 1985 to 1989 but with no discernable trend in the relationship. Other sources of information indicate that employment costs (sueldos, salarios y prestaciones) represented about one-half of total value-added.⁷

The four major industrial sectors among the Maquiladora industries are electrical and electronic materials and accessories, transportation equipment and supplies, electrical and electronic machinery and other manufacturing. Other

⁵SECOFI, op.cit., Table on p. 13

⁶SECOFI, op.cit., Table on p.7

⁷Anuario Estadísticas de los Estados Unidos Mexicanos 1989, Cradro IV.2.15, pp. 627-628.

Table 4
Maquiladora Industry Exports and Value Added
millions of U.S. dollars

Category	1985	1986	1987	1988	1989	Change 89 + 85 %
Total	5,093.3 1,267.2	5,645.9 1,294.5	7,105.0 1,596.1	10,145.7 2,337.4	12,470.1 3,048.5	144.8 140.6
Exports	.249	.229	.225	.230	.244	
Value-Added	50.4 10.3	43.4 10.9	44.0 15.7	56.5 23.3	70.6 31.7	40.1 207.8
V-A + Exports	.204	.251	.357	.412	.449	
Textiles, Apparel	378.6 87.2	380.5 83.5	409.5 101.4	457.9 127.7	567.8 183.6	50.0 110.6
V-A + Exports	.230	.220	.225	.230	.244	
Shoes, Leather Goods	78.1 20.9	36.6 12.8	77.6 19.5	101.5 28.3	159.5 46.1	104.2 120.6
V-A + Exports	.268	.350	.251	.279	.289	
Furniture, Wood & Metal*	110.3 49.9	145.5 33.0	255.2 79.4	414.7 126.5	572.7 156.3	419.2 213.2
V-A + Exports	.452	.227	.311	.305	.273	
Chemical Products	2.2 1.8	5.5 4.4	14.0 10.0	38.3 18.3	55.2 22.4	2409.1 1144.4
V-A + Exports	.818	.800	.714	.478	.406	
Transport Equipment	1,438.4 329.5	1,621.8 307.9	2,023.2 381.6	2,849.9 596.3	3,376.8 724.2	134.8 119.8
V-A + Exports	.229	.190	.189	.209	.214	

Table 4 (continued)

Equipment & Tools, Non- Electric	Exports	61.0	73.0	115.6	168.5	183.6	201.0
	Value-Added	20.3	24.9	29.2	37.3	46.5	129.1
	V-A + Exports	.333	.341	.253	.221	.253	
Electrical, Electronic Machinery	Exports	1,151.6	1,275.1	1,208.5	1,694.4	2,094.5	81.9
	Value-Added	240.5	289.5	283.4	382.1	476.3	98.0
	V-A + Exports	.209	.227	.235	.226	.227	
Electrical, Electronic Materials & Accessories	Exports	1,246.8	1,397.2	1,843.7	2,876.6	3,483.7	179.4
	Value-Added	326.9	315.1	393.2	585.8	765.4	134.1
	V-A + Exports	.262	.226	.213	.204	.212	
Toys & Sporting Goods	Exports	164.8	134.9	152.0	289.5	334.8	103.2
	Value-Added	39.4	40.7	44.3	66.4	99.9	153.6
	V-A + Exports	.239	.302	.291	.229	.298	
Other Manufacturing	Exports	335.5	449.9	851.1	1,085.7	1,367.0	307.5
	Value-Added	88.1	117.0	191.5	282.9	407.4	362.4
	V-A + Exports	.263	.260	.225	.261	.298	
Services	Exports	75.1	82.6	110.7	112.0	203.3	170.7
	Value-Added	52.4	48.8	50.9	62.7	88.1	68.1
	V-A + Exports	.698	.591	.460.	.560	.433	

Source: SECOFI Committee for the Promotion of Investment in Mexico, "An Overview of the Maquiladora Industry in Mexico", Tables on pp. 11 and 12

*Muebles de Madera y Metal mistranslated as wooden, leather goods in original document.

industrial sectors are relatively small, but are showing larger growth patterns: chemical products and furniture of wood and metal. Most export-to-value add ratios are in the range of 20 to 30 percent, but the food processing, chemicals, and services sectors are marked by positive, positive and negative changes, respectively.

SECOFI's Committee for the Promotion of Investment in Mexico is forecasting continuing increases in investment, employment and exporting for the Maquiladora industries. Insofar as the increase in exports is directed at the U.S., there will be a comparable increase in U.S. exports to the Maquiladora industries.

Changes in the Maquiladora Industries Program

The government of Mexico has been pursuing a multiplicity of economic liberalization programs under the Presidency of Carlos Salinas de Gortari. The Economist Intelligence Unit reported that among the government programs:

"...is the law governing Maquiladoras passed in December [1989]. The aim of the legislation is both to encourage the continued expansion of the in-bond industry and to increase the benefits it can offer to the mainstream of the Mexican economy. The principal benefit the industry has had for the domestic economy so far is the generation of employment: it absorbs very little in the way of Mexican goods and does not offer much in the way of technology transfer. So in order to raise the amount of Mexican products used by the

Maquiladoras, the government has decided to exempt their local purchases from V.A.T. This it hopes will raise 'national integration' from 1.7 percent to around 5 percent in 1990-91 and 10 percent eventually. Meanwhile, it is also permitting the Maquiladoras to sell up to 50 percent of their output on the domestic market, is aiming to streamline registration procedures and removing the time limit on in-bond operations. Moreover, temporary imports of computers, telecommunications and similar equipment are being allowed, export procedures are being simplified and credit facilities improved."⁸

The effect of these changes may be quite significant in accelerating the growth of the Maquiladora industries. More importantly, the new laws alter the traditional structure of the institution from one that faced (only) toward the external world to an institution which will have both external and internal postures.

The changes will also introduce additional complexities into the analyses of the role played by the Maquiladora industries in U.S.-Mexico trade patterns. Maquiladora industries move from an essentially bilateral import stance to one that will be multilateral; Maquiladora exports may well move in the same direction (Figure 2). As a result, U.S.-Mexico trade data may become less comparable unless specific merchandise flows are directly identified by source and by destination. The increase

⁸Economist Intelligence Unit: Mexico Country Report No. 1, 1990, p. 12.

in Maquiladora industries participation in Mexico's economy will also have to be well articulated.

APPENDIX A

SCHEDULE OF THE UNITED STATES OF AMERICA

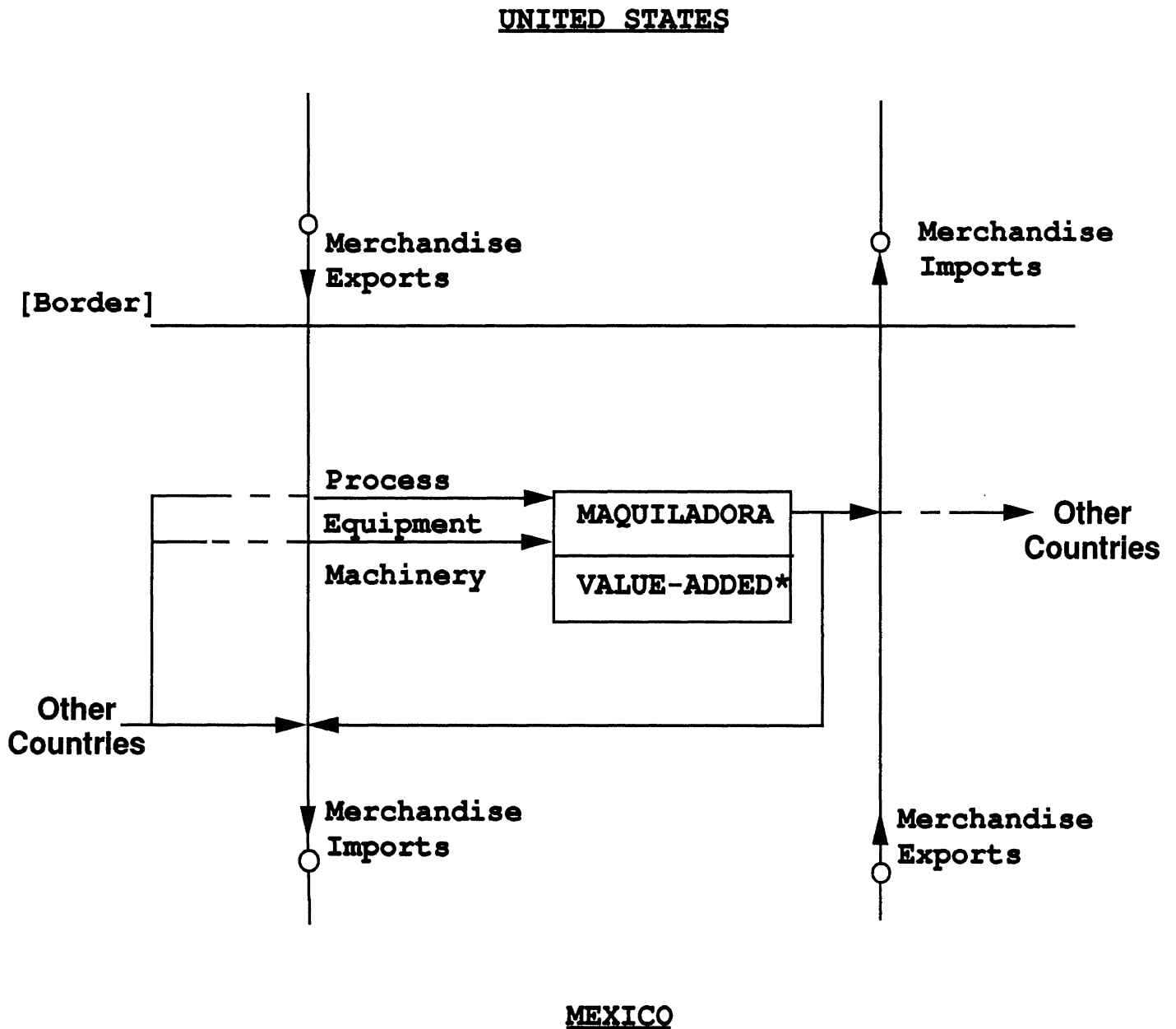
Item	Article Description	Base Rate	Staging Category
9802.00.60	Any article of metal (as defined in U.S. note 3(d) of this subchapter) manufactured in the United States or subjected to a process of manufacture in the United States, if exported for further processing, and if the exported article as processed outside the United States, or the article which results from the processing outside the United States, is returned to the United States for further processing.....	A duty upon the value of such processing outside the United States	<u>1/</u>
9802.00.80	Articles assembled abroad in whole or in part of fabricated components, the product of the United States, which (a) were exported in condition ready for assembly without further fabrication, (b) have not lost their physical identity in such articles by change in form, shape or otherwise, and (c) have not been advanced in value or improved in condition abroad except by being assembled and except by operations incidental to the assembly process such as cleaning, lubricating and painting..	A duty upon the full value of the imported article, less the cost or value of such products of the United States	<u>2/</u>

1/ A duty upon the value of the processing outside the United States shall be applied in accordance with the procedures specified in note 3 of subchapter II, chapter 98, of the Harmonized Tariff Schedule of the United States.

2/ A duty shall be applied in accordance with the procedures specified in note 4 of subchapter II, chapter 98, of the Harmonized Tariff Schedule of the United States.

FIGURE 2

Multi-Lateral Model of Merchandise Trade Flows
and Maquiladora Industries



○ Merchandise Trade Reporting Point

* Value-Added Reported as a Service Export

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