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A NEW LOOK AT OFFSHORE ASSEMBLY: THE INTERNATIONALIZATION OF IN--ETC(U)
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A NEW LOOK AT OFFSHORE ASSEMBLY: THE INTERNATIONALIZATION OF INDUSTRY

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March 1981

This paper was prepared for the Department of State as part of its external research program Views or conclusions contained herein should not be interpreted as representing the official opinion or policy of the Department of State

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FOREWORD

This study derives from a concern about the prospects for developing countries' exports of manufactures in a world in which economic growth of major industrial countries has slowed down and is expected to remain sluggish for the foreseeable future. Although their tariff levels have declined significantly as a result of multilateral trade negotiations, the developed countries have increasingly resorted to new kinds of trade barriers based on "voluntary" quotas and other restraints in order to protect their industries. The question arises, therefore, as to whether the promotion of non-traditional exports from developing countries can be reconciled with the rising pressures to protect economic activities in the industrial countries.

Cooperation between the two sides in sharing the manufacture of products might provide a partial reconciliation by establishing a mutuality of interests. This type of internationalization of industry is based on the complementarities between the factors of production of developing and developed countries, whereby one side furnishes primarily labor services, the other primarily components.[1/]

This trade is not a substitute for either the traditional exchange of primary goods for manufactured products nor for the "non-traditional" exports of products emerging from the newly industrializing countries and their imports of capital goods and technology. Complementary intra-industry trade, rather than being a replacement of, is a relatively new addition to the changing international division of labor.

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1. For a description of the various modes of co-production between developing and developed countries, see Joseph Grunwald, "North-South Intra-Industry Trade: Sharing Industrial Production Between Developing and Developed Countries" in Las Organizaciones Regionales en el Nuevo Orden Internacional, Instituto de Cooperacion Intercontinental, Madrid, 1978, pp. 81-97.

There are benefits and costs on both sides of the co-production relationship. Without attempting to undertake formal benefit-cost analyses, the study tries to evaluate the positive and negative aspects of international production sharing arrangements. The aim is to examine the nature of these activities and to arrive at some conclusions about how they might evolve and affect the future of North-South economic relations.

Four case studies provide specific insights into these relationships. Three country studies afford examinations of a diversity of co-production experiences. The semiconductor study analyzes in detail the factors underlying the internationalization of a major industry.

As part of the project two seminars were organized by UNCTAD and held in Mexico City in July 1979 and August 1980, respectively.[2/] Two Latin American institutions, El Colegio de Mexico of Mexico City and FEDESARROLLO of Bogota, Colombia collaborated on specific aspects of this project. Both contributed preliminary papers to the seminars. In addition, El Colegio de Mexico also acted as host to both seminars. Lic. Victor Urquidi, President of El Colegio de Mexico, provided helpful and detailed comments on a draft of the Mexico case study. Important observations on that country study were also received from Dr. Manuel Martinez del Campo, Dr. Jesus Seade, Lic. Alfonso Mercado and Lic. Francisco Giner de los Rios, senior staff members of El Colegio de Mexico, as well as from Alfredo Gutierrez Kirchner, Minister Counsellor in charge of Trade Affairs of the Mexican Embassy in Washington.

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2. For abstracts of the presentations and other details of the seminars, see the Director's summaries of the two meetings: Seminar on North-South Complementary Intra-Industry Trade, El Colegio de Mexico, Mexico City, 16-20 July 1979, UNCTAD/MD/105, GE.79-53971 and Seminar on North-South Complementary Intra-Industry Trade, Mexico City, 18-22 August 1980, Director's Report, UNCTAD/MD/111; GE.80-150.361.

At the second seminar, two Haitian economists, Leslie Delatour and Karl Voltaire, contributed a major paper which provided basic materials for the Haiti country study. They corrected the final draft of that case study of which they are named as co-authors. The paper on Colombia presented to the second seminar by Juan José Echavarriá, staff member of FEDESARROLLO, supplied much of the information for the Colombia case study. He did not have an opportunity to comment on a draft of the study of which he is listed as co-author.

S. A. Abbas, Chief, Technical Co-operation Service of UNCTAD, provided generous support throughout the duration of the project. S. Laird, economic affairs officer at UNCTAD, made valuable administrative as well as substantive contributions. Hugh Schwartz, senicr economist at the Inter-American Development Bank, commented on parts of an early draft.

Special thanks are due to Gabriel Valdes, formerly Assistant Administrator and Director of the Regional Bureau of Latin America of the UNDP, and the late Cecilio Morales, who was Manager of Economic and Social Development at the Inter-American Development Bank. Their recognition of the importance of the subject matter made this study possible.

In addition to major funding for this study and the seminars received from the UNDP through UNCTAD, financial support from the following organizations is gratefully acknowledged: The Tinker Foundation, which generously supported the Mexican portion of the research, the Inter-American Development Bank, which assisted primarily the Latin American collaborators, the U. S. Department of State, and the U. S. Agency for International Development, which supported in part the industry case study.

It is expected that, after review and editing, the study will be published as a book by The Brookings Institution under whose auspices this report was prepared by two of its staff members. The manuscript will undoubtedly be revised somewhat in the review process.

The authors bear exclusive responsibility for the contents of the study and for any errors. The views expressed here are theirs and should not be ascribed to any of the persons and organizations mentioned, nor to the trustees, officers or other staff members of The Brookings Institution.

October 1981

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Chapter I

Introduction

Industrial Readjustment in a Changing World Economy

International Competition in Manufactures

Chapter I

Industrial Readjustment in a Changing World Economy

A number of factors have adversely affected the Western industrial economies in the last decades. First, and perhaps most importantly, barriers to international trade have crumbled, as transport and communication costs declined, and the levels of tariff protection negotiated by the industrial countries in the Kennedy and Tokyo rounds of the GATT negotiations continued to steadily drop. Second, the underdeveloped countries have not in general grown quickly enough to eliminate huge international disparities in wages, and hence, the price competiveness of underdeveloped regions in the production of labor-intensive goods has increased (with Japan, the only major LDC to successfully make the postwar transition to a developed economy, the main exception to this generalization). Third, many states in the underdeveloped world have adopted export-led industrialization strategies, often with considerable success, accelerating the penetration of industrialized-country markets by imports of labor-intensive manufactures from low-wage areas. Fourth, the rapid growth of multinational firms in the industrialized economies has played an important role in the spread of manufacturing technology to the Third World, since such technology generally spreads out from within the confines of the firm to competitors and suppliers. Finally, the explosive growth of real energy prices in the 1970s reduced the real return to resources invested in the industrialized and highly oil-dependent Western economies.

The significance of these changes, ultimately, is that the industrialized countries are no longer the most economic locations for the manufacture of goods with production processes requiring important amounts of unskilled labor. The important exceptions to this generalization are those goods with relatively high transport costs, and those areas in which tariffs or other forms of protection shelter the domestic market. The oil crises of the 1970s, by hastening the obsolescence of the existing capital stock, accelerated the relocation of production to lower cost locations, domestic and foreign.

The alternatives facing the industrial economies are relatively few, and generally untried. One response would be to choose what might be called the "high-tech" option: to continuously invest large amounts in the development of new technology, to generate productivity increases to be used to maintain high wages for workers and large returns to investors. Since technological leadership, historically, has proven a fragile and easily squandered advantage, such a strategy would require continued investment in areas where returns are not easily identified, not to mention calculated. Furthermore, even if national advantage in technology can be maintained, limits more severe than the calculus of profit-maximization would have to be imposed on firms in a competitive industry to keep them from relocating production facilities in low-cost locations, in an age when multinationality is an option even for a relatively small enterprise.

Outright protectionism is another choice, with or without making technological advantage a precondition for a domestic industry to receive aid. Leaving aside the efficiency questions raised by any policy aimed at curtailing the international flow of goods and

resources, a return to high levels of protection does not seem a viable response in a world of interdependent economies. Trade is necessary for most countries to gain access to essential resources. A stable multilateral trading system does not lend itself to manipulation by any single country through protectionist measures, without risking retaliation and/or possible disintegration of the system. Furthermore, to import one must ultimately export, and any industrial readjustment must give the economy a way to competitively export enough to cover its import requirements.

A third option is to adopt to the changing pattern of advantage, integrating production operations across national boundaries, with unskilled assembly being performed in low-wage areas with a relative abundance of untrained labor, and more skilled operations performed in the developed economies with a relative abundance of skilled labor, technological and scientific resources. While this response might be best for keeping firms based in the developed countries competitive in international markets, it does little for the unskilled workers who have the most to lose as their jobs get shifted overseas. To avoid the pauperization of the less-skilled, a massive expansion of the unemployment roles in the industrialized economies, huge investments in increasing the skill levels of the population might well be called for. This last option, offshore production, which involves the internationalization of industrial operations performed within a single industry, is the focus of this book.

Offshore production, like international trade in general, reflects the distribution of resources and comparative advantage. In its broadest definition it includes trade in raw materials, components and

value added. The traditional form of such trade encompasses the production and shipment of raw materials for processing and manufacture into a variety of products in another country, often to be exported back to the countries from where the raw materials come. This kind of trade is as old as foreign commerce. It is not the "production sharing" that is of interest in this study. 1/

A modern form of offshore production is the interchange of parts that are fabricated and/or assembled in different countries. But even this form is not new. Already in the 18th Century the German term "Veredelungsverkehr" (upgrading trade) implied that each country undertook those stages of a production process which gives it the greatest value added. 2/ In the United States the McKinley tariff legislation of 1897 took account of offshore industry by giving special consideration to the imports of products which contained U.S. components. Before the recent post-World War II period there are no data on this kind of trade.

Three factors, however, are new about offshore production. The first, at least in the United States and Europe, is that we now can measure a part of it and have an idea about its trend and fluctuations. In the 1960s items 806.30 and 807.00 of the U.S. Tariff Schedule were formalized and trade in these classifications has been recorded in special tabulations in U.S. trade statistics. These tariff items provide duty exemptions for the value of U.S. components that are reimported in products fabricated or assembled abroad. U.S. trade statistics record the value of such imports including the duty-free U.S. components and the dutiable value added abroad. The product classification is fairly detailed but, except for major aggregates, the

groupings are occasionally not comparable from year to year. By definition these tariff items deal with U.S. parts and components that come back to the United States, often for further processing and for sale domestically or abroad. The statistics, therefore, do not show complementary intra-industry trade in products that do not return to the United States. Such production sharing activities may be significant in size. There are other omissions, such as production sharing trade either covered under the General System of Preferences -- GSP -- , which provides for full tariff exemption, or excluded from 806.00/807.00 because the provisions of the legislation are not met. 3/ The EEC nations have similar tariff provisions (on "outward processing trade") and, therefore, some statistics of their co-production trade are now available. 4/

The second "new" thing about international production sharing is that it appears to have grown dramatically during the last two decades. The spectacular improvement in communications and transportation undoubtedly has stimulated "upgrading" trade among the industrial countries. While some of this production sharing trade has been based on wage differentials, changes have also been linked to technology and skill specialization. Other factors have played a role, such as environmental and safety standards, which require, for example, that foreign automobiles can be imported only with special equipment made in the importing country. The proportion of foreign value added of such imports has generally been very high. Co-production among industrial countries has involved fairly sophisticated goods with technologically advanced production processes.

The third novelty in offshore production is the emergence of North-South production sharing. This co-production has been stimulated by the increasing international competition in labor intensive products. Trade, therefore, is based primarily on wage differentials and the relative availability of unskilled labor, although other factors, such as risk diversification may also be important.

While offshore production is important in the U.S. economy (perhaps 15 percent of U.S. imports of manufactures; 22 percent of those from LDCs; very much higher percentages of imports of certain electronic and apparel items) the amount of controversy generated by offshore production arrangements gives them a disproportionate prominence. To critics in the Third World, they symbolize not only a development strategy concentrating on export promotion, and the continued deepening of external links to a fluctuating world economy, but also, since they are often under the control of foreign investors, a strategy guaranteed to expand the role of powerful multinational corporations as a political and economic pressure group within the host state. Considerable debate often surrounds the questions of how much (and what quality) employment is generated by these activities, what their net contribution to the host ecomony balance of payments is, what sorts of technology are transferred, whether industrialization is fostered, how much economic instability results from dependence on export markets, and what the social impact of this type of development is. Proponents of offshore production as part of an industrialization policy generally claim a net positive balance on these points.

Offshore production also generates considerable friction within the industrialized economies. Labor groups are skeptical of its impact on domestic employment, although, at least in theory, it can increase use of domestically-produced components, stave off low-cost foreign import competition and otherwise provide employment. Some fear the loss of U.S. competitiveness through the the leakage of technology used in foreign plants, or the deterioration of the balance of payments in key industries. The workers displaced in industries where production is moved offshore, it is argued, are especially vulnerable to adjustment problems.

The objective of this overview is to systematically assemble factual material that bears on these questions, and evaluate the validity of the various arguments made either for or against offshore production, at home and abroad. In the next chapter the significance of offshore production activity in the U.S., Japan, and Europe is documented, and the reasons for important differences analyzed. Growth in U.S. offshore assembly is examined in greater depth for industries in which these flows are particularly important: electronics, apparel, and motor vehicles and parts. The U.S. 806.30/807.00 import statistics, while by no means a comprehensive measure of U.S. offshore assembly activity, permit a uniquely detailed view of the products they cover, and include the great bulk of U.S. offshore imports. The determinants of this pattern of trade are then examined. The effects of offshore production on the industrialized economies, and the developing countries, are analyzed and evaluated in later sections. A brief summary follows at the end of Chapter II.

Later chapters of this book shift from a global perspective to a detailed case study approach, with a richer picture of how economics, politics, and social instititutions interact to determine a pattern of trade, a mode of industrialization, and their effects. Country studies portray assembly operations in Mexico, Colombia, and Haiti; an industry study focuses on what is probably the world's most internationalized industry, semiconductors. A final chapter draws some general conclusions on the significance and effects of offshore production.

Offshore production should be understood to be an integral part of broader recent trends toward greater international competition in manufactured goods, expansion by multinational firms, and indeed, a qualitative change in the motivations and objectives underlying direct foreign investment in the less developed world. The remainder of this chapter develops this point.

International Competition in Manufactures

It is now widely recognized that between the early 1960s and the early 1980s, an important and widespread increase in the role of international trade in the major industrialized economies occurred, with a particularly large change in the volumes of manufactured goods traded internationally a key element in this shift 5/ (See Table I.1). In the late 1960s, Japan and West Germany each increased their share of the industrialized West's rapidly growing imports of manufactures, largely at the expense of U.S. imports. In the less developed countries' markets for manufactured imports, Japan scored a much larger increase in its market share, again largely at the expense of the U.S., but also, to a lesser extent, at the expense of the Europeans (See Table II.2).

In the 1970s, however, the situation changed dramatically. All the larger industrialized countries (U.S., Japan, and the EEC) faced an erosion in their share of trade in manufactures in developed and developing country markets. Manufactured imports from the rest of the world and particularly the developing world, scored major gains in both the absolute volume and in their relative share of the international market.

In retrospect, it seems clear that important dynamic forces altered world trade patterns in three fundamental ways.

First, by the 1960s, the diffusion of a great deal of postwar vintage manufacturing technology throughout the industrialized West had taken place. In industrialized Europe, a well-developed industrial and technological base was strengthened by national trade and investment policies that forced U.S. foreign investors to transfer their latest

Table I-1

A. Exports As A Proportion of GNP:
Ten Industrial Countries

	1951	1965	1979
Canada	.23	.19	.29
France	.17	.14	.21
Germany	.16	.20	.27
Italy	.12	.17	.25
Japan	.13	.11	.13
Netherlands	.47	.45	.52
Sweden	.31	.23	.31
Switzerland	.27	.30	.34
United Kingdom	.25	.18	.29
United States	.05	.05	.09

Source: McKinnon (1981), p. 532, based on IMF statistics

B. Real Growth Rates for Output and
Exports of Manufactures, 1965-1976

	1965-1976
Developed Countries	
Manufacturing Output	4.1
Exports of Manufactures	9.1
Exports of all Products	8.1
Developing Countries	
Manufacturing Output	6.7
Exports of Manufactures	12.7
Exports of all Products	6.3

Source: Keesing (1979), p. 6.

Table I-2

A. U.S., Japanese, West German, and EEC Export Shares of Developed Country Imports of Manufactured Goods (Percent)

Year	U.S.	JAPAN	W. GERMANY	EEC
1965	14	3	11	38
1972	11	5	13	41
1979	10	4	12	39

B. U.S., Japanese, West German, and EEC Shares of Less Developed Country Imports of Manufactured Goods from the Developed Countries

Year	U.S.	JAPAN	W. GERMANY	EEC
1965	32	13	10	43
1972	26	20	11	41
1979	26	19	11	42

Source: U.S. Department of Commerce, cited in Office of Foreign Economic Research, U.S. Department of Labor (1980), Tables III-9, III-10.

manufacturing technology to branch plants in order to penetrate the lucrative European markets. The Japanese took another approach, and through a combination of policies making entry into the Japanese market very difficult (through trade or investment), and some tough, shrewd and coordinated bargaining for technology sales, managed to move very close to the leading edge of manufacturing know-how for a broad range of sophisticated products. With the U.S. lead in the fabrication of a broad array of widely-produced manufactures gone, relatively lower labor costs in Japan and Europe made erosion in U.S. market share in this trade inevitable (See Table I.3).

The changes of the 1970s occurred as developed country manufacturers, faced with increasing international competition, relocated the production of manufactures requiring significant inputs of unskilled labor to even lower cost locations in the developing world. Often, as the result of organized national policies to encourage the development of industry in LDCs (and to an unquantifiable extent, as the result of the transfer of technology through the local operations of multinational firms), indigenous industry acquired the capability of producing the less advanced types of manufactures. To some extent, the figures of Table I.2 exaggerate the loss of market share of U.S. industry, then, since the overseas operations of U.S. firms in LDCs shipping to domestic and export markets are not counted in U.S. trade statistics.

The same is true for European and Japanese manufacturers, whose rapidly expanding overseas facilities must have substantially compensated for or even exceeded, their loss in direct export market share. Good statistics on the growth of U.S. overseas production are

Table I-3

Total Hourly Compensation, Production Workers
Average for all Manufacturing (including Benefits)
Dollar Indices, Relative to U.S. (=100) at Current Exchange Rates

	1960	1965	1970	1974	1975	1976	1977	1978	1979	1980
COUNTRY:										
U.S.	100	100	100	100	100	100	100	100	(100)	(100)
Japan	10	15	24	47	48	48	53	67	(62)	(59)
France	31	40	42	60	73	70	71	80	(90)	(95)
Germany	32	45	56	94	98	95	101	113	(121)	(120)
Sweden	45	60	70	98	113	119	116	116	(125)	(127)
United Kingdom	31	37	35	45	51	45	44	51	(60)	(71)
Korea		2*	4*		6	7	8	10	(12)	(11)
Taiwan		4*	6**		8	8	9	10	(11)	(13)
Hong Kong		7*	8*		11	13	13	14	(14)	(15)
Singapore		9*	8**		12	11	11	11	(12)	
Brazil					18	19	19	20	(19)	
Mexico					30	28	23	24	(25)	(28)
Argentina				39		37	(24)	(18)		
Haiti						(2.3-4.6)				
Colombia				10	10	(10)				
El Salvador				8	8					
Nicaragua				13	13	(13)				
Panama				20						
Portugal					25	24	21	20	(19)	
Spain					40	41	42	46	(59)	(60)
Ireland					47	43	43	50	(58)	(64)

* Based on Hong Kong Labor Department estimate of daily compensation, divided by 8.5, as reproduced in Yoshihara (1978), p. 26.

** Same as (*), except estimated from 1969 differential with Hong Kong.

Source: Unpublished estimates of U.S. Department of Labor, Bureau of Labor Statistics, Office of Productivity and Technology. Numbers in parentheses are preliminary; all figures for 1980 are provisional.

available, and it is clear that in the late 1960s and early 1970s, extremely large increases in the scale of foreign operations occurred (See Table I.4).

Over the 11-year interval from 1966 to 1977, (current dollar) sales of U.S. manufacturing affiliates increased almost 500 percent in Europe; 1300 percent in Japan; 440 percent in Latin America; 740 percent in developing Asia and the Pacific.

The transfer of manufacturing production to low-cost LDC locations by firms based in the industrialized countries is, of course, limited by barriers to trade thrown up by man and nature. The man-made barriers, in the form of tariffs and other trade restrictions, have limited the possibility of exporting many products from LDCs to developed country markets. Similarly, protectionist industrialization policies in LDCs have forced the bulk of foreign investment in many developing countries to be oriented toward the local market. Natural barriers in the form of the size and weight of products, and their associated transport costs, limit the production of other types of goods for the export market, and the nature of manufacturing technology -- which may make it difficult to separate labor intensive operations from more skill and capital intensive steps, which may be more expensive in the developing countries -- may pose a problem as well.

While production overseas to service local markets -- stimulated by protection and transport costs, and in some cases, lower production costs -- had long been a feature of direct foreign investment by U.S. and European producers of manufactures during the postwar period, volume manufacture in foreign locations for reexport to the home market

Table I-4

Growth of Sales by U.S. Foreign Affiliates in Manufacturing, 1966-1977

	EUROPE		JAPAN		DEVELOPING LATIN AMERICA		DEVELOPING ASIA AND PACIFIC	
	1966	1977	1966	1977	1966	1977	1966	1977
TOTAL SALES, U.S. AFFILIATES ($100 Million)								
All Manufacturing	251	1248	13	166	73	323	11	81
Food	23	116	.5	15	14	46	2	7
Chemicals	38	222	4	37	15	72	2	23
Metals	20	108	1	7	5	30	2	3
Non-Electric Machinery		226		25		24		4
Electronic Machinery	71	115	5	9	9	28	2	25
Transportation Equipment	61	257	.07	43	16	62	NA	6
Other	38	204	2	30	15	62	NA	12

Source: Bureau of Economic Analysis, U.S. Dept. of Commerce, U.S. Direct Investment Abroad, 1977 (Washington, 1981); U.S. Direct Investment Abroad, 1966 (Washington, 1971).

or other export markets was a qualitatively new feature of foreign manufacturing operations that emerged in the late 1960s. 6/ Again, the rather good data available for U.S. foreign manufacturing subsidiaries make this point clearly. As Table I.5 suggests, however, this growth in export-oriented manufacturing operations was a highly localized phenomenon, largely confined to Asia, and to a much lesser extent, Latin America.

In fact, exports to the U.S. by U.S. affiliates in Europe and Japan tapered off sharply in importance between 1966 and 1977, as might be expected given the large increases in relative labor costs experienced in those areas. Even more so than before, U.S. manufacturing operations in Europe and Japan functioned as vehicles for penetrating the local market.

On the other hand, major shifts occurred in U.S. investments in Latin America and Asia. Probably as the result of continued reliance on protectionist import substitution policies in many Latin American countries, U.S. manufacturers in the region became more reliant on sales to local markets, with the exception of the electrical machinery sector, where significant growth in the relative share of sales going to the U.S. market took place. Really striking changes are apparent in developing Asia, though, where in excess of one-quarter of sales went to the U.S. in 1977, compared to under ten percent in 1966. In electrical machinery, in particular, some 70 percent of output was shipped back to the U.S. in 1977.

Thus, those observers who claim that the 1960s and 1970s marked a new stage in the evolution of the world capitalist system 7/ are on the mark, insofar as the operations of U.S. multinational firms seem to

Table I-.

A. Exports to U.S. of U.S. Foreign Manufacturing Affiliates
(as Percent of Total Sales)

	Location of Affiliates:							
	EUROPE		JAPAN		DEVELOPING LATIN AMERICA		DEVELOPING ASIA AND PACIFIC	
	1966	1977	1966	1977	1966	1977	1966	1977
INDUSTRY:								
All Manufacturing	6	2	6	4	9	4	9	27
Food	6	2	2	0	3	4	7	18
Chemicals	8	1	3		12	1	6	2
Metals	4	1	NA	1	3	7	NA	NA
Non-Electric Machinery	7	3	11	5	10	2	25	24
Electronic Machinery		2		NA		18		70
Transport Equipment	2	2		NA	12	4	NA	NA
Other	7	2	NA	2	7	3	NA	12

B. Distribution of Exports to U.S., by Industry, 1977
(Percent)

INDUSTRY:	LATIN AMERICA	DEVELOPING ASIA
All Manufacturing	100	100
Food	12	6
Chemicals	7	2
Metals	14	NA
Non-Electric Machinery	3	5
Electronic Machinery	35	79
Transport. Equipment	17	NA
Other	13	7
VALUE IN MILLION U.S. DOLLARS, ALL MANUFACTURING:	$1409	$2165

Source: Bureau of Economic Analysis, U.S. Dept. of Commerce, U.S. Direct Investment Abroad, 1977 (Washington, 1981);
U.S. Direct Investment Abroad 1966 (Washington 1977)

have switched, on a large scale for the first time, to overseas production of manufactured exports for the home market. Asia and Latin America were the primary locations for these operations, and electrical machinery the major product.

A similar phenomenon appears to have taken place in Japanese multinationals. Solid figures on the distribution of sales are available for Japanese affiliates in 1975 (See Table I.6) in the less developed countries, and they also show a significant proportion of sales exported to Japan from Asian affiliates, though at somewhat lower levels than was the case for U.S. affiliates.

Japanese firms seem more prone to use their foreign affiliates (in investments not oriented toward securing material resources) as low cost platforms for exports into markets other than Japan. 8/

European firms, by way of contrast, showed relatively little propensity to service their home markets through exports from affiliates located in low-wage areas. 9/ There were a number of reasons which might explain their reluctance to move offshore: high EEC tariffs and other non-tariff barriers to trade played an important role in inhibiting offshore production; 10/ a strong and organized trade union movement may also have exercised considerable influence in preventing firms from relocating; and the important fact of significant state participation in ownership of many European multinationals, particularly in the electronics industry, may have placed further political constraints on export to the home market from foreign locations. Certainly, however, European firms were fully able to organize and coordinate foreign operations, since large outflows of direct investment continued, throughout the 1960s and 1970s, in the

Table I-6

Distribution of Sales of Japanese Foreign Subsidiaries, 1975
(Percent)

	Location of Investment:			
	LATIN AMERICA		ASIA	
	Exports to Japan	Other Exports	Exports to Japan	Other Exports
INDUSTRY:				
All Manufacturing	7	10	26	21
Textiles	6	21	28	27
Wood, Paper, Pulp	43	0	48	23
Iron & Steel	0	3	10	12
Electric Machinery	0	8	29	25
Transport. Equipment	.3	2	13	13
Other	0	11	30	24

Source: MITI, as reported in Sekiguchi (1977), p. 117.

establishment of numerous foreign subsidiaries aimed at penetrating protected foreign markets.

The growing participation of foreign affiliates of national firms in exports of manufactures from LDCs to industrialized country markets probably also served to reduce political resistance to these imports. The evidence indicates striking differences in the behavior of the share of imported manufactures coming from LDCs in Europe, the U.S. , and Japan. In all three industrialized markets, imports of manufactures grew considerably in relation to total consumption of manufactures, though much more so in the EEC and the U.S., than in Japan (See Table I.7).

In the U.S., however, the LDC share of manufactured imports grew by about 42 percent between 1968 and 1977, in Japan by about 64 percent over the same period. In both markets, LDCs accounted for about one-third of inudstrial imports in 1977. In Europe, on the other hand, the LDC share stayed roughly constant, at about 20 percent of imports. Of course, the low LDC market share in Europe may simple reflect the same trade restrictions that dissuade European-based firms from stepping up offshore exports to their home markets.

In short, then, the 1960s and 1970s witnessed a rapid growth in exports of manufactures from less developed countries. The expansion of operations of multinational firms from the U.S., Western Europe, and Japan, through difficult to quantify, must have accounted for a significant portion of this growth, though output by indigenous firms also grew rapidly. As basic manufacturing technology became more and more widely diffused, competition based on lowering production cost for standard products became widespread. In the 1950s and early 1960s,

Table I-7

Importance of LDC Manufactured Exports,
Major Industrialized Markets

	U.S. & CANADA				JAPAN			
	1968	1970-71	1974-75	1976-77	1968	1970-71	1974-75	1976-77
Apparent Consumption, Manufactures (Billion U.S. $)	48.8	705.6	1143.9	1391.9	127.4	188.3	409.8	494.9
Imports as Percent Consumption	3.1	3.9	5.2	5.2	3.9	4.0	4.7	4.4
Imports from LDCs as Percent Imports	24	24	33	34	22	23	31	36

	EEC			
	1968	1970-71	1974-75	1976-77
Apparent Consumption, Manufactures (Billion U.S. $)	74.8	93.7	176.5	208.8
Imports as Percent Consumption	5.6	7.7	8.4	8.9
Imports from LDCs as Percent Imports	20	19	20	20

Source: UNCTAD, Handbook of International Trade and Development Statistics, 1980, (New York, 1980), Table 7.1.
Data are for 14 industrial product groups, in current prices.

this competition to then-dominant U.S. producers was centered on Japanese and European producers, who faced significantly lower labor costs. But as the result of greatly lowered costs of transport and communication in the less developed areas of the world, rising wage rates in Japan and Europe, and defensive investment by U.S. producers in production of their product in lower cost LDC locations, vigorous international competition in the sale of standard manufactured products developed. This heightened competition had serious consequences for certain industries, and offshore production can best be understood as a strategy for response.

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Chapter II

Overview

Offshore Production in the Industrial Economies: The United States

A brief survey of the nature and extent of offshore production arrangements in the major developed economies is needed to document the extent of this trade. Although, logically, offshore production facilities can supply products to any or all of many export markets, available statistics only permit us to examine flows of imports into a developed country market which use components previously shipped from that same market, in any detail.

Historically, large-scale volumes of offshore assembly originated in the U.S. semiconductor industry. Because the semiconductor industry continues to be the most important single offshore product flow into the U.S. market, because it illustrates vividly many of the complexities and issues related to the use of offshore production, and because a full understanding of the economics of product flow in that industry requires rather detailed discussion, it is the subject of a case study, which may be found further into this book. Suffice it to say here that offshore assembly in Asia began as a response by U.S. semiconductor manufacturers to low cost Japanese transistor imports, because the other major alternative --automation of labor-intensive operations -- was impractical because of the rapid rate of technological innovation and product obsolescence in the industry.

It is enlightening to first briefly consider precisely what U.S. manufactures were most affected by increasing levels of foreign imports in the later 1960s and early 1970s. Table II.1 pinpoints a relatively limited number of industrial products in which imports showed significant growth in U.S. market share over the 1966-1976 period. Those products include some relatively unsophisticated manufactures -- apparel, footwear, pottery, simple metal products -- and a limited number of more sophisticated items -- textile machinery, radio and T.V. receivers, semiconductors, autos and motorcycles, and watches and clocks. As we shall see shortly, offshore production has been a particularly important factor in fast-rising imports of this latter group of more sophisticated products.

The chief source of information on offshore production going to the U.S. market is a set of statistics maintained by the U.S. International Trade Commission of imports entering the U.S. under tariff items 806.30 and 807.00 (henceforth, 806/807). These statistics, which go back in rudimentary form to 1966, and are available in a detailed and comprehensive form from 1972 on, 11/ provide us with a picture of imports entering the U.S. which are assembled from components previously exported from the U.S.

The U.S. 806/807 tariff sections represent a special sort of trade liberalization. Only fabricated and assembled U.S. components, and not the value added in the form of foreign components, labor costs, and capital charges, are exempted from duty. 12/ It is readily shown that this has the effect of cheapening the price of U.S.-made components relative to labor and capital in the foreign country in which assembly

Table II-1

U.S. Manufacturing Industries With Significant Import Penetration*, 1966 & 1976

INDUSTRY		PERCENT OF NEW SUPPLY 1966	1976
Sugar		20	23
Wine & Brandy		18	26
Bottled Liquors		25	27
Canned and Cured Seafoods			23
Miscellaneous Textile Goods		53	64
Knit Outerwear Sports Shirts	Apparel		23
Other Men's and Boy's Sports Shirts	Apparel		20
Raincoats	Apparel		47
Leather Clothing	Apparel		50
Shingles, Cooperage Stock			29
Pulpmill Products		33	33
Medicinals and Botanicals		16	26
Women's Footwear	Footwear		27
All Other Footwear	Footwear		57
Luggage	Footwear		22
Women's Handbags and Purses			32
Earthenware Food Utensils	Pottery		61
Other Pottery Products	Pottery		39
Electrometallurgical Products	Metal Products		37
Steel Nails	Metal Products		34
Refined Copper	Metal Products	11	20
Zinc Refining Products	Metal Products	16	44
Nonferrous Refining Products	Metal Products	44	40
Textile Machinery	Textile Machinery	14	30
Sewing Machines	Textile Machinery	40	47
Radio and T.V. Receivers		10	43
Semiconductors			20
Passenger Cars			20
Motorcycles, Bicycles, and Parts		46	51
Watches and Clocks		17	32
Dolls and Stuffed Animals			25

*4-digit SIC Products with imports equal to 20 percent of new supply (output and imports) and valued at over $100 million in 1976. Blank in 1966 means under ten percent of new supply imported.

Source: U.S. Department of Commerce, Bureau of the Census, U.S. Commodity Exports and Imports as Related to Output, 1975 and 1976, 1966 and 1967.

operations are located. In effect, when exporting to the U.S. under 806/807, a producer located abroad faces the equivalent of a "normal" tariff and a subsidy of tP_M per U.S. component assembled overseas, with t the U.S. tariff rate and P_M the price of the U.S. component, so that the net price to an assembler of U.S. components is $(1 - t)P_M$. This has two important effects on production.

First, if U.S. components can be substituted for other inputs (foreign components, capital, labor), it encourages the use of more U.S. components per unit of output than would otherwise be the case. U.S. components are substituted for foreign components, and more component-intensive production processes adopted, given prevailing input prices. Since, however, there are large differences in factor prices inside and outside the U.S., we cannot generally predict the relative intensity of component use without further information about the technical substitution possible between inputs.

Second, the effective reduction in U.S.-built component costs associated with 806/807 depends on the magnitude of the tariff on the assembled product. In unprotected industries, sections 806 and 807 have absolutely no economic effects. With low tariffs, there is a small cost advantage in the use of 806/807 and U.S. components; with high tariffs, such components receive a large subsidy. Since transport costs might normally be expected to make the use of foreign components somewhat cheaper relative to the use of unsubsidized U.S. components abroad, we should observe that the use of 806/807, and U.S. components, ought to occur in protected industries, and in industries using technologically sophisticated inputs unavailable offshore.

The 806/807 U.S. tariff sections, then, facilitate greater imports into the U.S. market, but in a way clearly serving to simultaneously foster greater U.S. exports of components and parts for assembly (though it is not clear that this end was accomplished by explicit design). 13/ One can expect the 806/807 tariff items to be used for the export of offshore production to the U.S. whenever the tariff rate exceeds transport costs as a fraction of the U.S. component price, and foreign-produced components are either unavailable, or available at a cost exceeding the U.S. component price less the savings realized after taking tariff-sparing and transport costs into account. 14/ Thus, (barring large transport costs) a foreign component must actually be cheaper than a U.S. component for its use to be economic in production for the U.S. markets.

As we shall see shortly, much of 806/807 imports represents transfers within the confines of a single multinational firm. Since this trade, in addition, is largely in semifinished goods, the difficulties that might arise (because of possible transfer-pricing) in determining the market value of such shipments are compounded even for independent arm's length transactions. Independent contracting relationships often require that inputs be furnished in kind, and the temptation to undervalue such transfers (if they are dutiable 15/) will exist. A detailed discussion of U.S. customs evaluation procedures for 806/807 trade is supplied as an appendix to this discussion; all signs point to underreporting in the customs value used in official trade statistics, relative to what a true market value might be. Thus, 806/807 import statistics probably underreport the true importance of such offshore exports relative to other imports,

when such comparisons are made.

Since 1966, U.S. 806/807 imports have grown faster than a rapidly growing U.S. import bill, from about 4 percent to about 6 percent (in 1980) of U.S. merchandise imports. The growth has been much more rapid in relation to imports of selected groups of manufactures. In 1966, 806/807 imports amounted to 8 percent of imports of apparel, metal products, and other manufactures (schedules 3,6, and 7 of the U.S. tariff). For apparel alone, imports under 806/807 amounted to under .5 percent of imported apparel; and about 10.5 percent of metal products came in under 806/807. By 1980, roughly 12.5 percent of combined imports of the three schedules, over 6 percent of apparel, and almost 15 percent of metal products were 806/807 imports (See Table II.2).

Offshore production exported to the U.S. is even more important in relation to U.S. imports of manufactures from LDCs. In 1977, there were about $15.3 billion in U.S. imports of manufactures from LDCs (excluding chemicals, nonferrous metals, and iron and steel). 16/ Imports from LDCs under 806/807 amounted to roughly $3.3 billion 17/ or about 22 percent of LDC manufactures entering the U.S., in 1977.

It is also clear that much of this trade is internal to the multinational operations of U.S. firms. One way to see this is to note that all U.S. imports shipped by U.S. manufacturing affiliates in LDCs (excluding food, chemicals, and primary metals) amounted to just under $3 billion in 1977. 18/ Since the analysts at the U.S.I.T.C. entrusted with these statistics judge that "a large part" of 806/807 trade is by U.S. firms and their foreign affiliates 19/ it is certain that an even larger part of the U.S. exports of U.S. foreign affiliates is 806/807 trade.

Table II-2

Importance of 806/807[a] Trade in U.S. Imports
1966-1980
(Millions of Dollars and Percent)

Products		1966	1969	1970	1971	1972	1973	1974	1975
All Merchandise Imports[b]	Schedules 1-7 (imports value)	24175.0	34424.7	38324.2	43901.4	53585.9	66739.9	97744.6	87382.8
	Corresponding 806/807 % & Avg. Schs. 1-7	3.9	5.4	5.8	6.3	6.4	6.4	5.5	5.9
Apparel, Metal Products, Other Manufactures	Schedules 3,6,7 (imports value)	12393.9	20201.2	23022.5	27090.0	33073.3	39185.2	49198.9	46039.5
	Corresponding 806/807 % & Avg. Schs. 3,6,7	7.7	9.1	9.6	10.2	10.3	10.8	10.9	11.2
Apparel	Schedule 3 only (imports value)	1833.3	2223.7	2422.6	2902.5	3358.7	3632.6	3782.4	3652.9
	Corresponding 806/807 % & Avg. Sch. 3	.4	1.6	1.8	2.1	2.6	3.6	5.8	6.5
Metal Products	Schedule 6 only (imports value)	8849.6	14875.6	16957.2	20221.3	24498.9	29234.8	38401.8	35402.3
	Corresponding 806/807 % & Avg. Sch. 6	10.5	11.7	12.1	12.8	13.0	13.5	12.7	13.1

Table II-2 (con't)

Products		1976	1977	1978	1979	1980
All Merchandise Imports b/	Schedule 1-7 (imports value)	118491.9	144359.4	170236.3	202423.7	
	Corresponding 806/807 % & Avg. Sche. 1-7	4.8	5.0	5.7	5.9	5.9
Apparel, Metal Products, Other Manufactures	Schedule 3,6,7 (imports value)	57886.8	68569.7	89954.1	99974.5	
	Corresponding 806/807 % & Avg. Sche. 3,6,7	9.8	10.4	10.8	11.9	12.4
Apparel	Schedule 3 only (imports value)	4975.9	5552.1	7095.3	7134.9	8153.1
	Corresponding 806/807 % & Avg. Sch. 3	5.6	5.6	5.8	6.4	6.3
Metal Products	Schedule 6 only (imports value)	43381.8	51645.4	67927.3	75936.7	86322.7
	Corresponding 806/807 % & Avg. Sch. 6	11.5	12.3	12.8	14.2	14.7

a. All 806 imports are composed of Schedule 6 items.

b. Excludes repair and other special processing.

Sources: U.S. Tariff Commission, Economic Factors Affecting the Use of Items 807.00 and 806.30, (Washington, September, 1970) June 1975, July 1976, and June 1980 ITC Reports; April 1981; Tabulations from ITC Statistical Division; U.S.I.T.C. March 1977 Statistical Bulletin, No. 1; U.S.I.T.C. March 1981 Statistical Bulletin No. 1.

Another way to appraoch the issue is by examining U.S. "related party" (basically, with a 5 percent or more ownership relation between importer and exporter) imports in areas where 806/807 is important. 20/ This is done in Table II.3, for 8 major types of 806/807 imports that made up 72 percent of the value of all U.S. 806/807 imports 1978. In some cases, it is possible to put bounds on the portion of 806/807 imports that come from related parties; it is clear for example, that a very large part of 806/807 imports of T.V.'s, semiconductors, and motor vehicles were related party transactions. When these statistics are disaggregated at the individual country level, the relationship is even more striking. 21/ While a related party transaction does not necessarily indicate an internal production flow (since it can also describe flows between purchasing and sales affiliates, as well as production affiliates), when taken with the other available evidence, these data seem to clearly indicate that 806/807 imports are dominated by the trade of multinational, and especially, U.S. firms. 22/

The major exception to the dominance of 806/807 imports by transnational firms seems to be in the apparel industry. In 1969, according to the U.S. Tariff Commission, 23/ about half of all such imports of wearing apparel were by jobbers or contractors dealing with foreign subcontractors in which they had no financial interest.

The 8 major product lines detailed in Table II.3, in fact, have dominated U.S. 806/807 imports since their inception. Table II.4 demonstrates that these 8 items accounted for about 2/3 of U.S. components incorporated into 806/807 imports in 1969 and 1978. In 1969, they made up about the same fraction of the total value of 806/807 imports; by 1978, they had grown to over 70 percent of these

Table II-3

Relation Between 806/807 and Related Party Imports
for 8 Major 806/807 Import Items, 1978

Product	Percent of Value of Imports Entering		Possible Bounds on Percent of 806/807 Transactions Between Related Parties (Percent)
	Under 806/807	As Related Party Import	
T.V.'s & T.V. Subassemblies	41.1	81.4	55 - 100
Semiconductors	84.5	90.8	89 - 100
Motor Vehicles	32.7	95.6	87 - 100
Equipment for Making, Breaking, and Connecting Electrical Circuits	21.1	66.4	0 - 100
Motor Vehicle Parts, Motorcycles, Tractors, Off-the-Road Type Work Vehicles	9.6	60.1	0 - 100
Textile and Apparel Products	8.8	11.9	0 - 100
Office Machines and Parts	20.5	68.6	0 - 100
Watches and Clocks	25.0	55.0	0 - 100

Source: Data on 806/807 and Related Party Imports furnished by U.S.I.T.C. and the Bureau of the Census on Magnetic tape. 806/807 product categories correspond to tariff classification numbers assigned to those categories by the ITC in 1978.

Table II-4

Relative Importance of Major 806/807 Import Items
1969 (807 only) and 1978 (806 and 807 imports)
(Percent)

	1969		1978	
Product	Total Value	U.S. Value	Total Value	U.S. Value
T.V. Receivers and Parts	5.3	11.0	7.6	8.3
Motor Vehicles	45.0	3.1	33.9	2.5
Motor Vehicles Parts, etc.	.4	.5	4.5	1.9
Semiconductors	6.4	18.4	15.2	34.2
Office Machinery and Parts	5.9	11.4	3.7	4.2
Textile and Apparel Products	2.1	23.0	4.2	9.8
Equipment for Making, Breaking, and Connecting Electrical Circuits	.4	1.0	1.2	2.7
Watches and Clocks	.1	.2	2.1	2.9
Total, 8 Major Products	65.6	68.6	72.4	66.5
Total, Other Electrical Equipment of which	16.9	28.5	13.6	16.9
Industrial	9.9	21.7	7.4	10.8
Consumer	6.2	5.0	4.4	2.9
Components	.8	1.8	1.8	3.2
Total, 8 Major Products and Other Electrical	82.5	97.1	86.0	83.4

Source: Appendix 2, and unpublished statistics of the U.S.I.T.C.

imports.

If other electrical and electronic products are added to the totals for these 8 major products, the totals are brought up to about 85 percent of total value and 97 percent of the U.S. component value in 1969, 86 percent and 83 percent, respectively, in 1978. 24/ Thus, U.S. 806/807 imports are largely confined to motor vehicles and parts, apparel, and various types of electrical equipment ("office machines" are overwhelmingly electronic calculators and computers; "watches and clocks" are the electronic solid-state types). 25/

These products are, with few exceptions, products that we previously identified (in Table II.1), as suffering from increasing competition from foreign imports. This points to the inference that 806/807 imports, and their corresponding offshore production arrangements, are often a response to low-cost foreign competition. An examination of the detailed circumstances of rising 806/807 imports in major products confirms this conjecture.

Semiconductors

Semiconductors, for example, were (in 1978) by far the most important use (over one-third of the total) for U.S. components in offshore production. The concrete details of the rise in offshore assembly of semiconductors are most illuminating, and are the subject of a separate essay in this volume. To summarize a key point, however, offshore production of semiconductors by U.S. firms originated as a response to low cost Japanese transistor imports, and provides an important example of offshore assembly as an adjustment strategy for a U.S. industry threatened by foreign imports.

Semiconductors also illustrate other key points. First, manufacturers are generally faced with a choice between two distinct responses to foreign imports whose competitiveness is based on lower labor cost. They can either automate, and reduce the importance of labor cost (and often, inrease product quality), or go offshore to beat the foreign competition at its own game. Automation -- because it generally requires large fixed investments -- is generally economic only when large production runs are guaranteed. In electronics in general (and semiconductors in particular), rapid and continuous technological change, and the constant cycle of obsolescence and innovation, has been an obstacle to automation. Similarly, in apparel, frequent and unpredictable change in fashions and styles has posed a similar barrier to automation. It is not surprising, then, to find electronics and apparel production dominating 806/807 imports.

Second, the nature of the technical characteristics of the product that determine transport cost, the separability of labor-intensive operations from other production steps, and capital intensity of assembly operations are critical to the decision to produce offshore. For apparel and electronics, high-value-to-weight ratios reduce transport costs as a barrier to trade, and production operations are easily separated into distant steps (manufacture of components, assembly, testing and packaging) that do not require physical contiguity. All these products require large inputs of unskilled labor in the assembly stage, when labor-intensive methods are used, and relatively small inputs of capital.

Apparel

The second most important uses of U.S. components for reimport in assembled products, in 1978, was the offshore apparel industry. Imports from Latin American countries, and especially Mexico, dominate these products; in body-support garments, however, the Philippines is the second largest producer. This fact is rooted in the history of the industry -- during the 1960s, Hong Kong and the Philippines were the primary exporters of bras to the U.S., competing in large measure with Puerto Rican factories, and limited by voluntary quota agreements. 26/

The technology utilized in apparel is one of the most labor-intensive, and -- as was documented above -- 807 imports have grown extraordinary rapidly as a portion of total imports and of domestic production. Numerous "voluntary" quotas which impose national ceilings on exports prevent us from reading much economic meaning into trends in the location and level of exports.

Nonetheless, the most rapid growth in 807 apparel imports has taken place in Haiti, the Dominican Republic, El Salvador, Nicaragua, and Barbados. Wage rates in all these areas are among the lowest in Latin America.

Colombia showed very rapid growth until 1975, and then dropped off to a much lower level. The dynamics of offshore production of apparel in Colombia are discussed later in this volume, and in Morawetz (1981). The key factors behind Colombia's rise, and subsequent decline, in 806/807 apparel exports to the U.S., were the relative returns to Colombian producers of exports vis-a-vis production for the domestic (and other Latin American markets).

Most interestingly, while most 806/807 apparel imports come from Latin America, they represent a small portion of overall U.S. apparel imports, which mainly come from Southeast Asia. As Morawetz points out, a major reason for this dichotomy must reside in fabric prices. 27/ In Southeast Asia, high quality fabrics are available to exporters at internationally competitive prices, while Latin America's fabric producers, protected by trade policies aimed at promoting import substitution, are high cost sources of inputs. Thus, internationally competitive apparel exports from Latin America almost necessarily must involve the duty-free entry and re-export of imported fabrics. For the U.S. market, this explains the predominance of 806/807 imports in garment trade with Latin America.

Morawetz also points to problems and delays in the administration of the duty-free drawback arrangements under which Colombian producers can use foreign inputs as a major obstacle to Colombian competitiveness. This emphasizes another major factor in the growth of offshore production, the availability of duty-free export processing zones, or drawback arrangements, as a key element in the attractiveness of an offshore location. This issue is discussed in much greater detail in the semiconductor study, as well as the country studies of Mexico, Haiti, and Colombia, in this volume.

In apparel, in general, 807 imports showed constant growth until 1975, and since then have remained relatively stable. The dominance of Latin American exporters also suggests that quotas, and the transport costs for materials, may have some significant role in the geographical origin of these imports. Mexico dominates offshore assembly in apparel, with roughly forty percent of all 807 imports in 1977. This

is a substantial drop from a peak of almost sixty percent of 807 apparel imports in 1972, and is probably related to both rising wage costs and quotas.

Motor Vehicles and Parts

Motor vehicles and parts alone represent almost two-thirds of 807 imports into the United States from developed coutries, and are typical of 806/807 imports from the industrial countries, in that they usually include a very small number of U.S.-made components (often to meet product safety standards or local consumer tastes) that account for trivial amount of the value of a basically foreign-made product. The products imported from industrial countries embody well over 90 percent foreign value added (in motor vehicles it is close to 98 percent). This can hardly be considered a production sharing activity. On the other hand, the total value of 807 products imported from developing countries is on the average about equally divided between value added abroad and United States components. 28/

Total 807 imports of motor vehicles and parts have shown steady growth, in both developed and developing countries. The great bulk of these imports are from developed countries, where "small quantities of U.S.-manufactured parts are incorporated into essentially foreign motor vehicles." 29/ This is reflected in extraordinarily large percentages of dutiable value; the major exceptions to this rule are Canada and Mexico. In Canada, because of the U.S.-Canadian automotive pact, a much higher percentage of U.S. parts are used. In Mexico, a 1969 decree linked the production quotas of U.S.-owned firms in the lucrative Mexican market to volumes of exports, and the firms have

responded by dramatically increasing their export of automotive parts to the U.S. market. 30/

As a result, automotive exports from Mexico under 807 have shown extremely rapid growth, going from about $8 million in 1971 to $90 million in 1977. The other major LDC exporting to the U.S. market, Brazil, has shown equally impressive growth, though much smaller in absolute volume.

Automotive exports from Mexico are still relatively minor in relation to U.S. production; in 1978, for example, the total value of Mexican 806/807 imports of motor vehicles and parts accounted for less than one-third of 1 percent of the value of output from the U.S. industry, while dutiable 806/807 value (which includes the value of Mexican labor, parts, and overhead used in these exports) amounted to less than one-half of 1 percent of employee compensation in the U.S. industry. 31/

Nevertheless, auto parts exports from Mexico are expanding. Various studies indicate that such "outsourcing" of auto components used in U.S. production will become increasingly common. A recent study by researchers at the University of Michigan predicted 15 to 35 percent of all auto parts will be imported by 1985, compared to 5 percent in 1981. 32/ An Arthur Andersen and Company consulting study predicts $7.5 billion in imported car parts imported in 1990, while the Transportation Department estimates 3.2 million engines in U.S.-made cars will be imported in 1983. 33/ The autoworkers' union has responded by lobbying for legislation imposing national content requirements on U.S.-made cars, 34/ addressed as much to the continuing increasing levels of Japanese imports as to the relatively minor amounts of

Mexican imports.

Television Receivers and Parts

The last major 806/807 import we will examine, T.V. receivers and subassemblies, is second only to semiconductors and autos in terms of total value of imports, and trails only semiconductors and apparel in terms of reimported U.S. content. In many ways, the experiences of U.S. television producers with offshore production represent the extremes to which the international realignment of an industry can be pushed by trade policy.

As was the case in most of the other electronic products in which offshore production by U.S. firms has become the predominant mode of organization, the U.S. T.V. industry was heavily influenced by Japanese competition. The Japanese, in the late 1950s, had vastly expanded their output of low cost transistors, and electronic exports using those transistors as components (this sparked the initial offshore movement by the U.S. semiconductor industry in 1961; see the semiconductor case study). In the early 1960s, the Japanese introduced transistorized portable black and white television sets into the U.S. market, imitating their earlier success with the ubiquitous transistor radio. These exports proved to be an enormous success, and soon made large inroads into shipments of black and white televisions by U.S. producers. U.S.-based production of black and white sets peaked in 1965, and has basically been in decline ever since.

Table II.5 documents the effects of this Japanese competition on the U.S. industry. Imports went from about 16 percent of U.S. consumption in 1966, to about 60 percent by 1971. Since the

Table II-5

Statistical Portrait of the U.S. Television Industry

	1966	1967	1968	1969	1970	1971	1972	1973
Imports/U.S. Consumption as % (Quantities):								
1. Black & White T.V.'s	16	22	29	43	50	58	62	63
2. Color T.V.'s	5	6	11	15	17	19	16	17

	1971	1972	1973	1974	1975	1976	1977	1978	1979
Imports/U.S. Apparent Consumption % (Quantities):									
3. Black & White T.V.'s	60	67	70	71	76	80*			
4. Color T.V.'s	19	16	18	20	25	35*			
5. Color T.V.'s, U.S. Producers only.					18	33	27	26	14
6. Foreign-made Subassemblies & Parts/ All Used, Manufactured by U.S. Firms & Affiliates (i.e., excluding purchases from suppliers), Color T.V.'s	23	50	75	88	90	91*			
807 Imports as % All Imports (Quantities):									
7. Black & White T.V.'s	33	53	49	41	52	34*			
8. Color T.V.'s	3	8	10	16	6	3*			
9. U.S. Value Added as % of U.S. Shipments, Color T.V.'s							42	39	39
10. U.S. Purchases as % of All Purchases of Materials and Components, U.S. Color T.V. Production							68	64	58

* First 3 quarters, 1976.

Sources:
A. U.S. Department of Commerce, The U.S. Consumer Electronics Industry (1975), Table 12: 1, 2.
B. U.S.I.T.C., Television Receivers. . ., Publication 808, (March, 1977), Tables 20, 21, 25, 7, and P. A-27: 3, 4, 6, 7, 8.
C. U.S.I.T.C., Color Television Receivers. . ., Publication 1068, (May, 1980), Tables 5, 12: 5, 9, 10.

Japanese competition was able to produce at low cost in part, at least, because of relatively low wage rates, U.S. firms, struggling to survive, moved much of their T.V. assembly operations offshore, to Mexico, Taiwan, and (later) Singapore. Roughly 40 to 50 percent of U.S. imports came in under tariff item 807 in the later 1950s; with the vast bulk of these imports coming from the offshore operations of U.S. firms in Mexico and Taiwan.

As U.S. firms went offshore, and wages in Japan continued to rise, Japanese producers also went offshore to produce their black and white television sets; Japanese firms in Taiwan and Korea soon were exporting substantial numbers of black and white sets. In addition, since the technology of television production was by then well known, especially for the less complex black and white models, indigenous producers in Taiwan and Korea entered the export market. Gradually exports from Japan of black and white sets dropped, and Taiwanese and Korean imports increased (See Table II.6). By the mid-1970s, the Japanese had also moved a substantial portion of their black and white production offshore. 35/

The net effect of these changes was very rough going, indeed, for the U.S. television industry. Although nominally, in 1976, some 20 percent of monochrome receivers sold in the U.S. were still "produced" in the U.S., substantial imports of subassemblies and parts from offshore locations in Mexico and Taiwan were incorporated into these sets. And many casualties of this competition fell by the wayside: in 1960, there had been 27 U.S. firms assembling televisions; by 1976, there were 12. Of the 12, only 7 produced black and white sets, 2 had been acquired by a Japanese firm (Sanyo and Matsushita), 1 was acquired

Table II-6

Pattern of U.S. T.V. Imports

		1971	1972	1973	1974	1975	1976	1979 OMA QUOTA LEVEL (annualized)
	U.S. Imports from: (1 million units)							
Black & White Sets	Japan	2.5	1.8	1.0	.9	.6	1.4	Unlimited
	Taiwan	1.3	2.7	3.3	3.3	2.1	2.6	Unlimited
	Korea	.04	.1	.3	.4	.2	.4	Unlimited
	All Countries	4.2	5.1	5.0	4.7	3.0	4.5	-
Color Sets	Japan	1.2	1.1	1.1	.9	1.0	2.7	1.750[1]
	Taiwan	.09	.2	.3	.3	.1	.2	1.021[2]
	Korea	-	.01	.002	.02	.02	.05	.204[3]
	All Countries	1.3	1.3	1.4	1.3	1.2	3.3	-
	Exports to U.S. as % Production (Quantity)							
Black & White Sets	Japan	57	40	27	21	21	32*	
	Taiwan				76	82		
	Korea				68			
Color Sets	Japan	78	57	52	44	44	57*	
	Taiwan				64	79		
	Korea						100	

* First three quarters of 1976.

1. 1.560 complete sets; .190 incomplete sets.

2. .373 complete; .648 incomplete.

3. .204 complete and incomplete sets.

Source: B, C of Table 3.5.

by a Dutch multinational (Philips), and another of the 12 (Sony) was a start-up by a Japanese multinational. 36/

In the early 1970s, this history again repeated itself with color televisions. The Japanese again aggressively promoted smaller solid state television sets, this time with color sets (solid state sets, in addition to being more portable, are more reliable and consume less power). American producers responded by sourcing some of their production of complete sets offshore, and in addition, set up operations offshore to produce large volumes of parts, subassemblies, and incomplete sets to be used in color televisions assembled and finished in the U.S. Between 1971 and 1976, the percentage of the value of color television subassemblies and parts produced overseas for their own use by U.S. firms went from 23 percent to over 90 percent (this figure excludes purchased parts and subassemblies, some of which were also produced offshore).

In 1976, Japanese exports of color sets to the U.S. increased 170 percent, and black and white exports 130 percent, relative to their 1975 export levels. Concerned about this export surge, U.S. unions and producers petitioned the U.S. International Trade Commission for import relief. The ITC responded affirmatively, and, in the end, a "voluntary" orderly marketing agreement (OMA) was negotiated with Japan, limiting Japanese exports through 1980. Soon afterwards, however, imports from Taiwan and Korea rose sharply, and, under pressure, OMAs were signed with Taiwan and Korea. It thus became apparent that shifting production to LDCs not covered by OMAs was <u>not</u> going to be successful strategy for export to the U.S.

Japanese producers responded by setting up U.S. assembly operations. By 1979, all the major Japanese producers had set up such assembly facilities. 37/ Since subassemblies and parts were not covered by the OMAs, they were free to import subassemblies to be assembled into finished receivers from Japan and low-wage LDCs. For similar reasons, Taiwanese producers also established U.S. assembly facilities, 38/ turning conventional expectations about the pattern of trade on their ear.

As a result, a substantial shift in the composition of U.S. color television imports occurred (See Table II.7). Imports of complete receivers dropped sharply as imports of incomplete receivers and subassemblies rose. The bulk of the imports of complete receivers came from Japan, Taiwan, and Korea, with little reliance on item 807, and presumably represent imports from foreign-owned plants under the existing quota system. The bulk of incomplete receiver imports came from Mexico (100 percent under 807), presumably from U.S.-owned offshore affiliates, trailed by imports from Taiwan (99 percent 807) and Japan. Subassemblies were from Mexico ($328 million, 97% - 807), Singapore ($76 million, 68% - 807), Taiwan ($44 million, 54% - 807), and Japan ($215 million, almost no 807). The assembly of color sets in the U.S. from these subassemblies generally involves the addition of a picture tube, cabinet, knobs, and perhaps a few other components. A chassis with the picture tube installed is classified as an incomplete receiver.

Thus, while U.S. producers were going offshore to stay competitive in color T.V.'s, Japanese producers were being forced to set up shop in the U.S. by trade restrictions (as were Taiwanese producers). In fact,

Table II-7

Total U.S. Color T.V. Imports
(Million Dollars)

	1976	1977	1978	1979
Complete Receivers	513	501	577	303
% 807	3	9	18	9
Incomplete Receivers	72	93	160	198
% 807	65	70	79	76
Subassemblies	383	379	597	681
% 807	70	59	57	59

Source: U.S.I.T.C. (May 1980), Tables 2-4.

since U.S. firms were increasingly shifting to imports of incomplete receivers from Mexico (as opposed to less finished subassemblies), while U.S. trade authorities were establishing a precedent for keeping out foreign-made receivers other than unfinished subassemblies, the Japanese producers may soon be put in the ironic position of performing more of the work going into the assembly of their sets in the U.S. than the so-called "American" set produced by U.S.-owned offshore producers.

Data gathered by the ITC seem to support this contention. In the Japanese-owned television assembly facilities in the U.S., about 45 percent of the total value of shipments is U.S. parts and labor. 39/ By way of contrast, for U.S. producers, purchases of U.S.-made articles and labor accounted for about 48 percent of shipments. 40/ In fact, shipments from Japanese-owned facilities have relatively more purchased U.S.-made components added than "American" color television sets.

Nevertheless, the Japanese-owned U.S. television assemblers use relatively more imported subassemblies, components, and parts than do U.S.-owned television shipments, though all producers have been increasing the foreign component content of their television shipments. And U.S.-owned producers hire relatively more U.S.-labor than Japanese-owned facilities; in 1979, U.S. labor value was almost twice as great as a proportion of U.S.-owned television shipments than in Japanese-owned U.S. shipments. Japanese facilities seem to be more modern and capital intensive; in 1978, the U.S. assembly facilities of U.S.-owned firms produced about .16 sets per man-hour compared to .25 in the Japanese plants. 41/ Thus, much more of the Japanese-owned shipments' value added probably represents a return to capital, and less payments to U.S. workers, than is the case in the U.S.-owned

American plants.

In a final ironic twist, the ITC voted in 1980 to lift the restrictions on Japanese television imports, because, with the implicit "commitment of Japanese producers to a relocation of their manufacturing facilities in the United States, it is unlikely that there would be substantial increases of imports absent the OMA with Japan". 42/ Thus, in the early 1980s, U.S. consumers are purchasing "Japanese" television sets assembled in the U.S., while U.S. producers relocate larger and larger portions of "American" output to offshore facilities, especially those in Mexico. With the implicit threat of renewed import restrictions hanging over their heads, Japanese producers are likely to continue to automate their U.S. facilities using more capital-intensive technologies to reduce labor costs, while U.S. producers compete with the more labor-intensive assembly technologies that are most economic offshore. 43/ Which strategy is more likely to be a long-run success is an interesting and open question. 44/

A final footnote in the history of the U.S. television industry was written in 1981, when General Electric, the only U.S. firm still producing black and white sets in the United States, announced that it would shut down those remaining assembly operations. Noting that competition from Taiwanese and South Korean imports made the move necessary, G.E. announced plans to shift production offshore by 1983. 45/

Offshore Production in Europe and Japan

The U.S. 806/807 statistics are the most complete set of published data available on offshore production, but some information, though less complete, exists on such flows to the European and Japanese markets. This perhaps is partially for reasons of interest, since such offshore production is much less widespread in Europe; and Japan, though heavily committed to offshore production in certain product lines, generally ships relatively little back to the home market, with over 70 percent of the output of its Asian manufacturing affiliates generally going to local or other export markets in all products (except in wood, paper, and pulp) produced. 46/ (U.S. Asian manufacturing affilates shipped roughly the same percent of Asian output to local or export markets, except in electrical machinery, where 70 percent of output went back to the U.S., and which accounts for the majority of U.S. material and component use in 806/807 trade.) 47/

In addition to this lower visibility in home markets, there may be politically compelling reasons to give it little publicity. In Taiwan and Korea, where the vast bulk of Japanese investment in Asia is located, 48/ Japanese firms account for a significant share of manufactured exports from those countries. In fact, an apparent shift from Japanese exports of color televisions (after the U.S. OMA described in the last section was imposed) to exports by Japanese affiliates located in Taiwan and Korea, to the U.S. market, was thought to be occuring prior to the U.S. decision to impose color television OMA's on Taiwan and Korea as well. 49/ And in addition to contending with possible resistance to exports by Japanese affiliates using

offshore locations in the Third World as export platforms for trade with developed country markets, Japanese producers offshore in East Asia must respond to the same host country perceptions of excessive dependence on trade flows with one country that U.S. multinationals face in their nearby Latin American markets.

European firms, faced with strong and concerned trade unions in their home market, probably feel a different sort of pressure not to publicize shifts of capacity overseas, though protectionist (generated in part by past trade union political pressure) measures severely limit the opportunities to make such shifts. The same is probably true, but to a lesser extent, in Japan and the U.S., where trade unions are politically weaker.

Prudence, then, must surely require that companies maintain a low profile offshore. Nevertheless, sufficient information is available to sketch out the general importance of offshore production in Europe and Japan.

Japan

The Japanese started making export-oriented direct foreign investments in the late 1960s, prodded by the increasing costs of Japanese labor, increasing problems with congestion and pollution at home in the traditional manufacturing industries, lower levels of protection for the Japanese home market, and exchange rate revaluations. 50/ These export-oriented investments in LDCs were (excluding several large chemical and natural resource oriented investment projects) largely in textiles and electrical equipment. 51/ In Hong Kong, in particular, Japanese garment makers and textile fiber

manufacturers stepped up their investments in order to circumvent OMA's imposed on Japanese apparel exports to the U.S. and Western Europe, and to avoid LDC tariffs on textile imports; in general the substantial volume of textile products exported from East Asia, and a large local market, has made it an important market for Japanese textile producers. 52/

The Japanese electronics industry in East Asia, on the other hand, is almost exclusively concerned with exports. A 1979 survey recently released by the Japanese Electrical Machinery Industry Association makes strikingly clear the large volumes of investment and employment involved. Of 193,000 workers reportedly employed by Japanese electrical equipment affiliates in the world, some 134,000 were in these East Asian export-oriented affiliates. 53/ Of these, in turn, some 89,000 worked in the manufacture of components, with the balance (45,000) in consumer and industrial electrical products. 54/ These 1979 Japanese Asian electrical affilate employment figures contrast with employment of about 158,000 for U.S. electrical and electronic affiliates in 1977 in developing Asia and the Pacific, of which some 101,000 were in components. 55/ Thus, Japanese and U.S. electronics employment in offshore Asian locations were both of roughly the same magnitude in the late 1970's and with component manufacture employment outnumbering workers in other product lines by about two to one.

Table II.8 summarizes the distribution of Japanese affiliate electrical employment in various countries in 1979 in relation to overall electronics employment, and to U.S. affiliate electrical employment (in 1977). The figures confirm that Japanese firms dominate the 46 percent or so of Korean electronics employment in firms with

some degree of foreign ownership in 1979. 56/ In Taiwan, on the other hand, U.S. and Japanese electrical industry employment were of roughly the same size (and must have been near half, together, of overall industry employment). In Singapore and Malaysia, on the other hand, U.S. electronics employment outnumbered the Japanese figure by over 2:1 (assuming continued growth in U.S. affiliate employment after 1977), and together must have accounted for about 2/3 of the overall electrical industry workforce. Only in Hong Kong do we find U.S. and Japanese firms of only marginal importance (perhaps 1/4) of employment) in the industry. Thus, in recent times, U.S. and Japanese electrical equipment affiliates must have accounted for one-third to one-half, or better, of electrical industry employment in all the major offshore locations in Asia, other than Hong Kong. Hong Kong is also the only of these major Asian locations where components do not dominate production.

Table II.8

Foreign Affiliate Employment in the Asian Electronics Industry

	Distribution of Output (%) ca. 1978			Total Workers (1000) ca. 1978	Employees in Japanese Affiliates (1000), 1979	Employees in U.S. Affiliates (1000), 1977
	Consumer	Industrial	Components			
Korea	41	9	50	180	38	8.5
Taiwan	46	4	50	230	54	48
Hong Kong	78	5	17	94	2.3	19
Singapore	49	2	50	60	14	25
Malaysia	10	--	90	55	11	24

Source: JEMIA (1980), pp. 180, 33; U.S. Department of Commerce (1981), Table II. C.4.

Use of Korea as a principal offshore production site by Japanese electronics firms can also be seen in the share of exports shipped by Japanese affiliates in total industry exports (See Table II.9); Yoshihara claims that Japanese affiliates accounted for almost all the electronic equipment exports from Korea in 1973. Another study shows some 89% of Korean electric and electronic equipment exports shipped by foreign (U.S., Japanese, and other) firms in 1974, and Japanese electronics investment in Korea exceeded U.S. electronics investment (on an arrival basis) by a margin greater than two to one ($35 million U.S. versus about $13 million). 57/ In contrast with the Japanese investment (which is mainly export-oriented), the U.S. investment is primarily geared toward the domestic Korean market.

Table II.9

Estimated Share of Japanese-Affiliated Firms in Exports of Electronics from Southeast Asia, 1973

(%)

Country	Equipment	Components	Total	Value (mil. U.S. $)
Taiwan	20	50	26	178
Korea	100	22	50	160
Hong Kong	0	19	9	43
Singapore	40	0	11	39
Total, 4 Countries	26	19	23	423*

*Does not add to country detail because of rounding.

Source: based on Yoshihara (1978), pp. 176, 219.

In the other major Asian location for Japanese electronics investment, Taiwan, the Japanese influence is less exclusively felt. Taiwanese figures show roughly 61 percent of the dollar value of foreign investment commitments over the 1952-74 period coming from the U.S., versus 17 percent for Japanese investment in electronics and electrical equipment. 58/ Nevertheless, Table II.8 shows roughly comparable levels of employment, suggesting that, in addition to being more prone to participate in joint ventures, Japanese investors probably undertake less capital-intensive operations than U.S.-based firms. 59/ As Yoshihara points out, Japanese export-oriented investment has been concentrated primarily in simple passive components, accounting for 45 percent of the amount and 58 percent of the number of cases of Japanese electronics investment in Southeast Asia prior to early 1974. 60/ U.S. investment in the region by way of contrast, while also geared to component exports, is dominated by production of more complex semiconductors. 61/

Japanese export-oriented investments in the textile and electronics sectors in Southeast Asia also seem to be undertaken by smaller firms than is generally the case with U.S. investments in the region, with roughly half the number of cases of electronics investment (and 33 percent of the amount) and one third the cases of textile investment being undertaken by firms not listed on the Tokyo stock exchange. 62/ Even among the listed firms, the tendency is for relatively small firms to predominate.

These little firms tend to stick close to home, as seen in the high degree of concentration of such investments in Taiwan and Korea. 63/ Only in more distant Singapore do we find large investments

by large Japanese firms predominant. 64/

In components, there has been a recent shift toward producing a greater volume of more complex active components, like semiconductors, offshore. 65/ Statistics also seem to show an accelerating trend to moving the production of equipment offshore; Table II.10 shows a substantial shift toward foreign production between 1978 and 1979 in several consumer electronic products. For color televisions, much of this increased foreign investment has gone to the U.S. market, because of the trade restrictions described in the last section. In other products, however, the vast bulk of foreign production is found in the nearby Asian countries.

A recent industry report suggested that Japanese producers will carefully coordinate the shift of lower value added items to their overseas production base, while keeping higher value added items in Japan in order to maintain employment. 66/ In electronic components, in particular, the Japanese industry's overseas production is oriented toward expanding its share of the global export market. 67/ The retention of a substantial amount of television, radio, tape recorder, and stereo production capacity in Japan (shown in Table 4.3) while large volumes of these products are simultaneously produced offshore by Japanese firms suggests, also, that Japanese producers tend to retain much of their domestic production base for these products in Japan, while supplying expanding export markets from offshore plants.

Note that while Japan has special tariff-sparing arrangements similar to the U.S. 806/807 provisions, they do not seem to be in very wide use. 68/ The UNCTAD secretariat had suggested that reexport to the Japanese market is discouraged by the governmental authorities, who (as

is not the case with the U.S. 806/807 provisions) have discretionary authority over the duty-free reimport of exported Japanese components. 69/ At any rate, Japanese offshore electronic production seems to be oriented toward non-Japanese markets.

Table II.10

Percent of Japanese-Produced Units

Produced in Foreign Countries,

By Product, 1978 and 1979

Product	Percent Produced Abroad 1978	Percent Produced Abroad 1979	Distribution of Foreign Production, 1979: W. Europe	No. America	Asia	Other
Videotape Recorder	0	0	--	--	--	--
Color T.V.	27	30	8	50	29	10
Black & White T.V.	41	49	--3 to 6 --		85	9-12
Radio	59	69	-- negligible --		93	7
Tape Recorder	27	34	-- negligible --		96	4
Car Radio	6	3	2 to 4		86	10-12
Car Stereo	2	4				
Stereo	21	32	-- 6 to 10 --		72	18-22
Hi-Fi Amp	5	8	1 to 3	--	95	2-4
Record Player	.4	3		--		
Tape Deck	5	6		--		
FM Tuner	9	9		--		
Speaker Systems	10	12	-- 80 --		20	neg.

Source: Japan Electrical Machinery Industry Association (1980, in Japanese), Pp. 3-4.

Finally, Japanese investors in the Asian offshore countries seem to have been acutely aware of the political nature of barriers to trade, and to have shown considerable resourcefulness in adapting to changes in the rules of the game. It seems clear, for example, that the Japanese, along with multinational firms from all over the world, are influenced in their choice of production sites for international export markets by the existence of trade preferences in important markets for output manufactured in a suitable host LDC. 70/ The political intervention that has repeatedly occured with their exports of color televisions, autos, and now, integrated circuits, has taught the Japanese that market share in advanced products in the U.S. and Europe often must be purchased by the transfer of some part of production into the targetted market, or by the political protection offered by a joint venture with a national possessing some claim on a part of an LDC's GSP limit or export quota. 71/ The dispersion of products across countries in Table II.10 reflects a complex interaction between Japanese firms' drive to minimize cost and maximize profit, the tariff, non-tariff, and explicitly political barriers to trade with major partners, the degree of competition felt with newly-industrializing nations' exports of less sophisticated manufactures, the physical and technological barriers to the relocation of all or part of the production process, the labor intensity of the product, and the institutionally guaranteed nature of the lifetime employment contracts inside major Japanese corporations. 72/

The EEC

Some information is also available on offshore production activity oriented toward the European Economic Community. West Germany and the Netherlands have produced accessible published statistical information on their so-called "outward-processing" trade, and for 1978, the European Community released, for the first time, complete records of such trade for the entire EEC. 73/ What had been apparent earlier for the Netherlands and West Germany 74/ was also true for the entire EEC: such offshore production seems to be much less important in relation to imports and exports of manufactures than is the case in the United States or Japan.

First, a brief survey of EEC "outward processing" trade is useful. An appendix to this chapter contains tables showing the relative importance of different products for West Germany, and the Netherlands, in extensive detail; for the entire EECs outward processing imports, from LDCs only, in less detail, and a brief technical description of these arrangements.

Note that European outward processing provisions differ from the U.S. 806/807 tariff items in one very significant respect. Instead of deducting the value of European components from dutiable value, before assessing the tariff charges (as would be the case with the U.S. 807 item), the tariff is levied, and then the value of the tariff charges on the exported component, if it were imported alone, are credited toward that tariff charge. Thus, exported components effectively face a tariff charge upon reimportation equal to the difference between the rate on the imported article into which it is incorporated, and the rate which it would face while unincorporated into a manufacture. In

semiconductors, for example, it may be uneconomic to import integrated circuits into Europe after assembly in Asia because of the wide gap between the 17 percent tariff applicable to assembled integrated circuits, and the 9 percent tariff rate on unfinished silicon chips, upon reimportation. 75/ Since finished goods often face greater tariff barriers than unassembled materials and components, this can be a formidable barrier to imports. The European system displays two other significant divergences from U.S. practice: all transactions must have the prior approval of the national customs authority, and only EEC residents are allowed to have the processing carried out.

Most EEC outward processing imports come from other parts of Europe (33 percent for Germany in 1978, 91 percent for the Netherlands). The bulk of this trade is with Eastern Europe for Germany (55 percent of all trade with Yugoslavia, Poland, and Hungary alone in 1978) and with Western Europe (86 percent in 1978) for the Netherlands.

Thus, "806/807" type imports from LDC's are minimal for the European Community as a whole and for these countries individually. In 1978, for example, outward processing reimports amounted to about $261 million compared to U.S. 806/807 imports from LDC's of about $4133 million, about 16 times greater. The great bulk of these imports were in textiles and garments, and in electronics. In fact, only in these two sets of products do outward processing reimports account for a significant portion of imports, as can be seen in the appendix tables, and in Table II.11. As can also be noted (by comparing Table II.11 with the appendix tables for Netherlands and West Germany), even in apparel, reimports from other developed and socialist countries must

predominate. In West Germany, however, the other major reimport (electrical machinery, about 1.9 percent of electrical imports in 1978) is dominated by the 1.5 percent reimported from LDC's.

Table II.11

EEC Outward Processing Reimports from LDC's; Value and as Percent of Total Imports of Item (in Parentheses)
(Values in millions of Units of European Account [UEA]) *

Product (NIMEXE numbers):	EEC	Germany	France	Italy	Neth.	U.K.
Leather, shoes (41, 42, 64)	136.3	8.8	4.1	--	--	--
	(.22)	(.42)	(.45)	--	--	--
Textiles, garments (61-62)	60.2	27.4	24.4	.05	2.4	1.0
	(.89)	(1.1)	(3.3)	(.02)	(.2)	(.1)
Machinery (84)	10.4	1.3	.6	.3	7.8	.3
	(.03)	(.02)	(.01)	(.01)	(.24)	(.005)
Electrical, Electronics (85)	109.6	66.4	19.6	16.6	.009	5.9
	(.65)	(1.5)	(.68)	(.83)	(.0004)	(.24)
Clocks to watches, optical photographic equipment (90-91)	6.7	2.7	2.4	.2	.033	1.2
	(.08)	(.12)	(.10)	(.03)	(.003)	(.08)
Games, toys, sporting goods (97)	3.2	.5	1.7	--	--	.9
	(.20)	(.14)	(.51)	--	--	(.33)
Other	14.4	7.5	1.7	2.9	1.5	.04
	(.06)	(.12)	(.09)	(.05)	(.03)	(.02)
All	217.7	114.8	54.9	20.2	11.6	9.3

Source: Official Eurostat import figures for Jan.-Dec. 1978, for all imports, and Berthomieu and Hanaut (1980) for outward processing reimports from LDC's for 1978.

* 1 UEA = $1.20 (U.S. dollars)

France and Germany account for the great bulk (78 percent) of these imports from LDC's. Reimports generally come from Southeast Asia, except in France, which takes a little under 2/3 of its assembly imports from its former colonies in North Africa.

The small scale of European offshore operations is evident in a recent survey of foreign employment by German-owned affiliates. 76/ It found a total of 23,000 employees, in 1975, in South and Southeast Asian affiliates of German electrical engineering firms, compared to 96,000 found in German electrical engineering affiliates in the developing countries worldwide. 77/ Since, except in the Mediterranean and North African countries, little German production for local markets is found outside Southeast Asia, we may conclude that exports are not a major motivation for German investments in foreign electronics industry affiliates, by and large. 78/

It should also be noted that many of the German firms involved in the offshore subcontracting of production of apparel are smaller firms. 79/ As is the case with U.S. firms, much of the apparel trade involves subcontracts with independent foreign subcontractors.

The reasons for this relatively minor use of offshore production arrangements by the EEC countries is probably largely the result of the substantial protection given to the European market. 80/ Imports of electronic goods and apparel, which dominate offshore production in general, are taxed with rather high tariff rates in the EEC. Furthermore, quotas exist on imports of apparel. National content requirements, like those limiting intra-EEC duty-free trade to electronics products with under three percent imported semiconductor content, also pose a formidable non-tariff barrier to offshore

electronics production. 81/

Summary

Offshore production arrangements in Europe and Japan are significantly different from the structure and orientation of offshore production by U.S. firms. European firms do relatively little of their production for the export market offshore, except in the apparel industry (and in which trade mainly flows from Eastern Europe). The barriers to imports in the European market of those products generally produced offshore (textiles, apparel, and electronics) is probably the most significant factor explaining this pattern.

Offshore production by Japanese firms is also concentrated in electronics and apparel, but is considerably larger in relation to imports and domestic production than is the case in Europe. Japanese electronics employment in Southeast Asia, for example, is of roughly the same order of magnitude as that of U.S. electronic affiliates. It differs from U.S. offshore production, however, in that export markets, rather than the home market, are the major focus for offshore output, and in that many of the electrical products shipped seem less complex than the electronics products typically shipped by U.S. firms. This may have much to do with the nature of labor market (i.e., lifetime employment) and financial (i.e., government supervised credit-rationing) institutions in Japan. Import quotas have also influenced production patterns in obvious ways, and it seems likely that much offshore production by Asian affiliates of Japanese firms is affected by its eligibility for import into developed country markets with various sorts of trade preferences extended to the LDC hosts.

Economics, Politics, and the Pattern of Offshore Production

At this point, it is useful to briefly take stock of some common elements in the offshore production activity of firms in industrialized countries. The first, and very striking, feature of this trade is that it is basically concentrated -- in all countries -- in two limited types of manufactures: apparel, and electronics. 22/

Three commonly cited attributes of these industries probably all play important economic roles in making offshore production more attractive in these products than in other products. These items all have extremely high value-to-weight ratios and, hence, low transport costs. Clothing and electronic equipment require rather large amounts of simple and routine assembly operations that can be done by unskilled labor or sophisticated machines, and therefore can have their cost of production substantially reduced if an ample supply of low cost unskilled labor is located. All three products are produced in sequential operations that can be physically separated in time and space without affecting the quality of the the product. Offshore production, for these essentially technological reasons, then, is especially attractive in these industries. Finally, apparel and electronics are highly competitive industries, where all possible cost reductions may well be forcibly introduced. (One might speculate that the technical characteristics of the products described reduce barriers to entry in the industry and are a partial determinant of the high degree of competition.)

A second feature (to be noted with a careful examination of the geographical breakdown of imports and production charted in the last section) is that a relatively small group of LDCs dominates most such

activity. While it is true that all share relatively low wages (or more accurately used to share, since Hong Kong, Singapore, and Korea now have wages significantly above their less industrialized neighbors), that is a trait common to many other LDCs. All also have relatively well-developed transportation and communication links.

But most importantly, all have well publicized and well known customs and tax arrangements that permit the rapid, duty-free import of inputs to be used in exported output, whether in the form of export processing zones, in-bond industrial parks, easy duty drawback procedures, or, simply, minimal tariff levels. Offshore producers have generally responded fairly rapidly to the establishment of these programs 83/ and make extensive use of them in their offshore exports. One way to document this last point is simply to note that activity in export processing zones is overwhelmingly devoted to precisely those products we have been discussing (apparel and electronics); in their survey of the zones, Froebel, Heinrichs, and Kreye (1980) found that employment in free zones all over the world had about the same pattern, with roughly half of workers in electronics, and another quarter in textiles and apparel. 84/

Thirdly, in all the major industrialized countries, movement offshore is not reserved exclusively for large multinationals. There are many smaller firms involved in these trade links. The smaller firms, in fact, tend to stick closer to home (to Mexico and the Caribbean, in the U.S.; to Taiwan and Korea, in Japan; to Eastern Europe and the Mediterranean, in Western Europe). 85/ In familiar nearby areas with which communication links are good, and where a considerable overhead investment in learning the local ways needed to

do business is not necessary, even small firms can afford to make the jump into foreign investment (and may be forced to by their competition).

In making these observations, three economic determinants of the relocation of industry offshore have been mentioned: the relative cost of labor, the technical details of production, and the costs of transport and communication. Of these, a low cost for labor services is necessary, though not sufficient, for offshore production to be economic. Transport costs limit the range of products which can profitably be transferred offshore, and the technology of products and processes narrows the range still farther.

The calculation must be further complicated by less central concerns. One is labor productivity. If there are large international differences, differentials in labor costs can be offset or augmented. A recent study, based on interviews with factory managers in export-oriented affiliates of multinational firms, concludes that such differences are minimal. 86/ Another study, on the other hand, when comparing Asian productivity in apparel with that in Colombia, finds significant differences (30 to 50 percent), in the productivity of labor between Asian firms and Colombian firms. 87/ The study notes, however, that firms in several cases raised their productivity to Asian standards after receiving foreign technical assistance, which suggests that the labor productivity differences are the result of technical and managerial know-how in the management of production flows. 88/ Thus, the two points of view are not in contradiction. Within a single firm, the productivity of an individual worker may well, after suitable training, be fairly constant across countries, yet considerable

differences in productivity observed as the outcome of variation in technical and managerial competence, and perhaps, installed capital. Our case studies of Mexico and Haiti also support the view that national differences in the productivity of an unskilled worker are generally perceived as small within multinational operations, and do not qualify in any major way the apparent cost of an hour of labor calculated from the going wage. 89/

Another major economic aspect of the decision to produce offshore is automation and mechanization as an alternative to foreign assembly. Since automation generally requires a large fixed capital investment, the relevant variables affecting its attractiveness are the relative cost of capital, and the size of the production flow, over the lifetime of the product that will pay off the capital charges. In Japan, for example, producers of semiconductors have managed to retain their production base in Japan, where unskilled labor is relatively expensive, by replacing it with automated machinery and specializing in those semiconductor types with the largest market size. 90/

In the many low cost, high volume manufactures in which it seems to specialize, the Japanese have replaced unskilled labor with highly automated plants, often reaping higher quality output as a dividend. 91/ In some of the higher wage offshore countries, automation is also now beginning to be economic. In Hong Kong, for example, large apparel and digital watch module assemblers are beginning to automate their production lines, citing not only cost, but also quality improvements. 92/ On the other hand, movement to other offshore locations is probably not really a viable alternative for these firms, because Hong Kong-specific quotas and trade preferences are often

needed to export their output.

Before concluding the discussion of the determinants of offshore production, two explicitly political influences on production location should be indicated. One has already surfaced in our mention of tariffs, quotas, and other non-tariff barriers to trade which are ultimately the result of political pressures. Certainly exporters now understand that production within a market, or export from a location enjoying special preferences, can head off political pressures that would otherwise choke off exports. Japanese investments in the assembly of autos, color televisions, and integrated circuits within the U.S. and Europe reflect these pressures to some extent.

Finally, another major political influence on investment is embodied in investors' concern over the potential effects of political and economic turbulence within a single country. These "country risks" of investment in generally poor (and, therefore, often politically unstable) low-wage countries have a major impact on the decisions of foreign investors. 93/ In just about every major product produced offshore, one finds numerous cases of basically the same operation being performed by affiliates in numerous locations, often with significant variation in wages from location to location.

Frequently, a single firm maintains similar production facilities in a whole range of offshore locations, as an explicit strategy to reduce such "country risk" by diversifying production across countries. U.S. T.V. assemblers have essentially similar facilities in Mexico, Taiwan, Singapore; U.S. semiconductor makers invest in Hong Kong, Taiwan, Korea, Malaysia, Singapore, the Philippines, and Thailand. Since all these countries have widely divergent wage levels, and

substantially less variation in transport and communication costs, it seems safe to hazard the observation that the return to offshore investment must vary substantially from location to location. Rather than modelling producers' sourcing decisions by a simple calculus of cost minimization, then, a richer model is needed, in which firms evaluate the political and economic risks to investment specific to every country, and select a portfolio of production locations that reflects the optimal combination of risk and return available to the firm.

The technical aspects, and policy implications, of this view of firm behavior are explored in some length in the case study of the semiconductor industry found later in this volume. We next turn to evaluating the effects on the industrialized countries, when the constellation of economic and political forces just described make the relocation of a portion of an industry to an offshore location attractive to producers.

Impacts of Offshore Production on the Industrial Economies

With the growth of offshore production in recent years, its effects on the home economy have become the subject of some controversy. In the United States, the 806/807 tariff provisions have been the target of repeated attempts at repeal. A brief consideration of some of the conflicting interests in those struggles provides some insight into the nature of the effects of offshore production arrangements on the U.S. economy.

First, there are the views of large American-based multinational corporations. Since there are few constraints preventing them from operating successfully overseas, competition from imports utilizing cheap foreign inputs must pose little threat to their long-term viability. Their demonstrated interest in promoting 807 (demonstrable, at least, in the case of the large multinational electronics firms) 94/ must therefore originate in some perception that 807 can increase profitability in their U.S. operations. Three likely reasons come to mind. First, to the extent that 807 can lower costs in protected industries, it may stimulate increased demand for their products. This may also be reflected in increased profit margins in the more technology-intensive and oligopolistic industries. Second, economies of scale in production may be more readily realized if tariff barriers to the flow of inputs and outputs across national frontiers are lowered. U.S.-oriented production may be moved outside the U.S., and the resulting economies of scale may serve to make production by U.S.-based firms more competitive in the international market. Third, global operations may show less variance in their net return, if multinationals can more easily diversify their production

internationally to minimize the impact of country-specific risks and business cycle fluctuations on profits.

Next, consider smaller, national U.S. businesses. Lacking the organizational, managerial, and informational resources of the multinationals, they cannot easily move their production overseas. Often, they are marginal producers within the U.S. market. For them, relaxation of protective measures spells certain economic death in the face of cheap foreign imports, unless they can somehow make use of cheaper foreign inputs without the international experience accumulated by the larger multinational organizations. Tariff item 807 offers obvious advantages to them: it maintains protection for their products, yet enables them to lower costs and become more competitive by transferring assembly operations to lower cost locations. To some extent, such initial movement into low wage areas may be a transitional step toward full-fledged multinationality.

Organized labor has a distinct and different point of view. The relatively high wages earned by workers in U.S. primary manufacturing firms may be intimately linked to protectionist trade policies. One can argue that such relatively high wages are caused by the superior productivity and skills of the American worker, though such statements are inherently difficult to prove. But the removal of all protection, in the absence of other trade barriers, would undoubtedly mean that American workers -- skilled and unskilled -- would end up earning the same wage earned by a worker with equivalent credentials in the developing areas, or unemployed.

Note that higher wages paid to U.S. workers do not necessarily imply that U.S. production cannot be competitive in international markets. If U.S. firms employ a technology superior to that used by other nations' firms, for example, higher wages may be a way for workers to capture some of the rent that would otherwise be received by the high technology firms. Producing abroad (or using 807) would merely transfer some of this technological rent back to the firm, or the consumer. 95/ Access to cheaper capital than that available to foreign producers might also produce similar rents, and the possibility of their capture by American workers.

To a certain degree 807 may compensate for the job loss caused by increased imports, by stimulating greater demand for components produced in the U.S. In fact, it is clearly true that if foreign assembly operations use basically the same techniques used by American firms, then any given increase in imports under section 807 will always cause less of a drop in U.S. output and employment, in all industries, than an equivalent increase in "normal" imports, because of the incentive created to use greater numbers of U.S.-made components.

In fact, it is theoretically possible that increases in demand due to lower costs, and/or price-induced shifts toward more component-intensive production techniques, might actually <u>increase</u> U.S. output and employment (at some fixed wage). Organized labor's experience during the 1963-67 period, however, might have led it to conclude that a decrease in employment is most likely, and to seek the repeal of 807.

Finally, one may label as "government" concerns all those effects not impacting directly on business or labor. Thus, the net effect on the U.S. balance of payments, and the prices faced by consumers, are important issues necessarily faced at the national level. There may also be a national security argument for keeping key elements of an industrial base within national boundaries. 26/

Thus, there seem to be a multiplicity of interests in offshore production, based largely on what perceived economic interests are. We can conveniently separate these economic conflicts into two groups-those that are basically distributional struggles for shares of a fixed level of output, and those that affect the level of aggregate production, the size of the pie to be divided up.

The standard trade theory view of these matters, put forward by the bulk of economists, is that these struggles over protection pit the incomes of workers against the overall level of economic welfare, and that by offering a suitable system of transfers to workers whose incomes are lowered as a consequence of trade liberalization, the economy as a whole would unambigiously benefit. The extra income created by trade would more than pay for the transfers required by affected workers, so that trade liberalization leaves all (at least, potentially) better off.

There are a number of practical and theoretical criticisms of this point of view, however. First, at the theoretical level, these arguments assume that a system of competitive free markets guarantees the employment of all resources, including labor, in the economy. The validity of this assumption is not always clear. For one thing, the so-called social "safety net" in most industrialized countries creates

a floor for wages, so that if the wage for unskilled labor that would ensure full employment falls below that socially set level, unemployment will be created. For another thing, in the presence of insufficient aggregate demand and Keynesian unemployment, these arguments for freer trade do not necessarily hold. Policies other than trade liberalization would also be required to ensure improvements in social welfare, in these cases.

From a practical point of view, even if markets do guarantee full employment in the long run, there may be significant transitional costs associated with the relocation on an industry, as displaced workers are forced to move, search for new employment, and possibly, retrain. These frictional "adjustment" costs are likely to have an effect on any calculation of the benefits of trade liberalization, since in effect, involuntary unemployment exists for a while (though not forever).

We must add to these social considerations (of how social welfare and national income can be increased by trade policy) distributive arguments. While, in theory, a system of transfers can be worked out to guarantee labor no drop in its standard of living as the result of socially desirable change in trade arrangements, these transfers have, in practice, not generally been made. Workers who lose high-paying jobs in previously protected sectors of the economy are not often given lifetime allowances to make up the difference when they find lower-paying employment, and even when successful in finding alternative employment, the adjustment costs generally come out of their own pockets. Thus, even if there is an overall social gain to be realized from offshore production arrangements, workers in the affected industry are likely to face private losses with the existing menu of

trade adjustment programs.

The issue of the social gains and losses from offshore production is addressed in detail in the semiconductor case study found later in this volume. It is clear, however, that the effects of industrial relocation of workers in an industry going offshore are the principle negative effects of such movement, to be balanced against the gains consumers receive through lower prices. The exact comparisons are difficult to construct, since one is required to make difficult choices of assumptions: for example, in the absence of offshore production, would imports reduce the size of the industry anyway? How much does offshore production act to increase, on average, the U.S. content of imports? Does the lower price of offshore-assembled products actually increase employment in the domestic industry by raising overall demand?

Rather than trying to answer such questions, 97/ which are inherently difficult to answer, and probably vary substantially from industry to industry, we will instead use the remainder of this section to look at some general characteristics of employment in industries with substantial offshore production, and assess whether the adjustment costs and structural problems created by contraction in these industries are more acute than those in other parts of the economy.

First, note that the workers in the two industries most affected by offshore production, apparel and electronics, especially in the least skilled assembly jobs, are overwhelmingly women. 98/ This true in all the Western economies. The explanation for this is probably related to the generally lower wage rates at which unskilled female workers are hired, their manual dexterity and patience with routine and monotonous tasks, and possibly, a perceived lesser propensity to resist

management initiatives. 99/

This is a significant fact, however, because empirical studies tend to show that adjustment costs for displaced female workers are greater than for male workers of the same age and skill levels. Unemployment spells for displaced women workers, for example, seem to be much longer than for male workers, at all ages. 100/ The limited available evidence suggests that workers displaced from manufacturing jobs suffer substantial costs, both in earnings foregone while unemployed, and in lower wage rates when subsequently reemployed. 101/ The losses suffered by female workers, single and married, appear to be significantly greater than those of similar male workers. 102/

Thus, those industries most directly involved with offshore production are also industries with heavily female, and relatively unskilled, work forces. The workers displaced by this form of internationalization of their industries, then, will suffer much greater losses than the average production worker in manufacturing, and offshore production is thus likely to cause particularly acute employment displacement problems. It might also seem somewhat inequitable to concentrate these losses in one narrow segment of the labor force, in effect forcing unskilled working women to bear costs which are more than compensated for by lower costs to consumers.

The changes being described here are clearly most threatening to the least skilled, and hence, most economically vulnerable segments of the labor force in the industrialized countries. The limited data available suggest that shifts to offshore production have fundamentally altered the structure of employment, to the detriment of the less skilled.

This is illustrated by Table II.12, which charts the estimated share of assembly workers in total U.S. production employment over the census years from 1963 to 1977, in machinery (electrical and non-electrical) industries with significant amounts of assembly employment. Along with material handlers and custodial workers, assemblers are considered to be among the least skilled occupations in manufacturing, so changes in assembly employment will impact directly on the demand for the labor services of the least skilled.

The second most interesting thing about this table is the rather surprising stability of assemblers' share of the production work force. By and large, for most industries, there is little real change in the relative demand for assemblers.

The most interesting thing about the table, though, is the list of industries in which striking changes (defined, informally, as a more than 10 percentage point change in the relative importance of assembly employment). There were no such changes over the 1963-1967 period. From 1967 to 1972 there were dramatic decreases in the share of assembler employment in semiconductors (from 77 to 52 percent), and communication equipment (from 53 to 34 percent), both of which went through a period of rapid growth in offshore production then. Over the same period, assemblers almost doubled as a fraction of the work force in office machines and typewriters, but this is probably related technological changes in those products, with electronic parts replacing mechanical movements.

From 1972 to 1977, only one product showed a significant decline in assembler employment share. Radio and television receivers were manufactured with a production work force that dropped from 82 percent

to 63 percent assemblers, and again coincided with a period in which production is known to have rapidly moved offshore. Calculators and scales increased their use of assembly workers (33 to 67 percent, and 32 to 42 percent, respectively), and again, technological changes that replaced other components with electronics are the most probable cause.

Since we cannot accurately identify how changes in technology, automation and prices have affected the demand for assembly labor (and we will generally expect them to), we cannot call these observations conclusive. Still, the sectors that stand out from the monotonous stability of Table II.12 are more than suggestive: radical drops in the share of assembly employment occurred in industries known to have gone offshore, when they went offshore. The sectors that increased their use of assemblers produced output in which electronics were substituted for other parts.

Offshore production, then, seems to have wrought permanent change in the composition of labor demand in that part of the industry left behind. The least skilled and the marginally employed, those for whom displacement is most costly, are those most affected. Ironically, though, demand for assembly workers seems to increase with the technological changes in design that increase use of electronic componentry. Cost savings realized through movement offshore, in turn, may have stimulated those design changes. We are left with a difficult and sensitive issue, a situation whose only clear message is that increased competiton from manufactures produced in low-wage LDCs is going to be most painful for less skilled workers in the industrialized economies.

Table II-12

Assembly Employment Share of U.S. Production Employment in Machinery Manufacture

SIC No.	Industry	Estimated Assembly Workers as Percent of All Workers: 1963	1967	1972	1977	
3511	Turbines	13.6	NA	14.2	18.1	
3519	Internal Combustion Engines	17.2	24.8	20.3	23.4	
3523	Farm Machinery	[20.1]	[22.9]	20.4	21.9	[23.8]
3524	Lawn & Garden Equipment			41.7	46.4	
3531	Construction Machinery	12.3	15.9	17.6	17.4	
3532	Mining Machinery	10.2	13.4	15.4	16.9	
3536	Hoists & Cranes	20.6	22.4	16.8	21.9	
3561	Pumps	[14.1	17.7]	17.5	21.5	
3563	Compressors			26.7	25.6	
3562	Ball Bearings	9.0	13.7	9.4	12.5	
3566	Drives & Gears	[11.9]	[9.9]	9.0	9.7	[13.5]
3568	Power Transmission Equip.			16.9	16.0	
3573	Computers	[35.9]	49.9	58.3	51.4	[44.1]
3574	Calculators		34.8	33.0	66.8	
3576	Scales	29.7	27.9	31.7	42.3	
3579	Office Machines, Typewriters	NNA	26.7	42.3	45.2	
3585	Refrigeration & Heating Equipment	29.8	39.1	43.0	43.1	
3586	Measuring & Dispensing Pumps	26.7	23.3	30.6	34.7	
3632	Household Refrigerators, Freezers	NA	34.6	NA	47.3	
3651	Radio & T.V. Receivers	78.9	82.3	82.2	62.6	
3662	Radio & T.V. Com. Gear	NA	53.2	33.8	34.4	
3671-73	Electron Tubes	67.8	66.5	68.0	NA	
3674	Semiconductors	75.7	77.0	52.4	46.4	
3675	Capacitors	[59.2	57.8	36.2]	76.6	[39.9]
3676	Resistors				37.1	
3677	Coils & Transformers				51.2	
3678	Connectors				33.2	
3679	Other Electronic Components				31.6	

Method: Data on assembly workers covering most production employment in an industry, in Census of Manufactures, Selected Metal working Operations (various years) was used to estimate assembly employment for entire industry, on assumption that average for firms not covered was identical to that for firms covered. Percent coverage was taken to be midpoint of range given.

Offshore Production and the Developing Economies

A consideration of the effects of offshore production arrangements on the developing host economies plunges us into even cloudier areas. The issues are more complicated, the analysis less clear, and the data even less satisfactory than is the case in the industrialized economies. The case studies of Mexico, Haiti, and Colombia included in this volume ought to convince the reader of how important historical, political, and institutional factors are in weighing the costs and benefits to a host economy of offshore production.

Nevertheless, we outline here, in skeletal form, the major points that have been raised with regard to impacts on the host economy. The issues generally raised can be categorized as those related to employment, the balance of payments, the creation of linkages to indigenous industry, the transfer of technology, social problems and the creation of economic dependence and instability.

Employment

A major attraction to a host LDC of offshore production must be the creation of relatively high-productivity industrial employment, especially in areas where there is substantial unemployment or underemployment, and little industry. Available evidence, however, indicates that current levels of offshore production make a much smaller contribution to employment creation, and labor absorption than might be supposed. Froebel, Heinrichs, and Kreye (1980), in their survey of export-oriented production in the LDCs, found about 420,000 employed in such factories in Asia, about 265,000 in Latin America, and about 40,000 in Africa, in 1975 103/ These figures probably exclude

most subcontracting by indigenous firms located outside export processing zones, but -- outside of the apparel and textile industry, in Asia -- such employment must be relatively minor. A generous upper bound on offshore employment, worldwide, in 1975, would probably be about 1 million workers.

Although this is not an inconsequential figure, it is rather like a drop in the bucket of Third World underemployment and unemployment. In 1975, for example, ILO researchers estimated the unemployed and underemployed to be about 195 million in Asia, 63 million in Africa, and 33 million in Latin America (with 18 million, 10 million, and 5 million openly unemployed, respectively). 124/

This is not to say that it is not a critical source of employment in certain countries, particularly in Hong Kong, Singapore, Barbados, and South Korea. But, by and large, offshore production does not employ more than a marginal portion of the labor force, or even the much smaller industrial work force. One can see this, for example, by noting that offshore production is basically concentrated in apparel and electronics, and then examining the portion of manufacturing output accounted for by these products (which overestimates the potential importance of offshore production, since substantial production of these products is generally shipped to local markets, rather than being exported).

In almost all major offshore LDCs in 1976, textiles and clothing accounted for only 10 to 20 percent of manufacturing value added, with the significant exceptions of El Salvador (31 percent), Korea (25 percent), India (29 percent), Sri Lanka (23 percent), and Hong Kong (98 percent). 125/ Manufacturing value added (in 1978) in these countries,

as a percent of GDP, in turn, amounted to 15 percent in El Salvador, 36 percent in Korea, 17 in India, 23 in Sri Lanka, and 31 percent in Hong Kong. 106/ Thus, only in Korea and Hong Kong does apparel production perhaps exceed 5 percent of GDP.

The same story holds true in the other major offshore export, electronics. Restricting our attention to offshore Asia (where such exports are concentrated), in 1974, only in Hong Kong and Singapore did electrical machinery output exceed 10 percent of manufacturing output (11 percent, to be precise). 107/ With the possible exceptions, then, of Hong Kong, Korea, Singapore, and Barbados 108/ offshore exports cannot possibly account for a significant portion of employment.

Also, it is not entirely clear that the employment created in the zones is a particularly effective response to the unemployment problems of LDCs. First, it ought to be noted that the workers in these offshore factories (as in the apparel and electronic industries in the developed countries) are almost exclusively (80 to 90 percent) women, which creates some rather interesting economic and social issues. 109/ In apparent contrast with these industries in the developed countries, the female workers are overwhelmingly young and unmarried, with the upper age limit for the bulk of the distribution by age at roughly the mean age of marriage for factory women in their local societies. 110/ This is not typical of female employment in these industries in the industrialized countries. 111/ Many of these young women participate formally for the first time in the labor force as an assembly export plant worker, and critics charge that rather than eradicating unemployment, it may actually induce it, by encouraging the labor force participation of groups that might not otherwise not do so. 112/

The other major issue in employment is that of wages and working conditions. If offshore plants paid wages above going rates, for example, then presumably a job created in the offshore export sector might yield a greater social return than jobs created in the national economy. 113/ The evidence on this point is mixed. In general, most observers find no significant differences between wages in export processing zones and the rest of the economy. 114/ A 1973 survey of Korea's Masan export processing zone found wages in the Masan zone somewhat higher than in its surrounding province, for all types of skills. 115/ The published data on wages in Taiwanese export processing zones show most workers getting wages somewhat below the general averages for apparel and electrical machinery, but this is difficult to interpret, since the zones probably have a greater percentage of unskilled assembly jobs, and female workers, than is true for the industries in general. 116/ On the other hand, as is noted in the Mexico and Haiti case studies, wages in offshore plants in those countries tend to be at or above the legal minimums. Since evasion of minimum wage requirements is widespread in both countries, 117/ the wages paid are probably somewhat above a market wage.

Because they tend to be more visible, and their environment more regulated than other firms, working conditions are generally thought to be somewhat better than in similar-sized firms in the rest of the economy, though undoubtedly unsatisfactory by developed country standards. 118/ A survey of the Swedish Ministries of Foreign Affairs and Trade found that labor legislation is generally enforced in most export processing zones. 119/ On the other hand, repressive measures designed to control or prevent trade union organization in foreign

firms are applied in many Southeast Asian countries. 120/

Social/Political Issues

A number of social and political issues are often raised with regard to offshore production, which are examined in detail in the country case studies in this volume. For one thing, the induction of large numbers of prime age females into the industrial labor force is chastised as being socially and culturally disruptive. The traditional family structure is threatened, employed and unemployed males feel unable to assert their usual roles as economic heads of their households, unwed motherhood increases, and the general moral fabric of local communities is attacked. These are difficult issues to appreciate for the resident of a late twentieth century industrial capitalist society, where these fears might even be labelled as sexist. Nonetheless, in a traditional culture where norms of behavior evolve very slowly, this sort of instant industrialization may be highly disruptive.

Since offshore production often is clustered in very compact and politically discrete free manufacturing zones, it is also criticized as an enclave of foreign interests, not subject to the same political and economic forces that regulate the business environment in other parts of the country. Criticism of the lack of integration of offshore production activities into the rest of the host economy are particularly sensitive in Mexico, where the relatively isolated border regions in which these plants are clustered have long been the focus of central government efforts to tie them more into the mainstream of Mexican political and economic life.

Linkages

Since many offshore producers use tax and tariff incentives that prohibit the shipment of large volumes of output to the national markets, there is little opportunity for national producers to use products produced offshore as inputs to production for the national market, and hence, little in the way of forward linkages developed to the host economy. In some cases, however, the development of backward linkages, the substitution of nationally-produced inputs for materials previously imported, has been observed. 121/ Table II.13 shows that in export processing zones in Taiwan and Korea, national material content has increased considerably -- to about one-fifth to one-fourth of the value of exports. Foreign exchange earned on those exports amounts to about half of their value, divided between wages, materials, rent, services, and utilities.

In Mexico, the U.S. content of 806/807 imports is also about 50 percent, but the national material content is considerably lower. While these data do not really tell much about how linkages develop, since the product mix of these zones, as well as the prices of various inputs, have changed over the years, they do seem to indicate that national content does have a tendency to rise over time in Asia. This contrasts sharply with the Mexican experience. On the other hand, it should be noted that, in the absence of significant transport costs (as along the Mexican border), national suppliers of inputs for U.S.-bound exports must actually produce at a lower cost than the product is available in the United States, since the 806/807 tariff exemptions lower the eventual landed cost of U.S. inputs relative to foreign-produced supplies. This probably restricts the competitiveness

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Table II-13

Foreign Exchange and National Content of Export Processing Zone Shipments

	Foreign Exchange Earnings as % Export	Foreign Imports as % Exports	Domestic Materials as % Exports
Three Export Processing Zones, Taiwan			
9/66 - 12/74	NA	66	9
1975	41[1]	57	9
1976	43[1]	55	12
1977	48[1]	52	12
1978	40[1]	60	16
1979	45[1]	51	20
Masan Free Export Zone, Korea			
1971	28		
1972	30		
1973	37		
1974	39	59	17
1975	41	54	17
1976	49	48	22
1977	49	48	24
1978	52	50	22
1979	52	47	24

Notes: 1. Defined as Exports-Imports-Net Outward Remittances.

2. Net Exports from Zone.

Sources: Taiwan from Export Processing Zone Administration, Essential Statistics, various years.
Korea from Korea, Masan Free Export Zone in Facts and Figures (ca. 1980).

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of foreign inputs to only the most labor-intensive items, where the labor cost differential can offset the surcharge added when a duty is added to the price of the item in U.S. customs. Perhaps because of this, even in more distant Taiwan, linkages to domestic subcontractors seem more prevalent in Japanese firms than in U.S. firms. 122/

The Transfer of Technology

Probably the most important (and most difficult to measure) effects of foreign investment, from the viewpoint of a host economy, are found in the extent to which productive knowledge and skills are transmitted to nationals of the host economy. There are three potential recipients of these transfers of technology --workers, managers of production flows, and designers and developers of products.

First, to be clear on the issue of how important skills transferred to workers are, it ought to be stressed that the term unskilled labor, as it is generally used in this book, really means "not skilled labor". A significant number of assembly-type operations require some training and experience, and probably could be labelled as semi-skilled. In the semiconductor industry, for example, it takes about 3 months experience to reach peak efficiency as an assembler, and the U.S. Department of Commerce categorizes such workers as semiskilled. 123/ Since many in the assembly work force are involved in their first industrial work experiences, there may also be some investment in the inculcation of industrial labor discipline. Nevertheless, such investments are likely to be rather limited, and their general value to the national economy not always clear. The specific assembly operations taught in electronics, for example, often

use proprietary high technology components unavailable in the national economy, and are thus of lesser value outside the export enclave. 124/

On the other hand, export-oriented foreign firms do train significant numbers of host country nationals as lower and middle level managers and often provide technical assistance to independent subcontractors. While difficult to document, qualitative impressions seem to indicate that this assistance, when supplied, can be of considerable value in learning how to organize production flows and processes. As mentioned earlier, there are examples in Colombia where technical assistance supplied by foreign contractors to national apparel firms doubled productivity.

The transfer of product and process technology seems to be much rarer. Most offshore plants perform a limited number of the production steps necessary to produce industrial output, and the design, research, and production of most high technology intermediate components largely remains in the industrialized countries. There are, however, a few recent examples of more technologically advanced steps being transferred to offshore locations. Simple semiconductor chips are now being produced in Taiwan and Korea, and are scheduled to begin production in Hong Kong soon, though it is not clear that this is necessarily related to the offshore assembly operations that previously existed in those countries. 125/ In Singapore, Philips (the Dutch electrical producer) now designs all locally manufactured audio products with a 150 person R&D team, the largest in the country; Hewlett Packard and Nestle also do some research and development locally. 126/ This is quite unusual, however, and is just beginning in the relatively industrialized and developed Singaporean economy.

Indeed, Singapore has been experimenting with a policy of deliberate and substantial wage hikes, in an attempt to restructure its industrial output away from low-wage, low productivity products, and toward high wage, high productivity, high technology products. 127/ Producers were to be forced to automate, mechanize, and wherever possible, substitute skills and capital for unskilled labor. Another aim was cut back on the migration of foreign workers into Singapore; the export processing operations were so successful in increasing employment (at low wages, to be sure) that 100,000 foreign workers (mostly from Malaysia, Indonesia, and Sri Lanka) were recruited. 128/ Foreign investment, however, has apparently responded to the wage hikes by declining. 129/ This, perhaps, reflects a general problem that may face offshore hosts as they seek to switch production to more complex products, in capital and skill intensive industries.

Stability/Dependence

Another criticism that is often made of offshore production as an industrialization strategy, is that it creates an industrial structure that is dependent on demands, and markets, that are entirely foreign, and over which the host economy has no control. Thus, it is argued, the economy is subject to fluctuations in employment over which it has little influence. 130/ The declines in employment, and layoffs, that occurred in processing and free zones all over the world during the 1974-75 recession are usually used to make this point. 131/

External linkages certainly do transmit international business cycle disturbances to national economies, and the extent and nature of these international effects are a serious theme for debate on policy.

The best choices for a particular country must surely depend on its alternatives: the endowment of natural and human resources, the existing stock of investment, its state of economic development, and political and social considerations. The vulnerability of an economy to external fluctuations is an important issue.

The issue, however, arises with all types of exports, not just those produced in offshore plants by foreign firms or their local subcontractors. To focus the argument more on this specific type of export, we might ask how these exports vary in relation to a more general measure of a country's industrial trade, say all manufactured exports. Because offshore production in LDCs tends to be concentrated in textiles, apparel and electronics, and because demand for these products is notorious for its volatility over the business cycle, we might expect that industrial promotion policies aimed at increasing the trade share of these "offshore" products would add to the vulnerability of exports during a world recession.

Table II.14 presents some information which gives us a rough answer to this question. In it, the ratio of U.S. 806/807 imports (an important subset of offshore production) to all manufactured exports, is presented over a time period including the 1974-75 world recession. If these offshore product exports were more prone to fall during a recession than manufactured exports, in general, we might expect to see this ratio drop over the 1974-75 period.

The ratio did, in fact, drop somewhat during the recession in Hong Kong and Singapore, both of which are relatively high-cost offshore locations, and in Barbados. On the other hand, 806/807 exports to the U.S. grew much faster, or dropped much less, than all manufactured

exports in at least six other countries during the recession: in Brazil, Colombia, El Salvador, Malaysia, Mexico, and the Philippines, all of which (except Mexico) are relatively low cost locations. In the other countries for which information is available, the ratio tended to grow slightly, or remain roughly constant (or erratic, as in the Dominican Republic).

On balance, then, 806/807 exports seem to have fared much better during the recession than all manufactured exports in the low wage locations, and somewhat worse than all manufactures in the high wage locations. Mexico belongs in a special category, because of its low transport costs to the U.S. In Colombia, as indicated in the case study, the surge seems to have occured as local garment makers switched capacity from the depressed local markets to U.S. exports. In Haiti, according to the case study in this volume, business actually seems to have picked up, as U.S. manufacturers moved marginal operations out of the U.S. and into Haiti, to cut costs.

This pattern is consistent with offshore producers rationalizing their operations during times of recession. When demand plummets, it is most economical to cut back relatively high cost plants first, or even switch them overseas to cut variable costs. This seems to have occurred repeatedly with U.S. semiconductor producers during recessions. 132/

Thus, when recession occurs, manufacturers appears to shut down their plants in high cost areas, in favor of output in plants in low cost areas. The production sites that will suffer, then, will be in the industrialized countries and in the most expensive offshore locations, while offshore plants in lower cost countries seem to do

rather well, in terms of export sales, compared to all national producers of exported manufactures.

The Balance of Payments

Table II.14 also displays what is perhaps the most obvious advantage to an LDC of offshore production: it is an important source of foreign exchange. In most of the countries of the Caribbean, as well as in many of the least developed economies of Asia, it is a crucially important source of foreign exchange.

In Singapore, Korea, and Hong Kong, U.S. 806/807 exports are less important (under 10 percent of manufactured exports), but this does not accurately reflect the importance of exports by foreign manufacturers, since much of the foreign investment in these countries is not American. To see this, as was mentioned earlier, during the late 1970s better than half of all electronics employment in most of the major offshore locations, other than Hong Kong, was in U.S. and Japanese affiliates alone. Table II.15 makes clear that electrical machinery exports were a significant portion of exports from all these countries in the mid-1970s. Electrical machinery exports by foreign producers, then, were a significant factor in the foreign exchange position of these countries.

While it is true that these figures probably overstate the importance of net foreign exchange earnings, since offshore exports tend to use many more imported inputs, they must still be substantial. As was seen earlier, 40 to 50 percent of the value of exports is typically the net foreign exchange yielded by these shipments.

Table II-14

U.S. 806/807 Imports in Relation to Total Manufactured Exports, Selected Countries (Percent)

	1970	1973	1974	1975	1976	1977	1978	1979
Barbados (807 only)		42		38	39	43	47	
Brazil (806 & 807)	1.2	2.0			3.7	4.3	3.8	2.8
Colombia (807)	.52	2.2	4.8	6.8	3.8	3.2		
Dominican Republic (807)		30		17		128	121	125
El Salvador (807)	3.1	24	88		144	203	261	
Haiti (807)	63	198	206	178	187	180		
Hong Kong (807)	6.2	4.2			2.7	3.4	3.4	3.1
Korea (806 & 807)	4.4	2.2		2.9	3.0	3.2	2.6	
Malaysia (806 & 807)		7.1	22	25	29	34		
Mexico (806 & 807)	61	61	97	116	119	105		
Philippines (806 & 807)	9.0	6.3		18	20	18	26	
Singapore (806 & 807)	7.6	13			10	10	8.9	9.0
Thailand (807)						2.2	6.2	
Indonesia (807)						10	8.9	8.0

Source: Total Manufactured Exports from UNCTAD, Handbook of International Trade and Development Statistics, 1980.
U.S. 806/807 Trade from U.S.I.T.C., "Tariff Items 807.00 and 806.30, U.S. Imports for Consumption, Specified Years 1966-79" (June, 1980); Subcommittee on Trade, House Committee on Ways and Means, Background Information and Compiliation of Materials on Items 807.00 and 806.30 (July, 1976).

U.S. 806/807 imports exceed total manufactured exports for some countries, because countries do not count these exports in their trade statistics (i.e., Mexico), or count only the value added (i.e., Haiti), and because of minor amounts of non-manufactures imported under 806/807.

Table II-15

As Percent (%) All Merchandise Exports,
Asian Countries

Country	Exports of Textiles and Apparel (1977)	Exports of Electrical Machinery (1974)	Exports of All Manufacturing (1977)
Korea	32	11	85
Hong Kong	46	12	96
Taiwan	23	18	49
Malaysia	2	2	17
Singapore	5	10	44
Philippines	5	7	25
Thailand	8	1	19

1. 10 percent in 1979.

2. Refers to 1979.

Source: ESCAP (December, 1978), p. 57, for electrical machinery; World Bank (October, 1980), for Textiles and Apparel, All Manufactures. Philippine data for 1979 based on information in Business Week (June 16, 1980), p. 36 and Asian Wall Street Journal, (June 9, 1980), p. 17. Electrical Machinery share for Taiwan, 1974, from Ranis, (1979), p. 240.

In fact, the two products which dominate offshore production, apparel and electronics, were probably better than 40 percent of all exports in Korea, Hong Kong, and Taiwan. Offshore production accounts for substantially less, however, because apparel and textiles in these countries appear to be dominated by indigenous producers (although a substantial portion of apparel output must be contracted by importers in industrialized countries it is, strictly speaking not offshore production, since these exports probably use mainly locally-produced inputs).

The exception that proves the rule is Hong Kong, where offshore production using imported components seems to be of much less importance. Hong Kong is something of an enigma, moreover, since 98 percent of manufacturing value added is in textiles and apparel, 133/ yet under half of exports of manufactures consist of textiles and apparel. 134/ One answer (in addition to its large volume of re-exports as an entrepot) to this puzzle seems to be that Hong Kong firms subcontract much of their output, or set up assembly operations, in surrounding low wage areas, especially mainland China. In 1979, for example, China's exports to Hong Kong (which were eventually re-exported) rose 423 percent to about $224 million, with most of the increase consisting of textile electronics, and other typical offshore products assembled from imported components. 135/ Thus, a significant portion of Hong Kong's manufactured exports are probably made up of reexports of offshore production fom Chinese plants. Much of Hong Kong's electronic watch output, for example, is assembled in China. 136/

China has, in the last few years, moved vigorously toward setting up export processing zones, compensation trade agreements , and other institutional arrangements aimed at encouraging the setup of offshore assembly plants. 137/ It (now)even permits joint ventures. And China is not the only socialist country to do so: Yugoslavia, East Germany, Hungary, and Rumania play a prominent role in West Germany's apparel assembly trade. 138/ In the case of both China and the Eastern European socialist countries, the primary motive for encouraging these ventures seems to be their yield of foreign exchange. 139/

Of course, foreign exchange is generally used when infrastructural investment, as in export processing zones, is undertaken to attract foreign producers. But the yield on these infrastructural investments is generally quite high. Therefore, the foreign exchange expenditure does not significantly reduce the attractiveness of these facilities as a means of earning hard currencies. 140/ And when offshore production is undertaken by foreign capitalists using labor force groups that would not normally be producing tradable goods, the foreign exchange costs of these projects is likely to be quite low. In short, then, from the viewpoint of the host economy, foreign exchange earnings must surely be one of the most positive features of these production arrangements.

Summary

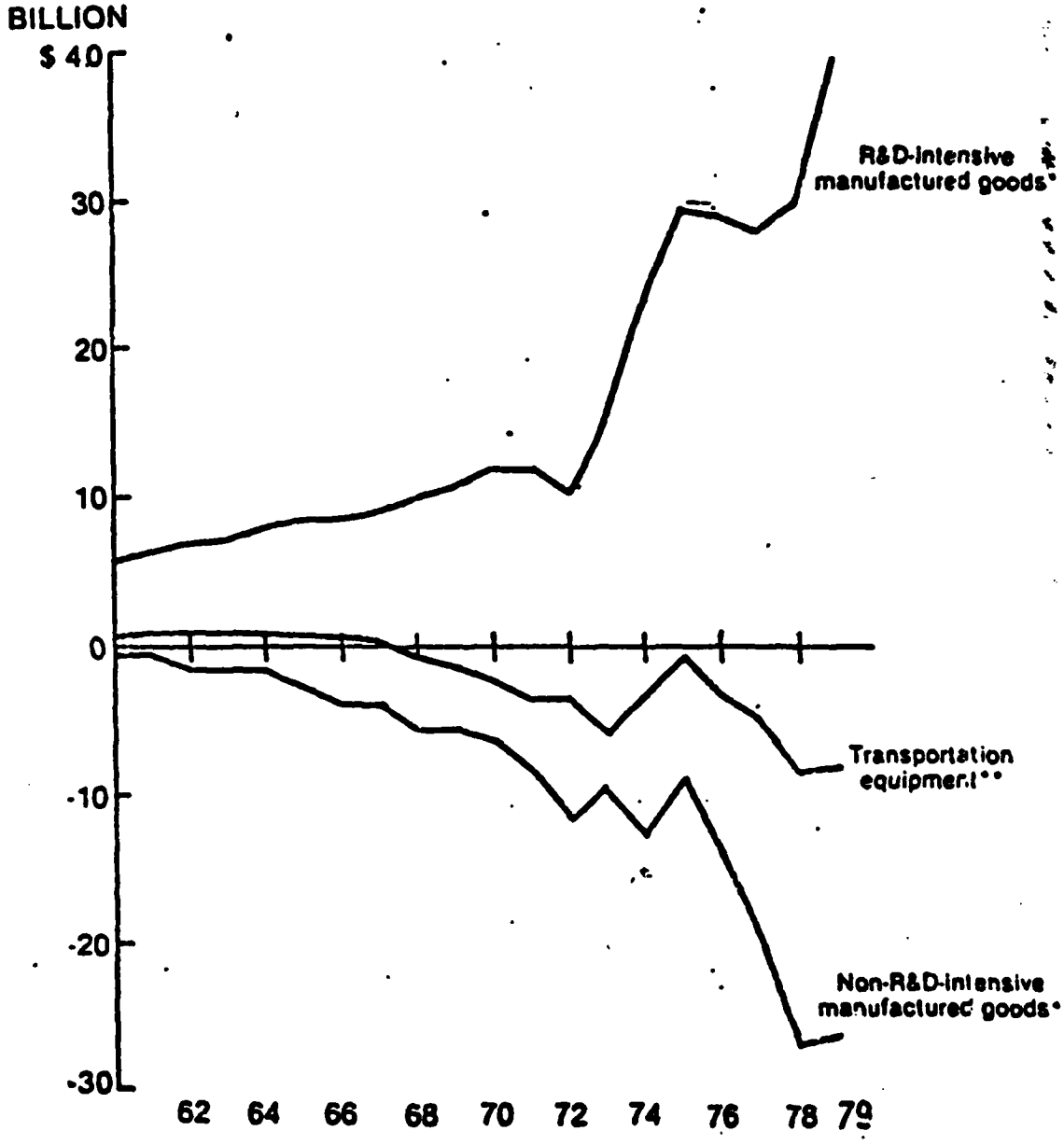
This brief, bird's eye view of offshore production arrangements has hinted at the complexities of international industrial redeployment. It was seen that truly international offshore production flows are basically concentrated in electronics and apparel, with electronics shipments being a multiple of those of apparel. Closer to home (i.e., Mexico for the U.S., Korea for Japan, Eastern Europe and North Africa for Western Europe), there are indications that more product diversity may exist, with transport costs a lower barrier to such trade.

It was also seen that offshore production has been one of three different strategies of response in the industrialized countries to the increase in exports of labor-intensive manufactured goods from the Third World. In Europe, protectionist trade barriers have blocked most of the channels for imports of those goods -- apparel and electronics -- in which offshore production is most feasible. In Japan, manufacturers have followed a strategy of setting up offshore production in those goods where LDC competitiveness threatens Japanese production, and to service third-country export markets. In the United States, offshore production has become an integral part of the highly competitive domestic market for electronics products, and to a much lesser extent, in apparel.

In a very fundamental sense, the whole phenomenon of offshore production is a portent of troubles to come, as industrialized countries respond to the increasing competence and lower production costs of producers of basic manufactures in LDCs. A single graph speaks eloquently to this trend (see Figure II.1); the U.S. economy is

Figure II-1

U.S. trade balances in R&D-intensive manufactured goods, non-R&D-intensive manufactured goods, and transportation equipment



Notes: *R&D-intensive manufactured goods include chemicals, nonelectrical machinery, electrical machinery aircraft professional and scientific instruments.

**Transportation equipment refers to motor vehicles and parts.

***Non-R&D-intensive goods includes food products, metals and fabrication, other manufacturing.

From: Office of Foreign Economic Research, U.S. Dept. of Labor, Report of the President on U.S. Competitiveness (SEpt., 1980), Figure III-10.

increasingly becoming an international exporter of technology and skill-intensive goods, and an importer of less skill and knowledge using products.

Few seem aware of this trend and its primary implication -- that the unskilled in the industrialized economies will simply be unable to market their services at wages treble or higher the going rates in Asia and Latin America (except in services and manufactures protected by tariffs or transport costs). Severe problems of structural unemployment, declining incomes and expectations, and the creation of widening gaps between the skilled and unskilled in industrial societies will follow.

Not many realize, for example, that one of the fundamental ways in which the United States has fallen behind Japan, is in the education and training of the great bulk of their respective work forces. By the late 1970s, for example, Japan had achieved the highest literacy rate in the world, and the percentage of its population finishing secondary education had grown much larger than in the United States and Canada, the runners-up. 141/ As another example, Japan, with roughly half of the population of the United States, now turns out substantially more electrical engineering graduates than the U.S. (See Table II.16). The future of high wage employment in the industrial countries clearly lies in increasing investments in skills, education, and technology.

As for the less-skilled occupations, there are basically two alternatives to be faced, if wages are not to erode to levels approaching those in the less industrialized countries. The first possibility is automation, the replacement of the unskilled by mechanized operations. Tending to machines, of course, is not

Table II-16

Number of Electrical Engineering Graduates *
(in Thousands)

	Japan	U.S.
1971	15.3	17.4
1972	16.1	17.1
1973	17.2	17.0
1974	17.4	15.5
1975	18.0	14.3
1976	18.3	14.2
1977	19.3	14.3

* Bachelor's, Master's, and Ph.D. degrees.

Source: Steve Kahne, "A Crisis in Electrical Engineering Manpower," IEEE Spectrum, (June, 1981), p. 52.

necessarily a skilled occupation, but high wages can absorb some of the implicit rent that investment in a stable and secure location earns, by comparison with a low-wage, and politically and socially unstable, environments for investment.

The second alternative is offshore production, moving the low skill jobs to where unskilled labor is in great abundance. The choice between the two strategies must surely be determined by economic costs, the limitations of existing technology, and the social and political costs of adjustment.

This second alternative, offshore production, really masks a very heterogeneous set of production relationships under a convenient label. But the differences which exist in the use of these arrangements, by products and by country, are the most interesting and important feature of this whole class of trade flows. They are interesting because the variations in the pattern suggest what the key elements of the decision to go offshore are -- the how, why, when, and where of assembly of different products in different countries. They are important, because they reveal what policy choices can affect the restructuring of international industry, and what the consequences of these choices are likely to be.

This study includes, in full institutional detail, an examination of the evolution of the internationalization of production for the most important single offshore product, semiconductors, and the effects on the most important single LDC location, Mexico. Other sections provide contrasts by examining the growth and nature of these trade flows in what is probably the poorest offshore location, Haiti, and in a country where this trade grew, flourished, and then wilted, Colombia.

CHAPTER II

APPENDIX 1

APPENDIX 2

Appendix 1

Problems in the Valuation of 806/807 Imports

Since a large part of 806/807 transactions represent the transfer of a semi-finished product between related firms (and thus has no observable market value) - offshore production is given a constructed value as it passes through U.S. customs. 142/ By statute 143/ the constructed value is defined to be the cost of materials and fabrication overseas, plus a markup for general expenses and profit equal to that usual (not actual!) in sales of merchandise of that particular kind, exported from that particular country. 144/ Essentially customs value is then defined as variable production costs, plus a markup particular to the country and product.

These problems are not even confined to trade within a single firm. Even when independent contracting takes place, the contracting firm often supplies inputs gratis, in which case problems of valuing an input with an unobserved price arise. Independent subcontractors, for example, are frequently given "assists" by their U.S. principles, in the form of loans of machinery, technical assistance, administrative assistance, etc., the value of which could be omitted from all sales contracts and invoices without financial prejudice to either side.

Note that -- except for certain special tools and dies unique to a specific product -- depreciation and other capital costs ought properly be considered a general expense. Also note that research, development, and design costs fall into a grey area of law. When directly allocable to a U.S.-made component, they are not considered a cost of fabrication. When numerous production stages take place inside

and outside of the U.S., before a finished product emerges, it is unclear what allocation of basic technical, administrative, and research overhead ought be made to the various stages of production. Does the silicon chip from which an integrated circuit is assembled overseas, and then shipped back to the U.S. for testing and packaging, embody the research cost that went into it as a chip, prior to export, as an assembled integrated circuit, or as a packaged integrated circuit after it has passed electrical tests and is actually ready for sale?

As might be imagined, the U.S. Customs Service has had great difficulty in interpreting this statute. An informal survey of Customs practice at various parts of entry along the U.S.-Mexican border, where a great deal of 806/807 trade enters the U.S., in early 1980, disclosed a great deal of variation in actual practice. Some import specialists ask for actual fabrication cost, general expenses, and profit, others make elaborate calculations comparing various cost ratios among the operations they are responsible for, in an effort to monitor "usual" expenses and profit; many simple accept whatever declaration is made with minimal scrutiny. Often, a wide variety of practices is followed within a single port of entry. The effect of valuation procedure is to effectively price the article at its declared cost of manufacture overseas, plus, possibly, a markup for general expenses and profit. No imputation for U.S. based research and development expenditure, administrative overhead, or marketing costs is generally made.

Thus, bearing in mind this brief discussion of U.S. customs valuation procedures, it is clear that this intrafirm trade in semi-finished goods is reported in official statistics with values that

have an extremely tenuous relation to an economist's concept of market value. Such trade, because it is in products that have no readily ascertainable market value, generally is given a constructed value by U.S. customs. Not only are the statutory requirements for such constructed valuation ambiguous and unhelpful, but also customs officials have responded with an extraordinary varied menus of ad hoc procedures, often within a single port of entry.

In addition, the values on official documentation that are reported to the U.S. Census Bureau, official custodian of U.S. trade statistics, are substantially revised as more accurate and timely cost information is received by customs import specialists. These revisions are often not attributed to the individual transactions to which they are applicable, and frequently are resolved after the deadline for sending revised data to Census has passed. One customs post reported that the official transaction values for electronic component imports sent to Census were generally 8 to 12 percent below revised appraisements later made, in many cases too late for the revisions to be picked up by Census.

Appendix 2

Outward Processing Imports in the EEC

(with the assistance of Karen Licker)

The EEC countries, as does the United States, permit the return of goods temporarily exported abroad for fabrication with the payment of duty on the value added. Assessment of the value added by customs officials in the EEC differs from U.S. procedures, but in principal the outward processing provisions of the EEC are very similar to the U.S. 806.30 and 807.00 provisions. The EEC countries are subject to more complicated procedures for allowing the re-import of assembled or treated good with partial duty relief, however.

Up until 1975 most of the EEC countries provided some form of duty relief for goods re-imported after treatment abroad. However, the application of these provisions varied from country to country within the community. In 1975, the council of the European community issued a directive regarding the "Harmonization of outward processing regulations." "Inward arrangements" allowing for the exemption of any export duty on goods processed within the community, have been in effect since 1969.

The directive makes duty relief consistent and uniform throughout the community. In essence the directive states that the duty due upon re-importation of a good after the treatment is to be reduced by the amount of duty that would have been charged upon import of the originally exported components had they been imported alone at the time

of re-entry of the product.

For statistical purposes each of the EEC countries have adopted a name for the type of outward processing transaction discussed here. They are as follows:

Belgium - Regime du perfectionnement passif -- Regeling Passive Veredeling (PPV)

Denmark - Passiv Foraeling

France - Exportation temporaire industrielle

Germany - Passiver Veredelungsverkehr

Ireland - Outward processing

Italy - Temporanea esportazaione per perfezionamento passivo

Luxembourg - Regime du perfectionnement passif

Netherlands - Voorwaardelijke vrijstelling voor goederen welke worden wederingevoerd na te zijn, bewerkt, verwerkt of hersteid (passieve veredeling).

United Kingdom - Outward processing relief.

Footnotes

1. The term "production sharing" was coined by Peter F. Drucker (see his article in the Wall Street Journal, "The Rise of Production Sharing," March 15, 1977). The terms "offshore production", "production sharing," and "co-production" are used interchangeably in this book.

2. Peter F. Drucker, "Production Sharing, Concepts and Definitions," Journal of Flagstaff Institute, January 1979.

3. Various studies by the U.S. International Trade Commission contain the following summary of the U.S. Customs treatment of 806.30 and 807.00:

> "Items 806.30 and 807.00 are provided for in schedule 8, part 1, subpart B, of the TSUS. Pursuant to the provisions of item 806.30, articles of metal (except precious metal) that have been manufactured, or subjected to a process of manufacture, in the United States and exported for processing and return to the United States for further processing ar subject to duty only on the value of the foreign processing. Under item 807.00, imported articles assembled in foreign countries with components that have been manufactured in the United States are subject to duty upon the full value of the imported product less the value of the U.S.-fabricated components

> contained therein. No further processing in the United States is required for articles imported under item 807.00."

(See, for example, Imports Under Items 806.30 and 807.00 of the Tariff Schedules of the United States, 1977-1980, U.S.I.T.C. Publication 1170, July 1981, p. 2).

The specific language of the 807.00 provision, which covered 98 percent of the combined imports under the two items in 1980, refers to

> "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 bee 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."

4. Japan also has special tariff arrangements permitting duty-free reentry of Japanese-made components assembled offshore, but their use appears to be much more restricted than is the case in the U.S. and E.E.C. See U.S.I.T.C. (1970), p. 32; UNCTAD (1975), p. 21-22.

5. See McKinnon (1981), Keesing (1979).

6. See Mira Wilkins (1974), for the history of U.S. direct foreign investment, Franko (1976) for European investment. Significant volumes of Japanese direct foreign manufacturing investment in the postwar period did not begin until the late 1960s. See Sekiguchi (1977).

7. Such as Froebel, Heinrichs, and Kreye (1980).

8. See also Yoshihara (1978), Pp. 37-38.

9. See Franko (1976), Pp. 126-132.

10. See the discussion of European trade policy in semiconductors, in this book, for a particularly clear example.

11. Complete, detailed statistics on 807 only are available from 1969 on. The ITC maintains these data in completely disaggregated (country/product) form on magnetic tape, in addition to its less detailed published reports.

12. Essentially, 806.30 permits the reimport of "fabricated" but effectively unfinished metal products into the U.S. for further processing; 807.00 permits the "assembly" of finished goods for reexport to the U.S. for final consumption. Over the years, the definition of what "assembly" is has been expanded through a series of decisions in the U.S. Customs courts. See Lebowitz (1979).

13. Section 807.00 of the Tariff Schedule of the U.S. (TSUS) came into being in 1963 as a technical change suggested in the U.S. Tariff Commission's Tariff Classification Study, codifying into law prevailing practices resulting from Customs Court decisions of the 1950s. The only substantive change introduced by this legislation was to no longer require that assembled components be subject to the

requirement of "constructive segregation," whereby assembled components had to be capable of being removed without injury from the item in which they were placed. Slight changes in this tariff section were legislated in 1965 and 1966. See U.S. Tariff Commission (1970), Pp. 15-20.

In 1966, when Mexico's Border Industrialization Program -- which depended upon 807 for its continued success -- began to really grow, organized labor became concerned about section 807. Since 1967, the AFL-CIO has sought repeal on numerous occasions. See testimony of N. Goldfinger before Subcommittee on Trade, House Ways and Means Committee, March 25, 1976.

14. There may also be some small cost to the firm of maintaining administrative and legal records, and their administration, required by the special customs procedures for entry of 806/807 imports.

15. Examples of such inputs being dutiable are non-U.S.-made materials or components, "assists" of a technical or administrative nature, machinery, or tools.

16. This figure corresponds to imports of manufactured goods classified chiefly by material (excluding iron and steel), machinery and transportation equipment, and miscellaneous manufactured articles from the Western Hemisphere (excluding U.S. and Canada), Asia (excluding Japan), and Africa. See U.S. Bureau of the Census, Highlights of U.S. Export and Import Trade, (December, 1977).

17. See U.S.I.T.C. (1980), Appendix tables. Actually, 806.30 imports of metal items from the entire world amounted to $80.6 million (or 2.2 percent of 806/807 imports from LDCs). There is no easy way to separate out imports of these items coming from LDCs, and exclude them

so as to match our definition of manufactured imports. In any event, it would not affect our calculations in any significant way.

18. U.S. Department of Commerce, Bureau of Economic Analysis, U.S. Direct Investment Abroad, 1977 (1981), Table II.I.20.

19. See U.S.I.T.C. (1980), p. 11. In 1969, the U.S. Tariff Commission (the ITC's organizational predecessor) found that roughly 40 percent of the total value of U.S. 806/807 imports, and 52 percent of the value of U.S. duty-free components reimported under 806/807, came from U.S. overseas investments. The divergence exists because many 806/807 imports are foreign auto imports from developed countries with very small U.S. parts contents. These auto imports from foreign producers amount to a large part of total 806/807 import value, and a very small part of reimports of U.S. components. Since autos do not appear, in general, as imports from LDCs, presumably much higher percentages of 806/807 imports from LDCs are from U.S.-owned firms.

The remainder of 807 imports in 1969 came from U.S. firms dealing with independent jobbers and contractors abroad, and foreign firms securing U.S. components for their exports to the U.S. Some 58 percent of the total value, and 40 percent of the U.S. value of 806.30 imports came from U.S. foreign facilities in 1969.

In the U.S. facilities shipping 807 exports, some 60 percent of the value of 807 exports was shipped by facilities whose main activities were 807 assembly operations.

See U.S. Tariff Commission (1970), Pp. 6-7, 147-149.

20. Unfortunately, there are no data available on which 806/807 imports are related party transaction.

21. This done in Appendices 2 and 3 to this section.

22. More detailed information on the relative importance of 806/807 imports and related party impports in overall imports of these items is given in Appendix Table 4.

23. See U.S. Tariff Commission (1970), p. 6.

24. Product categories included in "other" electrical equipment are:

Electronic memories	Radio apparatus and parts
Transformers	Phonographs and parts
Electric motors, generators, etc.	Electric household appliances
Radio telegraph, telephone navigational and radar apparatus	Loudspeakers and application equipment
Electrical conductors	Tape recorders and players

Other miscellaneous electrical products	Radio-phonograph and other consumer electronic combinations
Certain heating, welding, soldering equipment	Electric lamps

Components:
- Capacitors
- Resistors and Parts
- Electric Tubes (except x-ray) and parts

25. See U.S.I.T.C. (January, 1980), Pp. 41, 44.

26. See the testimony of Melvin Kleeblatt before the Subcommittee on Labor, Committee on Education and Labor, U.S. House of Representatives, April 26, 1967.

27. Morawetz (1981) also lists labor productivity differentials, quality control, and punctuality of deliveries as major problems in Colombia, relative to Asia. Since, however, foreign firms can set up their own garment export operations in most other parts of Latin America, it is doubtful that this is the major reason for the relative dearth of garment exports from other parts of Latin America.

28. The major exception is Brazil which contributed about 87 percent of the value of its 807 exports to the United States in 1977 and 1978.

29. See International Trade Commission (1976), p. 41.

30. See Bennett and Sharpe, (1979).

31. According to the U.S.I.T.C. in Certain Motor Vehicles and Certain Chassis and Bodies Therefor, (U.S.I.T.C. Publication 110, December 1980), U.S. producers' shipments of cars and light trucks in 1978 were valued at about $74.1 billion in 1979, wages paid to production workers about $21.9 billion. This compares to about $123.4

million in Mexican engine, vehicle, and other parts exports to the U.S. under 806/807 in 1978, and about $81.3 million in dutiable value (based on unpublished U.S.I.T.C. data tabulated from magnetic tapes). This amounted to about .2 percent, and .4 percent, respectively, of U.S. industry shipments and wages. In 1978, Mexican 806/807 exports of "motor vehicle parts, motorcycles, tractors, off-the-highway type work vehicles" amount to roughly two-thirds of total parts exports, so even if these exports were not entering under 806/807, they could not have exceeded twice these small percentages.

32. See New York Times, (July 6, 1981), p. D6. The figures refer to parts shipped from all foreign countries (including Western Europe and Japan), not just Mexico. Much of these imports will include parts completely manufactured (and not just assembled from U.S.-made materials) abroad.

33. See Business Week, (August 31, 1981), p. 60.

34. See New York Times (July 21, 1981). The proposed content requirements are 75 percent of value for producers selling over 200,000 cars per year, 90 percent for companies selling over 500,000 units annually.

35. This is discussed in the next section.

36. U.S.I.T.C. (March, 1977), Pp. A-8 to A-10.

37. U.S.I.T.C. (May, 1980), Pp. A-16 to A-18.

38. Ibid., P. A-41.

39. U.S.I.T.C., (June 1981), P. A-29.

40. Ibid., Magnavox (owned by the Dutch Philips group) is classified with the U.S.-owned producers in this comparison).

41. Ibid., P. A-51. Two other factors may also influence the apparently greater labor intensity of U.S. production. First, there are still color television sets that are mainly produced in the U.S. from U.S.-made assemblies, and these are being aggregated with U.S. facilities that finish offshore-produced sets, thus biasing our desired comparison between Japanese sets assembled in the U.S., and U.S. sets assembled in the U.S. from offshore-produced assemblies. Second, the Japanese have made innovations in color t.v. circuit design that reduce required labor input.

42. U.S.I.T.C. (May, 1980), P. 11. They also recommended that restrictions continue on Taiwanese and Korean imports, which were characterized as likely to increase in the absence of the OMAs. It was suggested that Taiwan's quotas be reviewed when "the process of investment in production facilities for assembly in the United States continues to the point that, like Japan, it is no longer a serious problem for the domestic-based industry" (p. 13). This finding was recently reversed by the U.S.I.T.C. in its June 1981 report on the industry.

43. A similar fear of import restriction apparently is one of the motivations for recent Japanese decisions to start large semiconductor manufacture and assembly operations in the U.S., in lieu of exports. See the semiconductor case study later in this volume.

44. ITT recently rescued its troubled European T.V. sales from intense competition by concentrating all European T.V. production in a single, highly-automated, large-scale facility in Germany. See Business Week, (August 31, 1981), Pp. 61-62.

45. New York Times, (April 29, 1981).

46. See Table II.6.

47. See Table II.5.

48. In early 1974, Japanese cumulative direct investment a in affiliated companies amounted to (in million of dollars):

Taiwan - $110 Korea - $315 Hong Kong $ 48
Singapore - $ 85

Source: Bank of Japan, as reported in Yoshihara (1978), Pp. 27-29.

49. See Developing World Industry and Technology, June (1978), Pp. 29-31. The ITC mentions a jump in imports from Taiwan and Korea after the imposition of the Japanese OMA as related to the imposition of the Taiwanese and Korean OMA's in 1979. (See U.S. ITC (May, 1980), P. A-5).

50. See Yoshihara (1978), Chapter 1.

51. Sekiguchi (1977), P. 73, and footnote 5.

52. Yoshihara (1978), P. 23, and Chapter 4.

53. Japan Electrical Machinery Industry Association (JEMIA) (1980) in Japanese, P. 2.

54. Ibid.

55. U.S. Department of Commerce, Bureau of Economic Analysis, U.S. Direct Investment Abroad, 1977, (April, 1981), Table II. G.4.

56. Japan Electrical Machinery Industry Association (1980), P. 180.

57. See Lee (1980), Pp. 28, 29, 39.

58. See G. Ranis (1979), P. 249.

59. See Yoshihara (1978), Pp. 165-169.

60. Ibid, Pp. 159, 176. See also U.S. Departments of Commerce, Global Market Survey - Electronic Components, (1978), P. 81.

61. See the semiconductor case study.

62. Yoshihara (1978), Pp. 163-165.

63. Ibid, Pp. 28, 31.

64. Ibid, P. 28.

65. See the semiconductor case study.

66. JEMIA (1980), Pp. 257-261.

67. Ibid.

68. Actually, we have been unable to locate any published statistics or analysis of their use, though their existence is often mentioned.

69. See UNCTAD (1975), Pp. 21-22. A more extensive discussion of these Japanese tariff-sparing arrangements may be found in section of the semiconductor case study.

70. For evidence that Japanese firms have GSP and quotas in mind when they choose offshore production locations, see the case studies of international subcontracting presented by S.S. Lee, (UN ESCAP TRADE PROMOTION CENTRE, Bangkok) at UNCTAD, Seminar on North-South Complementary Intra-Industry Trade, Mexico City, (July 1979). U.S. firms also use them: for instance, note that all Japanese imports of integrated circuits from Southeast Asia (some of which are produced in offshore locations by U.S. firms) entered under the Japanese GSP system in 1978. (See the semiconductor study and Office of Producer

Goods, Department of Commerce (1979), Pp. 962, 96; BA Asia (1979), P. 109).

71. Note, incidentally, that Japanese foreign investment is much more likely to be found in a joint venture [than U.S. investment]. See Yoshihara (1978), Pp. 39-46.

72. Perhaps the situations is best described by these comments of the Japanese commercial attache' in Singapore, when asked if recent wage hikes would bring more sophisticated operations into foreign-owned plants:

> "There is little prospect of more sophisticated ventures being established in Singapore," Mr. Nayashima said. "Japanese firms keep their businesses in Japan until they lose their competitiveness. Then, they move out to take advantage of lower wages or to establish export markets abroad."

From Asian Wall Street Journal (March 23, 1981), P. 20.

73. See Berthomieu and Hanaut (1980), Pp. 49-50.

74. See Finger (1975, 1977).

75. See the semiconductor study for a more extended discussion.

76. Froebel, Heinrichs and Kreye (1980).

77. Ibid., Part II.

78. Ibid. Compare the 23,000 Asian employees with the 200,000 employed by U.S. firms in 1977.

79. In the German apparel industry, some 70 percent of all firms maintain some form of production abroad. Ibid., P. 107.

80. See the semiconductor case study for a detailed discussion.

81. See Office of Producer Economics, U.S. Department of Commerce (1979), Pp. 97-98.

82. Actually, motor vehicles and parts ought to be added to the list for the U.S. but their import into the U.S. is rather special, related to the link between auto sales by U.S. companies and exports, in the Mexican market, and the historical decision by the U.S. auto firms to service their overseas markets from direct investment instead of exports.

83. See the semiconductor case study.

84. Froebel, Heinrichs, and Kreye (1980), p. 329.

85. See the Mexico case study on the types of U.S. firms found along the Mexican border; Froebel, Heinrichs, and Kreye (1980), Part I, on the types of German firms involved in apparel subcontracting.

86. Ibid., Pp. 140-141.

87. Morawetz (1980), Pp. 103-114.

88. Ibid., P. 111. Managers of apparel factories interviewed by us in Haiti and Mexico stressed the importance of managing production flows within the shop efficiently.

89. See Mexico and Haiti case studies.

90. See the semiconductor case study, for a discussion of factors influencing automation in semiconductors.

91. Open communication between managers and employees in "quality circles" is also stressed it should be noted. For more on automation in Japan, see World Business Weekly, (April 7, 1980),

Pp. 22-23; Asian Wall Street Journal (April 13, 1981), P. 1.

92. A. Spoeth, Asian Wall Street Journal (March 23, 1981), p. 1.

93. And is particularly easy to document in the semiconductor industry.

94. See the compendium of opinions on Pp. 107-118 of House Ways and Means Committee, Subcommittee on Trade, (1976).

95. The Japanese tendency to keep production in Japan, until forced to relocate abroad to stay competitive, or to penetrate foreign markets, may be, in essence, a program to transfer to Japanese workers a technological rent that might otherwise be dissipated with competitive price cuts by Japanese firms producing offshore at a lower cost.

96. An argument used by organized labor. See the reference in footnote 12.

97. Finger (1976, 1977) attempted to measure these effects in the U.S., West German, and Dutch economies by assuming:

a constant elasticity of import demand with respect to price, identical for all sectors, and equal to the overall elasticity for manufactured goods in the U.S.

1. perfect substitutability of foreign components for U.S.-made components.
2. a constant elasticity of foreign component and "assembly" supply with respect to price, with fixed assumed values, constant across sectors, and consistent with the overall supply elasticity of manufactured exports to the U.S.

with Finger's conceptualization, the reason 6 percent or so of U.S. imports come tounder 806/807 is that the price of foreign assembly and components have risen to the point where it would be uneconomic to use more foreign components in output for the U.S. market. Thus, the division of imports between 806/807 and wholly foreign imports is determined by the condition that the marginal cost of using U.S. components is just equal to the marginal cost of supplying foreign-made components to a foreign assembler.

The evidence reviewed in this volume for the SCD industry (which accounted for 1/3 of the U.S. components used in 806/807 imports in 1978) points to somewhat different assumptions:

there are numerous signs that the supply of foreign 'assembly' is infinitely elastic at a price determined by LDC minimum wage standards, while Finger assumed an elasticity of 40. Also, as will be noted below, these assumptions overlook the effects of country-risk on import sourcing decisions, which have important consequences for producer behavior. Finally, while the conceptual framework is ingenious, the numerical elasticities -- constant for all products -- are highly suspect, and the empirical results of dubious value.

98. See the case studies of Mexico, Haiti, and the semiconductor industry for more discussion of this point. Froebel, Heinrichs, and Kreye (1980), Pp. 78-79, 114-115, document this for the German apparel industry. For a comparison in the electronic industries of the U.S., Sweden, and Germany, see Weiss (1978). For the U.S. electronics industry, see Bureau of Labor Statistics (1963), P. 35; women made up more than half of production workers in consumer products and

components in the U.S.

99. See, for example, R.C. Estall, "The Electronics Products Industry of New England," Economic Geography (July, 1963), P. 200.

100. See Glenday, Jenkins, and Evans (1980), Pp. 16-17; Neumann (1978), P. 111-112.

101. In addition to the sources in the previous footnote, see Jacobson (1978), and Bale (1976).

102. Glenday, Jenkins, and Evans (1980).

103. Froebel, Heinrichs, and Kreye (1980).

104. Ibid., P. 340, citing the ILO, Employment Growth and Basic Needs (Geneva, 1976), P. 18.

105. World Bank (1980), Table 6.

106. Ibid., Table 3.

107. ESCAP (1973), P. 58. Data for Taiwan in 1971 show electronics accounting for under 4 percent of industrial production; see Ranis (1979), P. 240.

108. In Barbados, which is not generally included in the statistical tables used, offshore production is thought to account for 10-12 percent of GNP; see the remarks of D. Worrel in UNCTAD (1979). Of a total industrial work force of about 12,000, some 3,000 are employed in electronics; see "Special Report -- Industrial Development/Site Selection," Electronic Engineering Times (May 4-11, 1981).

109. These issues are generally the same around the world, are discussed in much greater detail in the Mexico and Haiti case studies. See also UNIDO (August, 1980), Pp. 10-12.

110. In the Asian export processing zones, it is estimated that up to 85 percent of the labor force is under 30, unmarried, or married without children. (Ibid.)

In Taiwan's zones, where detailed data on workers by age and sex is available, 84 percent of the labor force is female; 42 percent are women under 20, 78 percent women under 30 (Taiwan, Export Processing Zone Administration, Essential Statistics, December, 1979).

It is interesting to speculate that in Haiti, where female workers seem to be older than elsewhere (see the Haiti case study), the rather informal nature of the marriage bond in the local population might be related to the relative maturity of the labor force.

111. In German apparel firms, for example, in the industrialized countries some 22 percent of the labor force was over 40 years old, compared to 5 percent in affiliates in the developing countries. See Froebel, Heinrichs, and Kreye (1980), P. 114.

112. See the Mexico case study. In Korea, a survey of 60 male and 171 female employees in the Masan export processing zone found only 29 male and 34 female employees with any previous employment experience. Of the total (231 employees), 198 were from the province in which Masan is located. See Choe (1975), P. 240.

In Singapore, the startup of textile and electronics assembly plants is credited as a major factor in a huge jump in labor force participation in young women since 1968. See Siok-Hwa (1977), Pp. 369-371, Chen-Tung, Pp. 168-169.

113. In fact, if an offshore country faces a downward sloping demand for its labor, there will generally be an optimal tax rate it could charge. If the host economy has limited means to set or enforce

such a discriminatory tax policy, a second-best policy would have it set the wage paid by the foreign investor above the market wage. This point is discussed in the semiconductor case study.

114. UNIDO, (August, 1980), P. 16

115. Choe (1975), P. 247. In recent years, wage levels in the zones have fallen below the Korean averages for apparel and electronics; in earlier years, they were higher.

The statistics for the Masan zone (see Table II.12), incidentally, show female workers' monthly earnings at less than half of the earnings of male workers.

116. Compare the figures in Taiwan Export Processing Zone Administration, Essential Statistics, for various years, with apparel and electrical machinery averages in the Statistical Yearbook of the Republic of China.

117. For Mexico, see U.S. Department of Labor, Bureau of International Labor Affairs, Country Labor Profile --- Mexico, (Washington, 1979). For Haiti, see the case study in this volume.

118. UNIDO (August, 1980), Pp. 22,33.

119. Ibid., P. 18.

120. See Froebel, Heinrichs, and Kreye (1980), Pp. 320, 351-364; Nayyar (1978), P. 77. Even in socialist China, managers of offshore plants have, to a limited degree, won a right to dismiss workers, as is not the case elsewhere in the economy. See New York Times, (September 3, 1981), P. 3.

121. See the Haiti and Mexico case studies, and UNIDO (August, 1980), Pp. 25-29.

122. Ranis (1979), P. 248.

123. See the semiconductor case study, and the U.S. Department of Commerce, Office of Producer Economics, (1979), Pp. 29-30.

124. See UNIDO (1980), P. 31.

125. This is described in detail in the semiconductor case study.

126. "Singapore: 2000," Scientific American (August, 1981), Pp. 55.

127. See Asian Wall Street Journal (January 5, 1981), P. 1; (May 25, 1981), P. 17; (June 9, 1980), P. 16.

128. Far Eastern Economic Reviews (October 19, 1979), Pp. 81-83.

129. See Asian Wall Street Journal, (March 23, 1981), P. 20; (January 5, 1981), P. 1.

130. Froebel, Heinrichs, and Kreye (1980), Pp. 368-369, 383-385.

131. Ibid. The export processing zone statistics used in this section for Korea and Taiwan, show those declines. The declines, however, were not confined to export processing zones but occurred in other sectors of the affected economies as well. For Mexico, see the case study in this volume.

132. See the semiconductor case study.

133. See the first part of this section.

134. Table 2.14 shows this.

135. New York Times, (December 27, 1980), P.D1.

136. As reported in the Business Week.

137. New York Times, (December 27, 1980), P. D-1; (April 21, 1980), P. A2; Far Eastern Economic Review, (March 7, 1980), Pp. 44-45.

138. Froebel, Heinrichs, and Kreye (1980), Pp. 71-75, 108-110.

139. Ibid., Pp. 97-98; New York Times, (December 27, 1980), P. D1.

140. World Bank lending studies of the social return to investment in export processing zones generally show a 13 to 15 percent return. (UNIDO (1980), Pp. 24-25). Studies of the Korean Masan and Taiwanese Kaohsiung zones also show large social returns. See Seoth (1979), Pp. 338-340; Choe (1975).

141. See Developing World Industry and Technology, Inc. (1978), P. 78; Abegglen and Rapp (1972), Pp. 44-45.

142. See U.S.I.T.C. (1980), p. 11.

143. Prior to 1980, when a new valuation code took affect.

144. See A. G. Lebowitz, Item 807.00, Mandel and Grunfeld Seminar notes, Mandel and Grunfeld, New York, November 1979.

CHAPTER II

APPENDIX TABLES

Table IIA-2a. Total 806/807 Country Value and Dutiable Value as Percent of Total Country Value, Selected Countries and ITC Products (millions of dollars and percent) 1969-1978

Product and Years	MEXICO Total Value 806/807	MEXICO % Dutiable of Total Country Value	MEXICO % Country Value of Grand Total	MALAYSIA Total Value 806/807	MALAYSIA % Dutiable of Total Country Value	MALAYSIA % Country Value of Grand Total	SINGAPORE Total Value 806/807	SINGAPORE % Dutiable of Total Country Value	SINGAPORE % Country Value of Grand Total	TAIWAN Total Value 806/807	TAIWAN % Dutiable of Total Country Value	TAIWAN % Country Value of Grand Total	HONG KONG Total Value 806/807	HONG KONG % Dutiable of Total Country Value	HONG KONG % Country Value of Grand Total	KOREA Total Value 806/807	KOREA % Dutiable of Total Country Value	KOREA % Country Value of Grand Total
TV Receivers and Parts																		
1969	24.8	28.9	28.5							35.0	71.0	40.2	9.8	51.2	11.3			
1970	41.5	32.5	36.7							51.1	73.8	45.1	6.7	61.7	6.8			
1971	63.1	37.3	40.1							69.6	79.1	44.1	7.7	49.8	4.9			
1972	94.9	44.1	34.8				1.3	74.6	.5	147.6	81.8	54.2	7.7	55.7	2.8	.3	82.4	.1
1973	145.4	47.9	40.3				13.2	82.8	3.7	175.3	83.1	48.6	4.7	68.9	1.3		88.8	
1974	194.1	46.9	43.7				5.9	92.9	1.3	215.2	84.5	48.0	2.8	67.2	.6	.7	98.7	.2
1975	211.3	53.5	54.0	.1	75.4		1.1	90.5	.3	169.9	88.4	43.4	.5	73.5	.1	.2	98.7	.1
1976	258.0	58.2	55.5				5.4	90.7	1.2	185.3	90.9	39.9	1.3	68.1	.3	.5	93.6	.1
1977	220.8	57.9	49.0				19.3	90.4	4.3	177.1	92.4	39.3	1.1	79.8	.2	.6	92.3	.1
1978	385.6	56.8	51.8				18.7	93.1	2.2	272.2	91.2	36.6	1.3	85.3	.2			
Motor Vehicles																		
1969																		
1970																		
1971		75.0																
1972	.1	76.8																
1973		38.5																
1974																		
1975	.1	81.1																
1976																		
1977																.4	98.3	
1978																		
Motor Vehicle Parts, etc.																		
1969	.1	32.5	1.4															
1970	1.8	73.9	6.8															
1971	7.8	82.0	20.7															
1972	13.6	59.5	41.8							.5	92.6	1.5						
1973	19.1	57.4	57.5							.1	87.4	.2						
1974	29.9	62.3	62.4															
1975	58.6	61.5	62.5															
1976	85.8	81.7	32.5															
1977	95.6	87.6	37.4													3.9	98.5	.7
1978	94.8	84.9	21.9															

Semiconductors and Parts																		
1969	23.6	21.1	22.2	.1	41.3	.1	6.0	62.1	5.6	9.1	46.2	8.6	32.0	38.3	30.1	15.0	34.4	14.1
1970	33.5	26.3	26.4	.2	27.6	.2	12.2	42.3	9.6	6.5	51.8	5.1	32.3	43.2	25.5	16.6	25.8	13.1
1971	36.3	30.4	27.9	.1	30.8	.1	16.3	57.3	12.5	8.5	60.7	6.5	23.2	52.3	17.8	22.6	37.0	17.4
1972	53.3	36.0	21.3	.1	73.8		61.3	50.5	24.5	16.7	63.1	6.7	42.3	54.0	16.0	45.3	36.7	18.1
1973	78.2	42.6	19.0	23.9	47.1	5.0	90.0	57.0	24.1	37.4	71.9	9.1	63.0	62.3	15.4	69.7	40.7	17.0
1974	178.5	35.9	20.3	105.6	54.6	15.5	110.1	59.5	16.2	59.1	66.8	8.7	83.3	66.1	12.2	110.6	49.8	16.2
1975	107.8	32.1	17.5	144.0	56.1	23.4	123.3	61.2	20.0	39.0	61.2	6.3	55.8	62.2	9.1	90.5	42.5	13.1
1976	94.1	41.1	10.0	185.7	53.0	21.2	197.6	57.6	22.6	52.3	68.2	6.0	76.1	66.4	8.7	148.0	41.4	17.0
1977	71.2	33.5	6.4	270.0	43.5	24.1	234.8	46.4	21.0	85.2	56.8	7.6	76.1	53.7	6.8	213.3	38.6	19.0
1978	76.6	35.0	5.2	449.6	36.8	30.4	290.1	40.5	19.6	79.2	55.8	5.4	85.2	47.1	5.8	214.7	37.1	14.5

Product and Years	PHILIPPINES Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	BRAZIL Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	HAITI Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	EL SALVADOR Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	DOMINICAN REPUBLIC Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	COLOMBIA Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total
TV Receivers and Parts																		
1969							.1	14.9	.1									
1970							.2	17.2	.2									
1971							.2	16.3	.1									
1972								27.6										
1973				6.7	57.9	1.9	.2	39.4	.1									
1974				17.3	69.2	3.9	.1	44.6										
1975				1.2	73.3	.3		55.6										
1976							.1	22.8										
1977								33.3										
1978							.4	31.6	.1									
Motor Vehicles																		
1969																		
1970																		
1971																		
1972																		
1973																		
1974																		
1975																		
1976																		
1977																		
1978																		
Motor Vehicle Parts, etc.																		
1969																		
1970																		
1971																		
1972																		
1973																		
1974																		
1975				.2	98.2	.2												
1976				6.2	98.7	3.1												
1977				13.7	98.7	5.4												
1978				22.8	98.7	5.2												

Semiconductors and Parts

1969												
1970												
1971												
1972							.1	20.8				
1973	3.3	23.7	.8				.7	28.7	.2			
1974	18.7	42.6	1.6	2.7	92.7	.4	6.2	4.5	.9	2.0	81.6	.3
1975	25.1	39.4	4.1	4.3	86.2	.7	1.3	14.2	.2	7.3	85.4	1.2
1976	32.4	43.4	6.0	6.8	93.1	.8	.6	14.3	.1	29.5	82.8	3.4
1977	64.7	34.2	5.8	10.7	49.1	1.0	1.2	14.8	.1	38.5	53.4	3.4
1978	122.1	30.7	8.3	16.8	51.8	1.1	1.3	11.8	.1	40.4	48.9	2.7

Product and Years	WEST GERMANY Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	CANADA Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	JAPAN Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	Total: 15 Countries Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	GRAND TOTAL Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total
TV Receivers and Parts															
1969				6.8	65.5	7.8	5.1	95.9	5.9	81.7	56.8	93.8	87.1	57.0	100.0
1970		69.6		5.2	70.6	4.6	4.6	90.0	4.1	109.3	57.0	96.6	113.2	57.8	100.0
1971	.2	88.1	.1	4.1	75.5	2.6	6.3	91.8	4.0	151.1	60.5	95.9	157.6	66.5	100.0
1972	.7	89.3	.3	3.2	78.3	1.2	10.9	95.1	4.0	266.6	68.1	97.8	272.5	68.0	100.0
1973	.4	93.6	.1	2.6	80.2	.7	8.4	96.9	2.3	357.0	68.4	99.1	360.4	68.6	100.0
1974				2.3	82.5	.5	2.8	95.6	.6	441.2	67.4	99.4	444.0	67.5	100.0
1975				2.7	87.1	.7	.5	84.1	.1	387.4	69.3	99.0	391.5	69.3	100.0
1976				8.1	70.1	1.7	.7	75.6	.2	459.4	72.6	98.8	464.8	72.6	100.0
1977				24.6	70.4	5.5	4.6	60.6	1.1	448.3	73.7	99.5	450.6	73.7	100.0
1978				66.0	64.3	8.1	7.6	76.9	1.0	743.9	71.0	99.9	744.6	71.0	100.0
Motor Vehicles															
1969	597.7	99.6	80.5	6.9	58.1		.7	94.7		605.3	99.1	81.5	742.4	98.6	100.0
1970	734.0	99.3	75.8	7.1	64.7		29.6	89.5		770.6	98.6	79.6	967.9	98.3	100.0
1971	948.7	99.2	74.4	5.4	64.6		45.2	91.7		991.3	98.8	78.4	1265.2	98.3	100.0
1972	972.9	98.9	75.6	7.4	71.8		47.7	91.7		1028.0	98.3	79.9	1287.4	98.2	100.0
1973	1232.7	98.6	74.6	11.1	64.3		13.6	94.6		1257.4	98.3	76.1	1651.9	98.2	100.0
1974	1420.2	98.9	72.5	11.6	64.3		101.7	95.2	5.2	1533.5	98.4	78.2	1959.9	98.4	100.0
1975	1241.5	99.8	65.2	46.9	87.8		239.9	98.0	12.6	1528.4	98.5	80.3	1903.8	98.4	100.0
1976	900.6	98.5	52.3	61.6	72.4		491.6	97.1	28.5	1454.0	97.0	84.4	1723.3	97.1	100.0
1977	1461.5	98.6	62.7	35.3	72.2		649.2	97.5	27.9	2146.1	97.8	92.1	2330.1	97.8	100.0
1978	2011.4	98.5	60.9	45.4	79.6		961.5	97.9	29.1	3018.6	98.0	91.4	3302.6	98.0	100.0
Motor Vehicle Parts, etc.															
1969	.1	59.6	1.4	6.2	78.8	84.9				6.4	78.0	87.7	7.3	78.9	100.0
1970	2.7	99.8	11.5	15.7	51.1	67.1	1.2	81.2	5.1	21.1	61.1	90.2	23.4	63.9	100.0
1971	12.1	99.7	32.2	13.4	71.9	35.6	.3	77.5	.8	33.8	84.3	89.4	37.6	85.3	100.0
1972	5.0	98.2	15.4	18.4	79.0	32.0	1.0	89.5	3.1	30.0	73.9	92.3	32.5	75.5	100.0
1973	.4	98.3	1.2	12.0	80.6	36.1	.7	90.0	2.1	32.8	67.7	98.8	33.2	67.9	100.0
1974				14.7	73.0	30.7	1.3	95.0	2.7	46.0	66.7	96.0	47.9	67.9	100.0
1975	.2	90.4	.2	12.3	77.5	15.2	15.0	95.4	16.5	78.3	70.7	96.7	81.0	71.5	100.0
1976	.7	84.7	.3	15.0	79.7	7.4	111.4	94.8	55.0	199.1	82.8	98.2	202.7	83.1	100.0
1977	2.9	97.9	1.1	19.6	83.9	7.7	101.3	97.1	39.6	233.1	82.3	91.2	255.5	83.4	100.0
1978	.8	92.8	.2	17.2	79.2	4.0	234.9	97.2	54.1	373.1	87.8	86.0	433.8	88.9	100.0

Semiconductors and Parts

1969				1.6	90.9	1.5	2.6	29.4	2.4	90.0	36.2	84.7	106.2	41.2	100.0
1970				1.7	90.2	1.3	3.3	26.4	2.6	106.4	35.8	83.9	126.6	41.0	100.0
1971				2.3	87.7	1.0	.6	30.5	.5	109.9	43.9	84.4	130.2	47.4	100.0
1972				.8	71.7	.3	.6	46.7	.2	228.5	46.0	88.3	249.7	49.0	100.0
1973				4.1	78.7	1.0	.6	59.1	.1	379.4	52.9	92.5	410.1	54.7	100.0
1974				10.3	88.5	1.5	.9	59.2	.1	640.0	53.3	93.9	681.5	54.5	100.0
1975				3.1	87.3	.5	5.0	81.2	.8	596.5	52.0	96.8	616.5	52.8	100.0
1976				.8	73.3	.1	1.8	54.7	.2	846.5	53.6	96.8	874.7	54.3	100.0
1977	.6	27.8	.1	.8	73.7	.1	3.1	31.5	.3	1070.1	44.1	95.6	1119.7	44.9	100.0
1978	.3	21.3		.8	71.4	.1	1.1	40.6	.1	1378.5	39.2	93.3	1478.1	40.0	100.0

Product and Years	MEXICO Total Value 806/807	MEXICO % Dutiable of Total Country Value	MEXICO % Country Value of Grand Total	MALAYSIA Total Value 806/807	MALAYSIA % Dutiable of Total Country Value	MALAYSIA % Country Value of Grand Total	SINGAPORE Total Value 806/807	SINGAPORE % Dutiable of Total Country Value	SINGAPORE % Country Value of Grand Total	TAIWAN Total Value 806/807	TAIWAN % Dutiable of Total Country Value	TAIWAN % Country Value of Grand Total	HONG KONG Total Value 806/807	HONG KONG % Dutiable of Total Country Value	HONG KONG % Country Value of Grand Total	KOREA Total Value 806/807	KOREA % Dutiable of Total Country Value	KOREA % Country Value of Grand Total
Office Machine Parts																		
1969	13.1	12.8	13.5				.1	19.7	.1	2.3	27.2	2.4	10.1	25.4	10.4	.4	8.1	.4
1970	18.1	34.6	13.1				.8	19.2	.6	5.1	38.1	3.7	17.9	26.9	13.0	.3	23.4	.3
1971	12.8	28.1	6.7				1.2	18.9	.6	8.3	27.3	4.3	19.1	33.0	10.0	.2	30.2	.1
1972	25.6	25.5	10.2				3.1	16.6	1.2	7.5	31.1	3.0	16.1	42.2	6.4	3.9	26.6	1.5
1973	48.8	42.1	21.4	.2	61.1	.1	3.5	24.9	1.5	10.8	51.7	4.7	12.9	51.7	5.7	9.6	29.3	4.0
1974	101.1	64.0	37.7	3.7	67.6	1.4	2.3	42.7	.9	11.5	56.6	4.3	21.5	69.0	8.0	18.0	53.1	3.7
1975	72.0	63.8	31.5	3.2	70.7	1.4	1.3	58.4	.6	8.2	51.7	3.5	14.6	75.8	6.3	6.0	62.9	3.0
1976	48.0	51.4	18.6	5.7	63.1	2.2	1.5	61.4	.6	9.5	68.1	3.7	25.7	69.4	9.9	9.3	65.6	3.6
1977	32.6	34.4	11.0	1.2	70.0	.4	1.3	49.0	.5	15.6	67.8	5.7	63.6	67.1	23.2	11.7	57.0	4.2
1978	42.6	40.5	11.0	.1	66.4		1.4	41.9	.4	6.0	65.3	1.9	75.8	71.7	21.2	12.6	55.2	3.5
Textile Products																		
1969	16.7	26.0	48.0							.1	67.5	.3	.3	69.3	.9	.1	78.6	.3
1970	21.0	26.8	48.8										.4	76.2	.9	.2	79.1	.5
1971	33.5	26.9	54.1										.5	79.5	.8	.1	81.3	.2
1972	56.5	27.9	56.2										.2	60.6	.2			
1973	78.2	29.9	59.9										.8	63.2	.6			
1974	117.3	29.9	53.1				.4	89.6	.2	1.5	53.5	.7	3.6	61.1	1.6	.1	91.3	
1975	124.5	31.7	52.4				.2	90.1	.1	.4	82.3	.2	3.2	55.0	1.3	.3	48.2	.1
1976	131.4	36.9	47.4				.1	75.4		.8	35.1	.3	2.0	67.3	.7	4.9	53.9	1.8
1977	131.2	28.5	42.1							1.0	54.8	.3	1.2	57.0	.4	2.6	50.5	.8
1978	157.2	29.5	38.4							1.0	48.0	.3	1.2	77.7	.3	8.4	55.6	1.3
Equipment for Electrical Circuits																		
1969	2.5	30.9	38.5				.1	8.6	1.5	.2	53.1	3.1	.4	41.6	6.2			
1970	3.6	32.0	40.4				.7	4.0	7.4	.8	31.2	8.5	.8	83.1	8.5			
1971	6.6	24.7	44.6				2.0	5.3	13.5	.8	19.3	5.4	.4	76.0	2.7			
1972	14.7	29.3	42.6				3.4	64.4	9.9	10.5	40.6	30.4	1.0	67.1	2.9			
1973	27.6	33.2	66.7				6.3	82.1	15.2	.3	72.5	.7	.8	84.6	1.9	.1	27.0	.2
1974	49.3	35.6	70.8				7.1	87.1	10.2	.2	62.0	.3	1.0	77.1	1.4	.2	29.0	.3
1975	49.7	36.0	73.4	.1	69.7	.1	5.3	80.0	7.8	1.0	57.1	1.5	1.1	55.2	1.6	.4	30.7	.6
1976	68.4	39.3	78.1				1.7	73.8	1.9	1.0	46.8	1.1	1.6	59.9	1.9	.4	24.4	.5
1977	71.1	36.7	70.8	.1	62.9	.1	.6	41.7	.6	2.4	56.5	2.4	2.2	61.3	2.2	.8	30.5	.8
1978	88.5	36.3	73.0	.3	54.3	.2	.7	43.6	.6	6.2	69.6	5.1	2.0	64.4	1.7	.9	23.7	.7

Watches & Clocks

1969																		
1970										.2	17.5	6.5						
1971										.1	12.6	2.9	.1	16.4	2.9			
1972	.1	14.2	2.1				.5	11.9	10.6	.1	22.4	2.1	.2	13.5	4.3			
1973	.3	28.1	5.5				.5	15.0	9.1	.2	22.9	3.6	.4	15.2	7.3	.1	10.0	1.8
1974	3.7	23.5	28.2	.6	48.0	4.6	.8	39.1	6.1	.3	13.4	2.3	2.2	34.6	16.0	1.9	20.2	14.6
1975	17.7	38.3	23.1	3.1	62.4	4.1	13.4	49.7	17.5	23.2	67.7	30.3	4.2	52.1	5.5	5.7	32.2	7.5
1976	16.4	46.6	8.9	20.9	56.1	11.4	39.1	53.1	21.2	42.8	59.5	23.2	28.7	66.3	15.6	13.9	36.4	7.6
1977	9.7	25.9	4.7	9.0	44.6	4.4	24.5	69.4	11.9	90.2	48.6	43.9	39.8	59.9	19.4	15.2	54.2	7.4
1978	3.2	23.0	1.5	5.0	38.0	2.4	26.8	61.7	12.9	73.4	63.7	35.2	47.4	66.6	22.7	15.3	63.8	7.3

Product and Years	WEST GERMANY Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	CANADA Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	JAPAN Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	Total: 15 Countries Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total	GRAND TOTAL Total Value 806/807	% Dutiable of Total Country Value	% Country Value of Grand Total
Office Machine Parts															
1969	1.0	93.1	1.0	35.5	72.5	36.6	20.0	82.5	20.6	86.6	57.4	89.4	96.9	60.1	100.0
1970	1.5	94.9	1.1	55.5	61.8	40.2	25.7	76.7	18.6	127.8	54.7	92.7	137.9	55.3	100.0
1971	1.6	97.1	.8	94.3	54.7	49.3	34.9	78.0	18.2	174.6	53.7	91.4	191.3	53.6	100.0
1972	1.7	97.9	.7	143.9	51.9	57.2	22.1	90.9	8.8	229.2	50.5	91.1	251.7	50.5	100.0
1973	1.8	94.1	.8	88.2	62.5	35.2	21.5	84.0	8.4	198.8	55.2	87.3	227.6	55.9	100.0
1974	2.0	94.9	.7	84.2	67.8	23.9	20.2	85.6	7.5	252.8	64.5	94.2	268.5	64.5	100.0
1975	1.7	95.2	.7	78.0	72.9	32.8	12.5	86.9	5.4	216.8	67.4	93.7	231.4	67.8	100.0
1976	.8	95.6	.3	109.7	71.2	42.4	17.3	90.4	6.7	235.0	66.2	90.9	258.5	68.0	100.0
1977	.2	99.6	.1	95.5	71.1	34.8	20.4	93.1	7.4	251.5	65.8	91.6	274.6	66.7	100.0
1978	.3	99.7	.1	159.5	75.3	44.6	13.9	95.4	3.9	335.1	69.2	93.6	358.0	69.5	100.0
Textile Products															
1969				2.4	69.5	6.9				21.0	33.5	82.6	34.8	33.0	100.0
1970				2.9	68.0	6.7				27.5	33.3	64.0	43.0	35.3	100.0
1971				1.9	57.0	3.1				42.9	35.3	69.3	61.9	37.8	100.0
1972				1.3	57.4	1.5				64.9	34.1	74.8	86.8	36.5	100.0
1973				.9	58.5	.7				109.5	33.1	82.8	132.2	34.3	100.0
1974				1.1	56.2	.5				190.0	34.1	86.1	220.8	34.0	100.0
1975				.3	43.7	.1				205.9	34.7	86.6	237.0	34.7	100.0
1976	.1	84.8		.2	40.0	.1	.4	64.9	.1	232.1	34.3	83.7	277.4	34.8	100.0
1977	.2	78.3	.1	.8	43.0	.3	.3	73.8	.1	248.0	33.7	79.6	311.6	35.4	100.0
1978				1.7	43.4	.4	.3	74.6	.1	318.0	34.9	77.6	409.6	38.3	100.0
Equipment for Electrical Circuits															
1969	.5	59.3	7.7	1.3	62.0	20.0	.6	57.2	9.2	5.8	43.8	89.2	6.5	48.4	100.0
1970				1.8	60.4	19.1	.1	53.8	1.1	8.1	41.1	86.2	9.4	46.4	100.0
1971				2.2	68.5	14.9	.2	74.6	1.4	12.6	31.1	85.1	14.8	37.0	100.0
1972	.2	89.0	.6	1.7	64.1	4.9	.1	92.4	.3	32.3	48.0	93.6	34.5	39.9	100.0
1973				2.0	67.6	4.8	.1	29.2	.2	38.3	44.3	92.5	41.4	43.2	100.0
1974				3.2	71.8	4.6	.1	23.0	.1	63.2	43.6	90.8	69.6	43.5	100.0
1975				3.8	80.7	5.6	.1	23.7	.1	64.6	43.9	95.4	67.7	44.2	100.0
1976				5.1	80.6	5.8				84.3	43.4	96.2	87.6	44.1	100.0
1977				5.6	63.1	5.0	.2	17.6	.2	97.0	42.1	96.6	100.4	42.6	100.0
1978				6.3	65.6					117.0	41.7	96.5	121.2	42.4	100.0

Watches & Clocks

1969				.1	73.6	5.9	1.1	44.8	64.7	1.3	45.7	76.5	1.7	51.8	100.0
1970							2.5	86.8	80.6	2.7	80.6	87.1	3.1	78.0	100.0
1971							3.0	88.6	88.2	3.2	83.7	94.1	3.4	82.4	100.0
1972							3.3	89.1	70.2	4.1	73.7	87.2	4.7	73.0	100.0
1973				.5	95.7	9.1	1.6	89.0	29.1	3.7	59.4	67.3	5.5	68.2	100.0
1974				.1	97.9	.8	1.0	90.1	7.6	10.6	34.0	80.9	13.1	43.7	100.0
1975	.5	89.6	.7				1.2	83.4	1.6	78.9	52.5	92.7	76.5	54.4	100.0
1976	.1	83.8	.1	.2	88.5	.1	1.9	72.4	1.0	172.9	54.6	93.9	184.1	56.4	100.0
1977				.1	40.2		1.7	76.1	.8	201.7	52.6	98.2	205.5	52.9	100.0
1978	.2	69.4	.1	.1	89.0		2.1	93.1	1.0	203.1	63.4	97.4	208.5	64.0	100.0

Product and Years	PHILIPPINES Total Value 806/807	PHILIPPINES % Dutiable of Total Country Value	PHILIPPINES % Country Value of Grand Total	BRAZIL Total Value 806/807	BRAZIL % Dutiable of Total Country Value	BRAZIL % Country Value of Grand Total	HAITI Total Value 806/807	HAITI % Dutiable of Total Country Value	HAITI % Country Value of Grand Total	EL SALVADOR Total Value 806/807	EL SALVADOR % Dutiable of Total Country Value	EL SALVADOR % Country Value of Grand Total	DOMINICAN REPUBLIC Total Value 806/807	DOMINICAN REPUBLIC % Dutiable of Total Country Value	DOMINICAN REPUBLIC % Country Value of Grand Total	COLOMBIA Total Value 806/807	COLOMBIA % Dutiable of Total Country Value	COLOMBIA % Country Value of Grand Total
Office Machine Parts																		
1969				4.1	39.3	4.2												
1970				2.0	44.1	2.1												
1971				2.4	45.0	1.3												
1972				5.1	38.1	2.0							.1	62.6				
1973	1.1	38.4	.5	6.6	42.5	2.9	1.7	5.9	.7				.8	24.4	.4			
1974	1.7	42.6	.6	8.9	46.1	3.3	4.6	4.4	1.7				1.2	12.2	.5			
1975	1.1	47.4	.5	13.3	57.2	5.7	3.1	6.9	1.3	1.0	36.8	.8	.1	9.2				
1976	.3	44.0	.1	.9	56.1	.3	6.3	16.4	2.4	.1	49.3							
1977				3.3	58.1	1.2	5.5	13.7	2.0	.3	48.7	.1						
1978	.9	53.7	.3	6.2	76.8	1.7	5.5	17.6	1.5	9.1	77.5	2.5						
Textile Products																		
1969	.5	43.2	1.4				1.0	46.4	2.9	.1	31.2	.3	.1	38.8	.3	.4	34.1	1.1
1970	.8	55.7	1.9				1.5	38.3	3.5	.3	26.8	.7	.1	28.8	.2	.3	71.0	.7
1971	3.7	96.9	6.0				1.6	36.2	2.9	.5	24.6	.8	.3	21.1	.5	.7	69.2	1.1
1972	4.8	96.3	5.5				4.1	35.0	4.7	1.5	26.1	1.7	.7	9.4	.8	1.5	52.1	1.7
1973	5.1	93.2	3.9				10.1	29.9	7.6	4.6	24.2	3.5	2.0	22.8	1.5	6.7	32.9	5.1
1974	13.1	96.0	5.9				19.7	25.3	8.9	9.0	21.0	4.1	5.5	27.2	2.5	18.5	29.3	8.4
1975	13.8	89.8	5.8				19.4	25.2	8.2	12.6	26.0	5.3	10.9	26.2	4.6	20.4	29.6	8.6
1976	13.3	89.9	4.8				27.1	23.8	9.8	17.9	29.2	6.5	20.1	28.2	7.3	14.1	35.6	5.1
1977	16.0	88.8	5.1				30.7	24.7	9.9	18.9	32.4	6.1	31.1	36.9	10.0	14.0	38.2	4.5
1978	18.6	88.9	4.5				39.7	27.6	9.7	25.9	34.1	6.3	46.3	31.9	11.3	20.6	38.5	5.0
Equipment for Electrical Circuits																		
1969							.1	25.2	1.5									
1970							.1	21.4	1.1									
1971							.4	18.2	2.7									
1972							.8	17.1	2.3									
1973							1.0	27.0	2.4									
1974				.2	31.1	.3	1.9	21.2	2.7				.1	25.4	.1			
1975				.5	33.2	.7	1.1	25.5	1.6	1.3	66.0	1.9	.2	32.0	.3			
1976				1.8	72.2	2.1	2.2	23.6	2.5	1.4	55.1	1.6	.6	35.1	.7			
1977	1.6	18.2	1.6	5.8	85.0	5.8	2.3	30.6	2.3	2.3	52.0	2.3	1.9	36.1	1.9			
1978	2.2	26.6	1.8	8.0	85.5	6.6	3.1	25.8	2.6	2.9	51.2	2.4	1.0	27.7	1.3			

Watches & Clocks

1969										
1970										
1971										
1972										
1973				.1	9.2	1.8				
1974				.1	10.9	.8				
1975	1.9	38.7	2.5	.1	8.0	.1				
1976	5.7	28.2	3.1				3.1	50.1	1.7	
1977	1.6	38.0	.8				5.0	47.4	4.8	
1978	25.6	48.7	12.4				3.0	39.5	1.9	

Notes

1. For 1969-1971 only 807.00 values are given. The 806.30 values, while available, are usually very small compared to 807.00.

2. Where boxes are blank, values and percentages are either zero or negligible (less than $100,000 or less than 0.05 percent).

3. n.a. = not available
   Data not available for Korea in 1980, and Brazil, Haiti, El Salvador, Dominican Republic and Colombia in 1979 and 1980

Sources

For 1969-1978: Printouts of special magnetic tapes from US International Trade Commission.

For 1979-1980: Tariff Items 807.00 and 806.30 -- US Imports for Consumption, Specified Years, US International Trade Commission June 1980 and June 1981 (multilith).

Table II 2b

(Millions of Dollars and Percent)

Country	1979 Total 806 & 807 Value	1979 Percent Dutiable of Total Country Value	1979 Percent Country Value of Grand Total	1980 Total 806 & 807 Value	1980 Percent Dutiable of Total Country Value	1980 Percent Country Value of Grand Total
Mexico						
T.V. & Parts	537.4	61.9	64.4	645.3	67.0	65.8
Motor Vehicles		83.3			51.7	
Motor Vehicle Parts	105.9	68.9	17.7	107.6	68.8	15.7
Semiconductor & Parts	103.9	38.2	5.4	116.2	33.8	4.6
Office Machines	54.1	48.4	11.7	65.8	49.4	10.8
Articles for Making, etc.	115.9	37.3	76.4	136.3	39.0	75.8
Watches & Clocks	14.5	31.2	7.4	11.3	76.7	6.4
Textile Products	169.9	30.9	37.2	199.5	29.3	38.7
Malaysia						
T.V. & Parts	.4	61.8		4.2	88.6	.4
Motor Vehicles						
Semiconductor & Parts	568.3	37.4	29.7	745.0	39.8	29.7
Office Machines	.2	45.1		.8	52.8	.1
Articles for Making, etc.	.2	51.8	.1	1.2	71.9	2.7
Watches & Clocks	8.4	29.8	4.3	4.8	43.9	2.7
Textile Products		97.8				
Motor Vehicle Parts						

(Millions of Dollars and Percent)

Country	1979 Total 806 & 807 Value	1979 Percent Dutiable of Total Country Value	1979 Percent Country Value of Grand Total	1980 Total 806 & 807 Value	1980 Percent Dutiable of Total Country Value	1980 Percent Country Value of Grand Total
Singapore						
T.V. & Parts	59.9	94.3	6.9	64.7	94.2	6.9
Motor Vehicles						
Motor Vehicle Parts						
Semiconductor & Parts	398.9	36.8	20.8	544.3	33.3	21.7
Office Machines	3.8	27.2	.8	19.5	41.7	3.2
Articles for Making, etc.	.6	62.5	.4	.8	75.2	10.7
Watches & Clocks	20.3	81.8	10.4	19.2	86.0	10.9
Textile Products		100.0				
Taiwan						
T.V. & Parts	198.2	98.1	22.9	221.0	89.3	23.5
Motor Vehicles	.2	98.5				
Motor Vehicle Parts						
Semiconductor & Parts	75.5	53.3	3.9	99.5	49.7	4.8
Office Machines	6.6	87.6	1.4	10.0	85.5	1.6
Articles for Making, etc.	.7	64.4	.5	1.6	87.7	48.7
Watches & Clocks	47.6	71.4	24.4	56.2	78.1	32.8
Textile Products	.5	51.6	.1	.2	52.4	

Table II 2b

(Millions of Dollars and Percent)

Country	Total 806 & 807 Value	1979 Percent Dutiable of Total Country Value	Percent Country Value of Grand Total	Total 806 & 807 Value	1980 Percent Dutiable of Total Country Value	Percent Country Value of Grand Total
Mexico						
T.V. & Parts	357.4	61.9	64.4	645.3	67.0	65.8
Motor Vehicles	185.9	83.3	17.7	107.6	51.7	15.7
Motor Vehicle Parts	103.9	68.9	5.4	116.2	68.8	4.6
Semiconductor & Parts	34.1	38.2	11.7	65.8	33.8	10.8
Office Machines	115.9	48.4	76.4	136.3	49.4	75.8
Articles for Making, etc.	14.5	37.3	7.4	11.3	39.0	6.4
Watches & Clocks	169.9	31.2	37.2	199.5	76.7	38.7
Textile Products		30.9			29.3	
Malaysia						
T.V. & Parts	.4	61.8		4.2	88.6	.4
Motor Vehicles	340.3	37.4	29.7	745.0	39.8	29.7
Semiconductor & Parts	.2	45.1	.1	.8	52.8	.1
Office Machines	.2	31.8	4.3	1.2	71.9	2.7
Articles for Making, etc.	8.4	29.8		4.8	43.9	2.7
Watches & Clocks		97.8				
Textile Products						
Motor Vehicle Parts						

(Millions of Dollars and Percent)

Country	1979 Total 806 & 807 Value	1979 Percent Dutiable of Total Country Value	1979 Percent Country Value of Grand Total	1980 Total 806 & 807 Value	1980 Percent Dutiable of Total Country Value	1980 Percent Country Value of Grand Total
Singapore						
T.V. & Parts	59.9	94.3	6.9	64.7	94.2	6.9
Motor Vehicles						
Motor Vehicle Parts						
Semiconductor & Parts	398.9	36.8	20.8	544.3	33.3	21.7
Office Machines	3.8	27.2	.8	19.5	41.7	3.2
Articles for Making, etc.	.6	62.5	.4	.8	75.2	10.7
Watches & Clocks	20.3	81.0	10.4	19.2	86.0	10.9
Textile Products		100.0				
Taiwan						
T.V. & Parts	190.2	90.1	22.9	221.0	89.3	23.5
Motor Vehicles	.2	98.5				
Motor Vehicle Parts						
Semiconductor & Parts	75.5	53.3	3.9	99.5	49.7	4.0
Office Machines	6.6	87.6	1.4	10.0	85.5	1.6
Articles for Making, etc.	.7	64.4	.5	1.6	87.7	48.7
Watches & Clocks	47.6	71.4	24.4	56.2	78.1	32.0
Textile Products	.5	51.6	.1	.2	32.4	

(Millions of Doll[illegible] and Percent)

Country	1979 Total 806 & 807 Value	1979 Percent Dutiable of Total Country Value	1979 Percent Country Value of Grand Total	1980 Total 806 & 807 Value	1980 Percent Dutiable of Total Country Value	1980 Percent Country Value of Grand Total
Hong Kong						
T.V. & Parts	1.8	68.6	.2	.1	80.1	
Motor Vehicles						
Motor Vehicle Parts						
Semiconductor & Parts	84.0	50.2	4.4	92.5	50.2	3.7
Office Machines	97.5	77.4	21.0	150.1	81.4	24.6
Articles for Making, etc.	3.9	63.7	2.6	4.6	60.0	2.6
Watches & Clocks	45.8	64.2	23.0	37.2	71.3	21.2
Textile Products	2.9	89.0	.6	2.4	81.2	.5
Korea						
T.V. & Parts	.3	51.8		NA	NA	NA
Motor Vehicles				NA	NA	NA
Motor Vehicle Parts						
Semiconductor & Parts	243.0	39.9	12.7	NA	NA	NA
Office Machines	14.1	69.9	3.0	NA	NA	NA
Articles for Making, etc.	.9	30.9	.6	NA	NA	NA
Watches & Clocks	19.6	68.7	10.0	NA	NA	NA
Textile Products	9.4	48.7	2.1	NA	NA	NA

(Millions of Dollars and Percent)

Country	1979 Total 806 & 807 Value	1979 Percent Dutiable of Total Country Value	1979 Percent Country Value of Grand Total	1980 Total 806 & 807 Value	1980 Percent Dutiable of Total Country Value	1980 Percent Country Value of Grand Total
Philippines						
T.V. & Parts						
Motor Vehicles		87.5				
Motor Vehicle Parts						
Semiconductor & Parts	197.5	31.4	10.3	343.9	31.6	13.7
Office Machines	2.4	65.9	.5	15.1	81.4	2.5
Articles for Making, etc.	.5	24.7	.3	.3	35.0	.2
Watches & Clocks	37.0	54.3	19.0	21.6	65.6	12.3
Textile Products	17.4	88.2	3.8	20.6	87.5	4.0
Federal Republic of Germany						
T.V. & Parts		83.9			98.4	
Motor Vehicles	1,868.8	98.9	50.9	2,080.4	98.6	39.6
Motor Vehicle Parts	9.7	97.0	1.6	12.5	94.5	1.8
Semiconduct & Parts	.3	76.8				
Office Machines	.2	100.0		1.6	98.2	.3
Articles for Making, etc.		33.3			85.9	
Watches & Clocks	.3	83.5	.2	.2	73.2	.1
Textile Products						

(Millions of Dollars and Percent)

Country	1979 Total 806 & 807 Value	1979 Percent Dutiable of Total Country Value	1979 Percent Country Value of Grand Total	1980 Total 806 & 807 Value	1980 Percent Dutiable of Total Country Value	1980 Percent Country Value of Grand Total
Canada						
T.V. & Parts	38.9	69.0	3.6	22.9	72.2	2.4
Motor Vehicles	38.2	84.6	1.0	47.3	85.2	.9
Motor Vehicle Parts	24.5	70.6	4.1	16.9	72.1	2.5
Semiconductor & Parts	60.0	19.9	3.1	100.5	19.5	4.0
Office Machines	225.3	73.2	48.6	270.2	73.3	44.3
Articles for Making, etc.	8.0	75.1	5.3	18.0	77.4	5.6
Watches & Clocks	.4	95.6	.2	.3	68.6	.2
Textile Products	1.6	53.6	.3	3.3	70.6	.6
Japan						
T.V. & Parts	14.4	82.8	1.7	66.0	70.6	.6
Motor Vehicles	1,358.1	99.2	70.9	2,700.6	99.4	51.4
Motor Vehicle Parts	335.8	97.6	56.0	385.6	98.7	56.2
Semiconductor & Parts	3.3	94.1	.1	2.5	41.6	.1
Office Machines	4.2	97.4	.9	8.6	90.4	1.4
Articles for Making, etc.		58.3	.	.3	52.3	.2
Watches & Clocks	2.6	94.2	1.3	2.5	93.5	1.4
Textile Products		46.4			100.0	
GRAND TOTAL						
T.V. & Parts	865.4	71.2	100.0	941.5	74.8	100.0
Motor Vehicles	3,673.6	98.7	100.0	5,255.6	98.9	100.0
Motor Vehicle Parts	599.4	91.8	100.0	685.7	92.4	100.0
Semiconductor & Parts	1,915.9	38.3	100.0	2,506.2	36.9	100.0
Office Machines	463.9	70.9	100.0	610.1	72.8	100.0
Articles for Making, etc.	151.7	41.0	100.0	179.9	44.4	100.0
Watches & Clocks	195.2	65.5	100.0	175.4	76.3	100.0
Textile Products	457.2	36.7	100.0	515.6	35.8	100.0

Notes

1. For 1969-1971 only 807.00 values are given. The 806.30 values, while available, are usually very small compared to 807.00.

2. Where boxes are blank, values and percentages are either zero or negligible (less than $100,000 or less than 0.05 percent).

3. n.a. = not available
   Data not available for Korea in 1980, and Brazil, Haiti, El Salvador, Dominican Republic and Colombia in 1979 and 1980.

Sources

For 1969-1978: Printouts of special magnetic tapes from US International Trade Commission.

For 1979-1980: Tariff Items 807.00 and 806.30 -- US Imports for Consumption, Specified Years, US International Trade Commission June 1980 and June 1981 (multilith).

Table II-A-3. Relationship Between U.S. 807.00/806.30 Imports, Rel. Party Imports & Total Imports[a/], by Selected Countries & Product Groups (1969 and 1978)
(Percent)

Product and Years	Mexico 806/807 as % of Total Imports	Mexico Rel. Party Imports as % of Total Imports	Malaysia 806/807 as % of Total Imports	Malaysia Rel. Party Imports as % of Total Imports	Singapore 806/807 as % of Total Imports	Singapore Rel. Party Imports as % of Total Imports	Taiwan 806/807 as % of Total Imports	Taiwan Rel. Party Imports as % of Total Imports	Hong Kong 806/807 as % of Total Imports	Hong Kong Rel. Party Imports as % of Total Imports
T.V. Receivers & Parts										
1969	97.7		d/		d/		97.5		91.1	
1978	99.7	99.8	d/	69.0	21.7	94.3	61.9	87.4	65.8	74.6
Motor Vehicles										
1969	d/		d/		d/		d/		d/	
1978	d/	51.5	d/	d/	d/	d/	d/	99.9	d/	100.0
Motor Vehicle Parts										
1969	d/		d/		d/		d/		d/	
1978	62.5	49.1	d/	d/	d/	57.6	d/	23.4	d/	35.0
Semi-Conductor Parts										
1969	99.0		d/		d/		98.0		99.9	
1978	94.5	99.3	96.6	99.0	96.1	99.5	86.5	84.3	94.11	86.4
Office Machine Parts										
1969	98.4		d/		d/		98.9		99.8	
1978	82.5	97.2	9.7	98.7	8.5	44.9	14.5	18.6	70.1	78.0
Textile Products										
1969	97.9		d/		d/		25.0		1.6	
1978	86.5	62.6			21	.3	.1	1.3	.1	2.7

Equipment-Electrical Circuits										
1969	d/		d/		d/		d/		f/	
1978	97.9	96.1	17.8	82.9	4.7	94.3	3.0	39.7	21.6	35.3
Watches & Clocks										
1969	d/		d/		d/		d/		f/	
1978	82.0	84.3	88.6	96.5	83.4	96.5	76.8	73.7	32.0	28.0
S Products										
1969	98.2		d/		d/		96.9		70.9	
1978	89.6	83.9	91.3	94.3	60.3	76.5	28.5	37.2	14.1	15.9
All Products										
1969	86.8		d/		d/		73.9		32.7	
1978	65.3	71.3	85.5	91.4	46.6	74.1	12.3	20.8	10.1	17.2

Product and Years	Korea 806/807 as % of Total Imports	Korea Bal. Party Imports as % of Total Imports	Philippines 806/807 as % of Total Imports	Philippines Bal. Party Imports as % of Total Imports	Brazil 806/807 as % of Total Imports	Brazil Bal. Party Imports as % of Total Imports	Haiti 806/807 as % of Total Imports	Haiti Bal. Party Imports as % of Total Imports	El Salvador 806/807 as % of Total Imports	El Salvador Bal. Party Imports as % of Total Imports
T.V. Receivers & Parts										
1969	d/		d/		d/		98.1		d/	
1978	d/	45.8	d/	d/	d/	100.0	61.4	34.5	d/	d/
Motor Vehicles										
1969	d/		d/		d/		d/		d/	
1978	32.8	100.0	d/	d/	d/	d/	d/	d/	d/	d/
Motor Vehicle Parts										
1969	d/		d/		d/		d/		d/	
1978	37.5	77.0	d/	34.4	36.8	68.9	d/	d/	d/	d/
Semi-Conductor Parts										
1969	95.1		d/		d/		56.4		d/	
1978	93.8	95.6	96.6	42.8	97.9	99.1	70.8		99.6	99.9
Office Machine Parts										
1969	91.9		d/		d/		98.6 d/			
1978	44.8	91.5	37.4	35.8	70.5	91.9	97.6	83.0	68.9	98.6
Textile Products										
1969	95.3		d/		d/		81.4		d/	
1978	.9	7.6	13.3	37.4	d/	12.8	91.1	19.1	83.9	54.0

Product and Years	Korea 806/807 as % of Total Imports	Korea Rel. Party Imports as % of Total Imports	Philippines 807/807 as % of Total Imports	Philippines Rel. Party Imports as % of Total Imports	Brazil 806/807 as % of Total Imports	Brazil Rel. Party Imports as % of Total Imports	Haiti 806/807 as % of Total Imports	Haiti Rel. Party Imports as % of Total Imports	El Salvador 806/807 as % of Total Imports	El Salvador Rel. Party Imports as % of Total Imports
Equipment-Electrical Circuits										
1969	d/		d/		d/		f/		d/	
1978	32.7	16.0	99.4	2.4	80.0	89.3	98.2	10.6	98.8	99.9
Watches & Clocks										
1969	d/		d/		d/		d/		d/	
1978	49.4	25.3	92.2	93.8	50.9	20.3	d/		96.3	99.9
8 Products										
1969	95.0		d/		d/		79.0		d/	
1978	23.7	34.4	56.6	44.7	44.2	63.0	91.1	24.8	89.5	84.3
All Products										
1969	79.9		d/		d/		83.7		d/	
1978	10.2	24.3	36.3	37.6	19.0	43.0	78.5	29.2	80.3	78.9

Product and Years	Dominican Republic 806/807 as % of Total Imports	Dominican Republic Rel. Party Imports as % of Total Imports	Colombia 806/807 as % of Total Imports	Colombia Rel. Party Imports as % of Total Imports	West Germany 806/807 as % of Total Imports	West Germany Rel. Party Imports as % of Total Imports	Canada 806/807 as % of Total Imports	Canada Rel. Party Imports as % of Total Imports	Japan 806/807 as % of Total Imports	Japan Rel. Party Imports as % of Total Imports
T.V. Receivers & Parts										
1969	d/		d/		d/		69.4		2.3	
1978	d/	d/	d/	d/	.5	37.8	78.9	82.3	1.1	74.5
Motor Vehicles										
1969	d/		d/		68.3		80.7		.2	
1978	d/	d/	d/	d/	70.9	97.2	12.8	82.3	16.4	95.7
Motor Vehicle Parts										
1969	d/		d/		d/		d/		d/	
1978	d/	d/	d/	d/	.3	63.7	1.1	33.3	12.4	82.0
Semi-Conductor Parts										
1969	d/		d/		d/		28.9		22.1	
1978	d/	d/	100.0	100.0	1.0	90.7	8.2	49.9	.91	80.6
Office Machine Parts										
1969	d/		d/		7.0		80.2		35.6	
1978	50.0	100.0	0	44.4	.3	75.5	69.7	92.9	1.8	54.3
Textile Products										
1969	d/		d/		2.6		19.7		1.0	
1978	97.9	70.8	64.7	25.5	.1	24.2	4.5	46.5	1.0	18.7

Product and Years	Dominican Republic 806/807 as % of Total Imports	Dominican Republic Rel. Party Imports as % of Total Imports	Colombia 806/807 as % of Total Imports	Colombia Rel. Party Imports as % of Total Imports	West Germany 806/807 as % of Total Imports	West Germany Rel. Party Imports as % of Total Imports	Canada 806/807 as % of Total Imports	Canada Rel. Party Imports as % of Total Imports	Japan 806/807 as % of Total Imports	Japan Rel. Party Imports as % of Total Imports
Equipment-Electrical Circuits										
1969	d/		d/		d/		d/		d/	
1978	48.1	97.2	d/	100.0	d/	67.1	11.4	45.3	d/	66.5
Watches & Clocks										
1969	d/		d/		d/		d/		d/	
1978	d/	d/	d/	d/	.4	12.7	10.0	51.9	1.0	73.0
8 Products										
1969	d/		d/		67.2		66.2		4.8	
1978	94.6	72.6	64.6	25.6	57.3	90.1	12.3	48.5	12.2	84.9
All Products										
1969	d/				52.3		29.5		8.5	
1978	69.1	64.1	17.9	23.3	27.7	68.6	9.1	45.1	7.2	73.2

Product and Years	Total: 15 Countries 806/807 as % of Total Imports	Total: 15 Countries Rel. Party Imports as % of Total Imports	Total: All Countries 806/807 as % of Total Imports	Total: All Countries Rel. Party Imports as % of Total Imports
T.V. Receivers & Parts				
1969	27.0		25.0	
1978	41.4	82.0	41.1	81.4
Motor Vehicles				
1969	51.1		47.3	
1978	33.4	95.6	32.7	95.6
Motor Vehicle Parts				
1969			29.0	
1978	9.2	59.9	9.6	60.1
Semi-Conductor Parts				
1969	84.8		79.0	
1978	85.4	90.6	84.5	90.8
Office Machine Parts				
1969	58.4		34.9	
1978	23.6	66.0	20.5	68.6
Textile Products				
1969	46.5		5.1	
1978	8.7	11.5	8.8	11.9

Product and Years	Total: 15 Countries 806/807 as % of Total Imports	Total: 15 Countries Rel. Party Imports as % of Total Imports	Total: All Countries 806/807 as % of Total Imports	Total: All Countries Rel. Party Imports as % of Total Imports
Equipment-Elec. Circuits				
1969	d/		10.5	
1978	26.1	69.0	21.1	66.4
Watches & Clocks				
1969	d/		d/	
1978	33.6	57.6	25.0	55.0
8 Products				
1969	49.3		31.8	
1978	28.6	70.7	27.1	69.4
All Products				
1969	32.2		19.0	
1978	16.2	56.7	13.7	52.2

a. Total imports for each product group include all TSUS items in that group that contain 807.00 imports.

b. 806.30 imports and "related party" imports are not available for 1969.

c. The 1969 data correspond to the total for all Caribbean countries. In the absence of other information and under the assumption that U.S. 807.00 imports from other Caribbean countries were relatively small in that year, the 1969 percentages were applied to Haiti.

d. Zero or below $250,000.

Sources: U.S. Tariff Commission, Economic Factors Affecting the Use of Items 807.00 and 806.30 of the Tariff Schedule of the United States, 1970; and Printouts of special magnetic tapes prepared by the U.S. International Trade Commission.

Table II A-4. Dutiable Value of 12 Major Developing Countries as Percent of Total Dutiable Value of All Developing Countries in U.S. Imports Under Tariff Items 807.00 and 806.30 1969-1980

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
						(Percent)						
Mexico	29.4	32.7	33.2	32.0	34.6	35.6	37.7	34.6	30.5	32.8	38.0	36.4
Malaysia	-	.2 b/	.1 b/	.1	1.4	5.0	7.7	8.1	8.1	8.6	9.2	10.7
Singapore	4.4	6.3	10.5	12.6	15.0	11.7	11.8	11.5	11.0	8.9	10.3	11.5
Taiwan	25.3	25.1	26.7	30.6	25.6	20.8	18.1	17.6	18.3	18.0	11.6	11.5
Hong Kong	22.6	23.5	17.0	14.0	12.6	11.4	8.3	8.6	9.6	8.4 b/	8.4 b/	9.3 b/
Republic of Korea	4.5	3.2	4.2	4.1	4.3	5.2	4.1	5.5	6.2	5.4	5.6	4.6
Philippines	1.0 b/	.9 b/	1.6 b/	1.2 b/	1.0	1.5	2.1	2.5	2.4	3.3	4.0	5.0
Brazil	.9 b/	.5 b/	.4	.7	1.5	3.6	4.2	4.1	6.0	5.7	4.6	3.0
Haiti	.9 b/	.9	1.0 b/	1.0 b/	1.0 b/	1.0	1.2 b/	1.4 b/	1.3 b/	1.3 b/	1.5 b/	1.5 b/
El Salvador	.1	a/	a/	.1 b/	.1 b/	.6 b/	1.1 b/	2.2 b/	2.0 b/	2.0 b/	1.9 b/	1.2 b/
Columbia	.1 b/	.1 b/	.2 b/	.2 b/	.3 b/	.4 b/	.5 b/	.3 b/	.3 b/	.4 b/	.4 b/	.2 b/
Dominican Republic	-	a/	.1	.1 b/	.1 b/	.2 b/	.3 b/	.5 b/	.8 b/	1.0 b/	1.0 b/	1.0 b/
TOTAL 12 COUNTRIES	89.2	93.3	95.2	96.5	97.6	97.0	97.1	96.9	96.6	95.7	96.5	95.9
TOTAL ALL LDCs Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Millions of ($) Dollars	177.3	245.9	314.1	531.2	827.0	1303.0	1238.7	1548.6	1721.4	2175.8	2071.7	3175.8

a. Negligible (less than 0.05 percent).

b. No 806.30 imports.

Sources: U.S. International Trade Commission, "Tariff Items 807.00 and 806.30:U.S. Imports for Consumption," various issues (multilith).

Table II A-5-1 West Germany: Origin of Passive Improvement Re-Imports, 1976-78 (Millions DM)

	1976		1977		1978	
	Re-Imports	Percent Comp.	Re-Imports	Percent Comp.	Re-Imports	Percent Composition
All Countries	2,594	100	2,352	100	2,189	100
Europe	2,356	91	2,062	88	1,818	83
Great Britain	128	5	90	4	2	.09
Switzerland	253	10	190	8	34	2
Austria	348	13	213	9	28	1
Yugoslavia	664	26	666	28	682	30
Poland	190	7	210	9	204	9
Hungary	275	11	318	14	346	16
Africa	3	.1	5	.2	8	.4
Tunesia	2.8	.1	4.3	.2	6.2	.05
America	57	2	73	3.1	73	3
U.S.A.	46	2	51	2	56	3
Canada	4	.2	14	.6	4	.2
Mexico	.03	.001	-	-	.7	.03
Brazil	7	.3	7.4	.3	12	.5
Asia	179	7	212	9	290	13
Cyprus	.06	.002	4	.1	5	.2
Pakistan	2	.07	1	.05	1	.05
Malaysia	39	2	48	2	68	3
Singapore	55	2	46	2	51	2
Philippines	20	.8	26	1	3	2
People Rep.China	.8	.03	1	.05	2	.09
South Korea	3	.1	8	.3	15	.7
Japan	11	.4	9	.3	15	.7
Taiwan	29	1	41	2	56	3
HongKong	18	.7	28	1	40	2

Source:
Zusammenfassende Übersichten für den Aussenhandel, Reihe 1, 1978, Statistisches Bundesamt Wiesbaden Verlag: W. Kohlhammer GMBH Stuttgart und Mainz, 1979.

Table II A-5-2

Percentage of Total German Imports Which Have Been Fabricated Abroad
(Millions D.M.)

Commodity Group	1976 Total Imports	1976 % Re-Imports	1977 Total Imports	1977 % Re-Imports	1978 Total Imports	1978 % Re-Imports
All Agricultural Products	36,037	.05	39,306	.05	38,605	.05
All Industrial Products	183,274	1.4	192,775	1.2	201,783	1.1
All Raw Materials	36,097	.004	35,154	-0-	30,786	-0-
- Textile Fibers	2,462	.06	2,174	.001	2,015	.001
All Intermediate Goods	34,689	.03	35,453	.01	37,526	.001
- Textile Yarn & Thread	2,417	.3	2,533	.08	2,994	.003
Partially Finished Products	112,488	2.3	122,168	1.9	133,471	1.6
All type Textile Fabrics, incl.: Fabrics from	5,617	1.1	6,134	.6	6,705	.2
- Synthetics	2,550	1.4	2,769	.6	3,065	.1
- Wools, Other Animal Hairs	1,569	.08	1,722	.2	1.908	.07
- Cotton	1,230	1.9	1,316	1.1	1,390	.1
- Hemp, Flax	266	1.4	327	1.0	342	.09
Leather	804	.03	872	.03	886	.003
Skins, Furs	366	.9	420	1.1	404	1.2
Paper, Pulp	3,300	.02	3,379	.009	3,453	.006
Veneer Plywood	936	.004	1,039	.005	1,172	.003
Porcelain Products	548	.03	686	.01	736	-0-
Glass	419	1.5	419	.8	434	.3
Plastics	4,388	.2	4,685	.1	4,626	.06
Aluminum	697	1.3	854	.6	769	-0-
Other Basic Metals	288	1.2	356	1.0	397	.02
Finished Products	81,064	3.0	88,912	2.5	98,129	2.2
All types Clothing	10,157	12.7	10,767	11.7	11,462	11.6
- Certain Wool Clothing	457	41.0	535	36.0	645	33.3
- Certain Cotton Clothing	915	4.8	1,006	4.5	1,089	3.5
- Certain Synthetic Clothing	2,461	5.7	2.518	4.7	2,937	4.1

Table XI A-5-2
(con't)

Commodity Group	1976 Total Imports	1976 % Re-Imports	1977 Total Imports	1977 % Re-Imports	1978 Total Imports	1978 % Re-Imports
Rubberware	1,876	.2	2,016	.06	2,069	.02
Cutlery	97	1.0	116	-0-	130	-0-
Tools, Agri. Equip. (not Tractors)	372	1.1	454	.7	477	.4
Conveyor Equipment	603	1.1	655	.2	826	.01
Other Ironware	3,363	2.5	3,538	2.5	3,833	.8
Leather Shoes	1,709	2.5	2,013	2.2	2,298	2.0
Other Leather Goods	1,097	.5	1,236	.6	1,401	.5
Machinery						
- Paper & Printing Machines	380	1.4	469	1.3	516	.3
- Pumps & Pressure Machines	1,434	1.3	1,621	.9	1,533	.1
- Power Machinery	693	.4	583	2.0	533	.1
- Food Industry Mach.	870	1.0	319	1.1	369	.2
- Tool Machinery	1,031	2.5	1,214	1.6	1,517	.9
- Agricultural Mach.	850	2.0	893	1.8	993	1.1
- Mach. for Leather	722	1.8	691	1.6	732	.3
- Elec. Machinery & Electronics	12,374	3.5	13,974	2.5	15,574	1.9
- Office Machines	3,325	.4	3,545	.3	4,012	.2
- Other Machinery	4,259	1.5	4,738	.8	5,195	.5
Other Goods for Business Metals	1,199	1.2	1,287	.8	1,339	-0-
Precision Machinery	12,374	1.1	13,914	.8	15,574	.6
- Optical Instruments	2,674	.3	2,860	.1	3,204	.03
Plastic Goods	1,671	.9	1,874	.5	2,039	.4
Pharmaceutical Prod.	1,910	.09	2,167	.04	2,334	.01
Aircraft	2,647	.01	3,160	-0-	3,333	-0-
Automobiles	10,919	.8	12,810	.6	14,898	1.0
Film, Film Related Goods	63	1.3	78	1.2	90	1.3
Photo Chemical Prod.	771	.3	879	.07	947	-0-
Watches; Clocks	486	1.4	523	.2	642	.7

Table II A-5-2
(con't)

Commodity Group	1976 Total Imports	1976 % Re-Imports	1977 Total Imports	1977 % Re-Imports	1978 Total Imports	1978 % Re-Imports
Musical Instruments	108	.5	1128	.2	144	.1
Toys; Balls	536	1.1	631	.7	646	.2
Other Goods (Misc.)	2,862	.2	3,097	.06	3,319	.06
Other Finished Goods	4,370	.2	3,340	.2	3,470	.03

Source: Zusammenfassende Übersichten für den Aussenhandel (1978), Herausgeber: Statistisches Bundesamt Wiesbaden Verlag: W. Kohlhammer GMBH Stuttgart und Mainz.

Table II A-5-3

Geographical Origin of Outward Processing
Re-Imports, Netherlands, 1978

Country	Percent (%)
TOTAL	100
EEC	80
Other Western Europe	5.6
Eastern Europe	5.5
Asia	.94
Other Countries	8.5

Source: Netherlands, Central Statistical Bureau, Maandstatistiek van de buitenlandsie handel, (January, 1979), Table 8.

Table II A-5-4. Netherlands: Total Imports and Passive Improvement Re-Imports as Percent of Total, January - September 1979.

Commodity	Total Imports (Millions gldn)	Re-Imports Percent of Total
All Products	96,950	2.8
Animal Products	2,292	.3
Plant Products (tobacco, veg. oils, etc.)	6,572	.4
Food Products	5,561	2.6
Mineral Products	20,682	-0-
Chemical Products	7,115	1.4
Plastic; Rubber Waves	3,338	1.1
Skins, Leather, etc.	815	3.2
Wood, Charcoal Wares	2,066	.1
Paper; Related Products	2,902	1.5
Textiles; Related Products	7,212	11.4
Headgear; Footwear, etc.	831	1.3
Stoneware, Ceramic, Glass	1,352	3.6
Jewelry, Gems	874	7.8
Metals; (primarily Aluminum, Copper, steel)	7,352	2.7
Machinery, Appliances	7,557	4.8
Electric Machinery	5,281	10.1
Transport Equipment	8,350	1.8
Precision Instruments	2,933	3.8
Weapons, Munition	13	-0-
Other	2,786	.6

Source: Calculated from: Maandstatistiek van de buitenlandse handel per goederensoort. Central Bureau voor de Statistiek, September, 1979.

Table II A-5-5. Passive Trade Improvement EEC Imports from LDC by Commodities and LDC Suppliers

1978. Unit: 1000 U.E.A.
(1 U.E.A. = 1,20 US $)

LDC Countries \ Commodities	Leather shoes	Textiles Garments	Mechanics	Electrical Electronics	Clock and watchmaking optical photo	Games, toys sporting goods	Other	TOTAL
Mediterranean Africa								
Morocco	800	7 462	637	3 779	-	-	500	13 178
Tunis	3 517	17 755	-	893	70	540	2 587	25 362
Algeria	-	-	44	7	1	-	19	71
Egypt	-	-	36	-	92	-	-	128
Libya	-	-	4	3	-	-	49	56
Total	4 313	25 217	637	4 672	70	540	3 886	38 795
Latin America								
Brazil	309	-	-	3 668	98	-	939	5 014
South East Asia								
Malaysia	416	917	-	24 736	1 262	-	4 980	32 311
Singapore	-	4 363	-	35 433	227	-	671	40 694
Philippines	-	1 785	1 136	12 888	-	-	58	15 867
South Korea	-	8 239	-	9 203	-	3	323	17 773
Taiwan	4 224	3 348	86	15 803	2 128	64	298	25 951
Hong Kong	3 576	13 038	4 567	2 691	1 170	37	1 191	26 270
TOTAL	8 216	31 690	5 789	100 759	4 787	104	7 511	158 856

Source: C. Berthomieu and A. Hanaut, "Recent Studies and Data from Western Europe on Production Sharing and the International Division of Labour", Paper submitted to The Brookings Institution, Revision of March 1980.

Table II A-5-6. Passive Trade Improvement EEC Imports by Country and by LDC Trade Partner.

1978. Unit: 1000 U.E.A
(1 U.E.A = 1,20 US $)

EEC COUNTRY / LDC COUNTRY	Total EEC		Germany		France		Italy		Netherlands		United Kingdom	
		%		%		%		%		%		%
Mediterranean Africa												
Morocco	13 178	6,5	00 517	0,5	12 574	24,7	00 047	2	40	0,6	2	-
Tunis	25 362	12,5	2 438	2,2	18 934	37,2	2 372	12,2	1 074	15,0	-	-
Nigeria	71	•	-	-	10	•	56	0,3	-	-	-	-
Egypt	128	•	-	-	-	-	123	0,6	-	-	-	-
Libya	56	•	-	-	-	-	56	0,3	-	-	-	-
Total Med. Africa	38 795	19	2 955	2,6	31 518	62	2 654	13,6	1 114	15,6	2	•
Brazil	5 014	2,3	4 763	4,3	12	•	59	0,3	142	2	-	•
South East Asia												
Malaysia	32 311	16	25 597	23,9	3 033	6	15	•	8	•	1 746	21,4
Singapore	40 694	20	20 135	18	1 619	3,2	16 441	84,5	-	-	656	8,0
Philippines	15 867	7,8	14 274	12,8	529	1	-	-	-	-	1 064	13,1
South Korea	17 773	8,8	5 755	5,2	11 320	22,3	-	-	-	-	643	7,9
Taiwan	23 951	12,8	21 143	19	1 918	3,8	8	-	46	0,6	1 757	21,6
Hong Kong	26 270	13	15 756	14	919	9,8	284	1,4	5 811	81,6	2 275	27,9
Total Southeast Asia	158 856	78,4	103 660	93	19 348	38	16 748	86	5 865	82,4	8 141	100
TOTAL	202 665	100	111 438	100	50 872	100	19 461	100	7 121	100	8 143	100

Source: C. Berthomieu and A. Hanaut, "Recent Studies and Data from Western Europe on Production Sharing and the International Division of Labour", Paper submitted to The Brookings Institution, Revision of March 1980.

Chapter III

Conclusions and Policy Implications

Conclusions and Policy Implications*

This study has shown that firms in industrially advanced and in developing countries collaborate in the manufacture of a variety of products. To a large degree the collaboration takes place within multinational enterprises, usually between a parent company based in a developed country and its foreign subsidiaries. This is the prevailing mode of operation in the high technology electronics field. In other product lines, particularly textiles, the tendency is for a company in the developed country to contract with an independent firm in the developing country.

Whether the relationship is intra-firm or arms-length subcontracting, as a general rule the arrangement entails the meshing of factors of production in relative abundance in the respective countries. In the industrial country, capital intensive methods are used to produce the components, which are then assembled manually in the developing country.

The catalyst for the emergence of this internationalization of industrial production was the growing world-wide competition in manufactures in the post World War II period. Western Europe recovered and its economic activities rose far above prewar levels, Japan quickly became a top industrial power, trade barriers and transportation costs fell, communications improved, and newly industrializing countries

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*This chapter focuses on general implications of the study. For specific conclusions see the Overview (Chapter 2) and the individual case studies.

appeared on the world scene with manufactured products.

The United States faced the new competition first because of its high wages relative to the rest of the world. As labor intensive production became increasingly uneconomic, U.S. firms started to turn offshore, breaking up production into stages and carrying out the labor intensive processes in countries where wages were low. In response to essentially the same situation, industrially advanced countries of Europe imported low cost labor and Japan turned to automation when wages rose to high levels.

Among the industrial countries, U.S. offshore production has become by far the most important. Because of comparatively high degrees of protection, offshore activities in Europe have remained at a fairly low level. In Japan such activities have been used primarily as a means of penetrating foreign markets, although it appears that more recently Japanese companies have increasingly reimported products assembled for them abroad. On the other side of the co-production relationship the principal participants are developing countries in the Far East and in and around the Caribbean basin.

For the United States the items assembled abroad have become an important part of the supply of certain manufactured products although they are still small relative to total national output and trade. More than half of certain textile and electronics articles are assembled abroad. The imports of assembly output have reached a level of about one sixth of U.S. imports of manufactures. In many developing countries assembly activities have achieved prominence, although in few of them have they constituted the primary engine of growth.

Offshore assembly activities cover the whole spectrum of manufactured products. They tend to concentrate in electronics and textiles not only because there are important labor intensive stages in their manufacture, but also because products in these categories can be transported inexpensively due to their high value to weight ratios. International competition is keenest in electronics. Offshore assembly in that sector outweighs textile assembly almost ten to one. About two thirds of the components the United States ships abroad for assembly are in electronics, less than one tenth in textiles. Even in Mexico, which is the largest assembler of U.S. textiles in the world, only 5 percent of its dutiable assembly exports to the United States (value added in Mexico) derived from textiles in 1980. 1/

While the available data do not permit a rigorous cost-benefit analysis of co-production activities either in the United States or in the developing countries, the analysis of a number of issues has made it possible to draw some general conclusions.

A General Evaluation of Assembly Activities in Developing Countries

The single most important benefit of assembly production to developing countries has been its contribution to the balance of payments. Net export earnings have been running between 30 and 50 per cent of the total value of assembly output. For many developing countries this constitutes a major proportion of the foreign exchange earned from the exports of manufactured products.

In some countries, foreign exchange earnings from assembly exports to the US under 807.00/806.30 exceed earnings from exports entering the US under GSP (Generalized System of Preferences). This is true for

Mexico, the fourth largest GSP beneficiary in 1980 (among 140 countries), and other major GSP beneficiaries such as Singapore, Malaysia, Haiti and El Salvador. 2/

The absorption of underemployment is a principal objective in most developing countries. Although manual assembly activities are by definition labor using, they have generally not been large enough to employ a significant share of the labor force. Only in very small or very poor countries is the employment impact of major importance. Thus in small Singapore, which has no rural population, assembly employment may exceed 5 per cent of the labor force. 3/ In poverty stricken Haiti, assembly operations account for almost one fifth of the total employment in its principal city, Port-au-Prince.

Of all the developing countries, Mexico has the largest employment in assembly production for the U.S. market. Assembly employment has an enormous impact in the towns along the northern border, but it is less than one per cent of the national labor force. It has done nothing for the rural population where the greatest underemployment problem lies.

It also seems that export-oriented assembly has created much of its own labor force by bringing in primarily young women who were formerly not economically active. Although this appears to be a typical phenomenon in most countries, it is not so in Haiti, where poverty presses women into the labor force at an early age. Thus, while an increase in assembly employment might reduce outmigration from Haiti, it will have little effect on Mexican migration of workers to the United States, especially since most of them are males from rural areas.

The assembly payroll appears to constitute a larger share of the aggregate wage bill of the industrial sector in developing countries than the corresponding employment share. This is so because assembly wages are above average wages in industry in some countries and in all countries assembly tends to be more labor-intensive than other industrial activities. Wage rates in assembly are often above minimum wages, which in some developing countries are ceilings rather than floors. Capacity utilization or hours worked have also on average been higher in assembly than in the rest of the economy in some developing countries. The above average pay seems to prevail in high wage Mexico, where most assembly workers get an hourly rate, as well as in Haiti, the other extreme on the wage scale, where most workers are paid by piece.

This may be surprising, particularly in poor countries where un- and underemployment is high. There one would expect a rational policy to keep wages at the (presumably) low opportunity cost of labor in order to maximize employment. However, it was shown in the semiconductor study that the assembly labor demand curve probably slopes downward and that, therefore, it would often be quite rational to charge wages 50-100 per cent above the opportunity cost of labor in the domestic economy to maximize the value of the payroll. Governments in some of the developing countries seem to be (implicitly) aware of this, when minimum wages for these activities are fixed well above those costs ; (assembly firms frequently pay even above minimum rates).

The positive effects on the economy of incomes earned in assembly production can be diluted by a high propensity to import. This appears to be true in the case of Mexico, given the concentration of assembly

plants along the border with the United States. There is no reason, however, for the leakage of assembly incomes across the frontier to be greater than for incomes generated in other activities at the border. The net flow in border trade has historically been in Mexico's favor.

In Haiti it was shown that about one quarter of the population of the capital city depends on assembly wages. Those incomes also give rise to ancilliary activities such as catering services and work clothes production.

On the negative side, a variety of ills have been attributed to the creation of a predominantly female workforce in assembly operations. These range from the disruption of the family to worker exploitation. It is true that generally the wages of women have been below those of male workers in assembly plants, as in other economic activities, but the comparison cannot be controlled for occupation and other factors. (In the case of piece work, as in Haiti, wage differences could indicate productivity differentials). The fact is that women predominate in certain assembly operations everywhere in the world. Developing countries are therefore not unique in that respect. What is new , however, is that the introduction of assembly production into developing countries has accelerated the entrance of women into the labor force. 4/ Therefore the disruptions and adjustment problems are more severe than might have occurred with a slower pace in the absence of the internationalization of production.

The fact that in many countries assembly production tends to be confined to free trade zones has sometimes produced an image of a foreign enclave. This picture is often reinforced by the strong presence of subsidiaries of industrial country companies and by the

general weakness of the linkages of assembly production with the rest of the economy.

The situation in Mexico represents the most pronounced example of this image. Assembly plants along the frontier with the United States, US subsidiaries predominate, US managers and technicians commute from their homes on the US side of the line and evidence of US influence can be seen everywhere in the border region. The assembly operation itself appears to be hermetically sealed off from the rest of the country. U.S. components cross the border in bond to a plant often only a few blocks away and go back again in assembled form with almost no leakage into Mexico. Mexican inputs are confined primarily to janitorial supplies and packing materials. It is not surprising that as seen from the distant capital, Mexico City, the border region appears more integrated with the United States than with Mexico.

Apart from the facts that frontier areas around the globe frequently are a no-man's-land and that Mexican influence on the U.S. side is for obvious historical reasons very strong, the U.S.-Mexican co-production relationship is unique. It is difficult to think of another case where a border joins two large countries of such disparate income levels and different proportions of high quality factors of production. Therefore, there are many possibilities for mutually profitable economic complementarities.

In Haiti, however, assembly activities take place in the capital, in Colombia in towns across the country. In some of the Far Eastern countries it also would be difficult to speak of an enclave. And, in Mexico, too, an increasing number of assembly plants have been established in the interior of the country, and if this trend gains

momentum, the enclave image may fade.

The weakness of linkages of assembly operations to the rest of the economy appears to be the main reason why some developing countries are ambivalent about promoting assembly activities. Linkages are tenuous because of economic as well as institutional causes. Protection of domestic industries often made the cost of national materials higher than imported U.S. components in assembly production. Apart from price considerations, the lack of international competition in domestic markets has also made it more difficult for firms to meet production and delivery schedules as well as high standards of quality and specifications. The same factors have sometimes restrained the investment of national capital in assembly operations.

Forward linkages are limited because of the frequent legal prohibitions or restrictions on the sale of assembly products on the domestic market. If the connections of national firms to the assembly activities are limited, so too will be the transfer of technology. Technical assistance provided by the foreign principals to the assembly plants cannot be diffused easily to the rest of the economy unless national firms are involved as suppliers or operators of the plants or as purchasers of their products. In Colombia, some national firms produce for the domestic market as well as for assembly exports. Therefore the transfer of technology will tend to be more effective there.

In some of the Far Eastern countries, the local material content of assembly operations tends to be higher than for Latin American countries. Higher transportation costs will give domestic production in far away countries a higher degree of protection than in nearby

ones. In this respect Mexico is at a disadvantage. With transportation costs close to zero for shipments to and from border plants, the costs of Mexican components for assembly might have to be below US prices in order to compete with US components that enjoy duty free reentry into the United States. Because of higher transportation costs to the United States and lower costs to local suppliers, assembly plants in the interior of Mexico record a higher percentage of national material use than plants at the border. Haiti's extremely low labor costs have made economic a greater use of domestic components than in Mexico in a few product lines. Also national capital is involved in assembly production to a much greater degree in Haiti than in Mexico.

Nonetheless, value added in Mexico has constituted a higher share of its total assembly output than the corresponding proportion in Haiti and in many other developing countries. This is so not only because of a different product mix, but also because Mexican wages are higher and make up a larger proportion of the total value added than elsewhere.

It is often assumed that, since assembly operations require a much lower investment level than "normal" manufacturing and depend so directly on U.S. companies, they will be particularly unstable. This is only partially borne out by the experience of the countries studied. The US economic downturn of 1974-75 had some effect in particular product lines and on weak firms, but overall assembly exports were less affected than other exports to the United States. A recession appears to induce US firms to cut down on high cost operations at home and to turn increasingly to offshore assembly. Assembly activities have shown a certain stability in developing countries. In most of them value added in assembly has been continuously increasing.

U.S. 807.00/806.30 imports from a few advanced East Asian countries have leveled off, not because of a U.S. induced drop in demand, but because these countries have succeeded in substituting their own materials for US components and thus have been able to export the entire product (coming into the United States as a regular import rather than under 807.00/806.30). U.S. 807.00 imports from Colombia have been unstable since the mid 1970s. Again this cannot be attributed to fluctuations in U.S. demand, because Colombian firms have been using assembly operations as a complement to their regular production for the home market. If the domestic market is strong, assembly exports decline and vice versa. Assembly is used by Colombian firms to stabilize their total production levels.

In many countries where there is arms-length subcontracting for assembly work, both sides usually diversify their risks by contracting with more than one firm at the same time. This will also tend to smooth out large fluctuations.

The overall stability and growth in assembly production in many developing countries implies that such activities do not seem to be exceptionally sensitive to changes in relative wages among countries. There will be shifts of individual firms and products from one country to another. There is also some evidence of an upgrading of the skill level in assembly production as wages rise. The sharp wage increases in Mexico during the mid-1970's probably contributed to the shift of semiconductor assembly to Malaysia and other East Asian countries. While this was probably the single most important loss of a market share in a major assembly product that can be noted among countries, Mexico has continued in the semiconductor business. In 1980 it shipped

a higher volume of assembled semiconductors to the United States under 807.00/806.30 than it did during its 1974 peak.

Other factors seem to play at least as important a role as wages in the geographic composition of offshore assembly production. Risk diversification, the perception of political and social stability, and cultural and geographic proximity are important elements. Thus, Mexico's overall market shares appear more resilient than warranted by changes in relative wages. Convenience of the border, familiarity with the country, ease of communications, low transportation costs and perception of stability combine with the motive for risk diversification to make the demand for offshore assembly in Mexico fairly wage-inelastic within a certain range. These are the same reasons that underly offshore production even in Canada with its very high wages. Therefore, the variety of products produced offshore is much wider in both U.S. neighbors, Mexico and Canada, than in any other country that processes U.S. components for return to the United States.

From the developing country viewpoint, there is the question as to whether resources put into assembly operations might not be better used in other sectors that would produce more immediate linkages and therefore benefit development even more. However, most investable funds for assembly production would not be available for other uses, particularly if the funds come from foreign sources. A U.S. company, for example, having decided to shift assembly operations abroad, may be prepared to establish a subsidiary for offshore assembly, but would not undertake an investment which would be completely extraneous to its assembly decision.

And it is unclear whether national capital is best-invested, from the social point of view, in offshore production-type activities, in infrastructural investments (both physical and social), or in industries where technological externalities and linkages seem more extensive or more dynamic. Rigorous empirical calculations are not only statistically difficult, but require conceptual frameworks which do not easily accommodate the dynamic elements essential to policies aimed at accelerating the process of economic development.

Critical eyes might focus on the lack of integration of offshore activities into the national economy and polity; some critics view assembly production as a sort of "dead-end" industrialization. In the latter case, it makes no sense for scarce national capital to be invested in these facilities. If offshore activity is then isolated from the national economy by trade and investment policies aimed at divesting national capital to areas deemed more socially productive, the enclave nature of this production is a deliberately-created outcome. Thus, one can judge these activities to be ill-suited to national capital and seek to create a controlled foreign enclave, or to be potentially productive investments for national entrepreneurs and to break down the enclave-like aspects of these foreign investments, but not both.

In very poor countries, such as Haiti, it is doubtful whether any sector in the economy could provide stronger shortrun linkages than asssembly production. Such an economy is not yet nationally integrated and most of the population still lives in the nearly self-contained traditional subsistence sector.

Generally, in economies with large un-or underemployed resources, assembly activities offer opportunities for low cost employment creation and foreign exchange earnings. It was shown that the capital-labor ratio in assembly is generally only a fraction of the capital requirements in other manufacturing activities. Assembly could thus provide the lowest cost employment in the modern industrial sector. The resource costs of its foreign exchange earnings are also small in view of the probability that most of the labor force used in assembly exports, previously was engaged in substantially lower productivity activities.

Nevertheless, in one important respect assembly production can impinge negatively on the domestic economy. Although the bulk of assembly employment is drawn from a pool of unskilled persons (in and outside of the labor force) in abundant supply, the activity does require some technical and managerial workers. These are in tight supply in developing countries. Unless assembly firms train or import such persons, competition for the existing scarce talent will drive up the cost of production in most sectors of the economy.

To sum up: assembly production has made an important contribution to the foreign exchange earnings of participating developing countries. For the larger countries, assembly employment creation, while significant, has had little impact on the national un- and underemployment problem. In countries where assembly plants are geographically concentrated, they will tend to have a major effect on the economic development of the region in which they are located.

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A NEW LOOK AT OFFSHORE ASSEMBLY: THE INTERNATIONALIZATION OF IN--ETC(U)
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In some of the least developed countries, assembly production constitutes a substantial force in industrialization. Thus, while in Mexico assembly operations until now have had only a marginal impact on the country's industrial development, in Haiti they have constituted the most dynamic element.

Offshore Assembly Effects on the United States

The obvious objective of U.S. firms in transferring assembly work offshore is to reduce costs of production. In 1978, cost savings for Mexican operations have been estimated to amount to between $8,000 - $14,000 per employee per year. 5/ On this basis, rough calculations yield a total direct savings from Mexican offshore assembly production of between $1-2 billion for 1980. Including all countries, the cost reduction for U.S. firms would be more than twice as high, since Mexican wages are higher than elsewhere in U.S. offshore assembly operations and the country represents less than half of total employment in these activities. Although this is only a small fraction of U.S. value added in manufacturing, the cost savings for individual products are substantial. For semiconductors, the gain to consumers was estimated at about 10 percent of the value of consumption. The lower costs will be propagated through other industries that use the offshore assemblies as inputs. Therefore demand for their products will probably increase. The increased international competitiveness will eventually also have positive effects on the balance of payments.

It is clear, however, that assembly jobs have been lost in the United States. After each recession the ratio of production workers to total employment in offshore industries seems to have declined. This

confirms the conclusion derived from developing country data, that during a business downturn producers appear to reduce their high cost operations in the United States in favor of offshore production. This is not reversed during the subsequent economic recovery. Recessions will therefore be more harmful to U.S. employment than to assembly employment abroad. As the proportion of non-production employment in the United States increases, the fluctuations in total employment may tend to decrease.

Even if it could be shown that jobs gained would exceed jobs lost as a result of offshore asembly, there are still serious displacement costs. About 90 percent of U.S. assembly workers in electronics and textiles are women. Because they have limited skills and tend to be less mobile, they cannot easily shift to other work when they lose their assembly jobs. Ironically, therefore, while offshore assembly brings young women into the labor force in developing countries, it pushes older women out of the labor force in the United States. No matter how high the benefits of offshore assembly for the economy, it tends to place burdensome costs on those who can least afford them.

This is an issue which is not limited to offshore assembly but derives from trade liberalization in general. It should be noted that a general lowering of trade barriers would almost certainly cause worker dislocation in excess of that brought about by offshore assembly operations through tariff items 807.00/806.30.

Assembling offshore will tend to have a negative direct effect on the US balance of payments. In semiconductors, for example, it could be seen that the trade surplus declined as a result of the increased imports of the value added in assembly abroad. But it would take a

rather complex model to estimate the net effect on the balance of payments. The cost reduction obtained through offshore assembly will make semiconductor devices more competitive internationally, thus encouraging exports and decreasing imports. More indirectly, other products using these devices as inputs will also become cheaper, and so demand for other U.S. products will be stimulated.

Policy Implications for Developing Countries

The overall objectives of developing countries in fostering assembly operations in their territory for foreign firms are to increase (a) employment creation, (b) foreign exchange earnings, (c) transfer of technology, (d) upgrading of the labor force and its value added, (e) use of domestic materials, (f) involvement of national capital and (g) other elements that help to integrate that activity with the rest of the economy in order to obtain the greatest benefits possible.

Some of these objectives, such as employment creation, foreign exchange earnings and the wage bill will depend on the magnitude of assembly activities. Existing policies of free trade zones, "in-bond" arrangements, tariff exemptions and duty drawbacks, special tax treatment, waiving of national ownership and content requirements, etc., are designed toward this end. These can be strengthened and improved, and more industrial parks with adequate facilities can be built. In general, however, there will be a political limit to such policies, lest they create a special privilege activity sealed off from the rest of the economy.

The proper policy standard should be to subordinate measures specifically designed for assembly industries to the country's overall development policies. Most of the policies that will promote general economic development will also affect assembly production.

Among these broad industrialization policies, three seem particularly important. One is the continued reduction of trade barriers. This applies especially to the large Latin American countries. Further trade liberalization in these countries may increase competition and force firms to reduce costs. At present there is little incentive for protected oligopolistic industries (which are sometimes foreign owned) to be efficiency conscious. Quality standards are often low, production and delivery schedules haphazard.

Increased competition may also facilitate a greater participation of national enterprises in assembly activities. Cost reduction may enable firms to lower prices of products that could serve as inputs for the assembly plants. Competition would also raise their performance standards so that they might be able to meet the more stringent requirements of export production, both as potential suppliers to and as operators of assembly plants. Thus trade liberalization policy, while designed as part of an overall economic development strategy, may contribute toward raising the national content of assembly products and increase the participation of local capital in export activities.

The other broad policy sought in most developing countries is the streamlining of administrative procedures. Bureaucratic obstacles have discouraged many productive investments and contributed to high cost business operations. Export production is particularly sensitive to administrative delays. In a perverse fashion, bureaucratic rigidities

and stumbling blocks have fostered in some countries, such as Haiti, what can be regarded as a healthy development -- a large participation of local firms in export assembly operations. Domestic entrepreneurs have a comparative advantage over foreigners in knowing how to get things done in the bureaucratic maze, e.g. how to get goods out of customs in one day instead of one month. If the objective is to maximize the involvement of local capital, it probably should be realized through sounder means than adeptness in running an obstacle course.

A third general economic development policy is promotion of technical training and the transfer of technology. Technical assistance can be a powerful development tool, as was shown in the case of Colombia, where it seemed to easily double productivity levels in some firms. The usually close assembly relationship between the U.S. principal and the subsidiary or subcontractor in the developing country would appear to be especially conducive to the transfer of technology. As noted in the country chapters, technical assistance to assembly plants is given by the U. S. companies involved almost on a routine basis. The main problem is to diffuse the technical knowledge to other parts of the developing economy, in particular, to the potential supplier firms of assembly plants, and to apply the knowledge to other types of production.

Technology transfer is easier in countries such as Colombia, where many firms produce both for the home market and for assembly exports. In countries where assembly is more isolated, incentives can be provided for domestic enterprises, which produce, or could readily produce, materials that are similar to the imported components used in

assembly, so that they would avail themselves of training and technical assistance services which the U.S. company or its assembly subsidiary could provide. Thus fiscal subsidies might broaden the benefits derived from offshore assembly by encouraging national firms to seek, and foreign companies to provide, training and technology.

There are other general industrialization or development policies that would impact positively on the linkages of assembly activities with the rest of the economy. For example, incentives for industries to locate in depressed regions of the country could be of particular benefit to the national integration of assembly operations. In the case of Mexico, the establishment of assembly plants in the interior would diminish if not eliminate the leakage of purchasing power and foreign exchange into the United States which occurs at the border, and would raise the local material content in assembly operations.

There is one specific measure applying only to assembly, which is to open up forward linkages by permitting a portion of assembly output to be sold on the domestic market. This might stimulate industries that could use the cheaper and probably higher quality assembled articles as inputs. Consumers, of course, may benefit, if through nothing else than saving the two-way transportation costs of the assembled product returning to the US and then being reimported into the developing country. In order for assembly items that are sold on the domestic market not to compete unfairly with entirely locally produced articles, they should pay the normal import duty.

Short run economic policies can also affect assembly operations. When the developing country currency becomes overvalued, dollar costs of operations will increase while export earnings in local currency

will decline. These may be short run effects until the next devaluation takes place, but it may cause serious disruptions for export firms, particularly U.S. assembly subsidiaries.

Implications For U.S

The US tariff it .00/806.30 could be viewed as a component in the liberalization of trade. Yet, the paradoxical aspect is that the higher the general US tariff levels the more effective the provisions of 807.00/806.30 will be in promoting offshore assembly with U.S. components. 6/

As tariffs decline the value of 807.00/806.30 diminishes. There is some evidence already that in a few cases firms do not use 807.00/806.30 for certain eligible assembly products. In those cases the subjective costs of applying for the tariff exemption (filing the necessary forms, etc.) probably exceed the tariff savings. If general trade liberalization continues, 807.00/806.30 will probably be used less and less.

There are some products now that enter the US under those tariff provisions that actually would be profitable to assemble and import without 807.00/806.30. In Chapter 6 it was suggested that offshore assembly of semiconductors is not dependent on 807.00/806.30. For other products, particularly textiles, offshore assembly using U.S. components probably could not take place without the benefits derived from these tariff items. In their absence such industries could not compete with totally foreign imports.

In respect to trade policy vis-a-vis developing countries, it makes little sense to maintain restrictions against some of their products, assuming that support of economic progress in these countries is still an objective of U.S. policy. It is often argued that such restrictions are not onerous for developing countries, because their exports usually fall short of the imposed quotas. Haiti, for example, does not come close to meeting its textile quotas except in brassieres. Yet during the 1970's when there were textile quotas imposed on Haiti's exports but not on those from the Dominican Republic, there was a dramatic upsurge of offshore assembly operations in the latter country, as U.S. firms invested and subcontracted there. 7/ The existence of quota restrictions discourages U.S. firms from entering into subcontracting arrangements or from establishing assembly subsidiaries. At a minimum, consideration should be given to removing quotas from the lower income countries such as Haiti.

At home the most important task for the U.S. government in respect to the effects of offshore assembly operations is to protect workers who will be displaced. While the net employment effect of offshore assembly might be positive in the long run, there is no justification for permitting the costs of maintaining U.S. industrial competitiveness to fall on a particularly vulnerable sector of the U.S. labor force. Low skilled women, who make up the bulk of U.S. assembly workers, have great difficulties in finding alternative employment after loss of their jobs, particularly if their mobility is restricted. A portion of these women may benefit from retraining especially if they are young and unattached. Older women, many of whom are tied to families, may have no choice but to take less attractive employment or to leave the

labor force. These persons should be compensated, even if it takes special measures to do so.

Finally, the development of large-scale offshore production arrangements by firms in developed countries points to a fundamental long-term shift in the nature of competitive advantage that the industrialized economies will have to adjust to in the coming decade. The world economy has passed through successively more comprehensive stages of integration, with markets for traded goods, and more recently, financial markets, becoming meshed together across national boundaries into a truly international structure. What this study has shown is that labor markets are also in the process of being integrated into an international system not only through migration, but also through trade.

The significance of this internationalization of industrial product flows within a single industry, is that for a developed economy like the United States national labor markets will no longer be insulated from international competition by the costs of transport and communication. To some extent, high wages for relatively unskilled labor in the United States embody a rent created by superior technology, as well as by barriers to migration and trade. The phenomena studied in this book, carried to their ultimate conclusion, appear to spell the end to relatively high wages and standards of living for the unskilled in the Western industrial societies (except, perhaps, in services, and other non-tradeables) with the internationalization of the labor-intensive stages of production for technology and capital-intensive goods.

So, we are left with a fundamental long-term policy choice for these industrial societies. One choice is to face a reduction in the economic privileges of the least skilled, and with it, possibly a considerable period of social and political turbulence. The other alternative is to eliminate those sectors of the labor force in direct competition with developing country workers through investments in education and training, in effect shifting the composition of the labor force to more skilled occupations. In the very long run, of course, the eventual outcome may well be identical: the elimination of the unskilled from the industrial work force. The choice is, in effect, between laissez faire and state intervention in education, training, and other forms of investment in human capital. Given the imperfections in markets for human capital, as well as the substantial social costs of an unplanned transition, large-scale investment in upgrading the skills of the U.S. labor force would seem to have ample justification.

Concluding Remarks

There is some fragmentary evidence that over time more complex assembly operations are introduced as the labor force becomes more skilled and relative wages rise in a developing country. More elementary processes would then be shifted to lower wage areas. Although the accumulated evidence is not yet convincing, an idealized form of a product cycle, combined with development stages, might be conceptualized for offshore assembly as follows. 8/

International competition triggers in the United States a "depackaging" of production of some manufactures into labor, capital and technology intensive parts. U.S. firms transfer abroad labor intensive assembly operations in which they clearly can no longer compete, but keep capital and/or technology intensive processes in which they still have a comparative advantage. During the first stage, the developing country to which assembly is transferred, provides nothing else except unskilled labor services. Machinery, equipment, the components to be assembled and the technology are provided by the U.S. firm, either through the establishment of a subsidiary or through subcontracting with a local firm. During a second stage, the skill level of workers is raised through on the job training and technical assistance, and firms in the developing country are able to supply an increasing portion of the components for assembly. Wages of assembly workers rise relative to other developing countries. U.S. firms transfer more sophisticated assembly processes to the country while shifting the elementary assembly operations to lower wage LDCs.

In a third stage, the original developing country is able to supply all or most of the materials for assembly, so that in effect it can produce the entire product with only technical inputs and special components coming from U.S. firms. During the second and third stages the assembly of new products may continue to be transferred to the country, either because they require higher skill work or because there are still large pockets of unskilled low wage labor present in the nation.

Singapore and Hong Kong probably are representative of countries that are in certain product lines in stage two and in others already in stage three. Recently, Singapore seems to have instituted a deliberate wage policy to price itself out of the market for basic, unskilled assembly work. Mexico appears to have started a transition to stage two. As discussed in the Mexico study, some assembly plants at the border have spun off branch plants into the interior of the country where wages are still considerably lower than at the border. The most elementary assembly processes have been transferred to the interior plants, keeping the more skilled operations at the border.

This product and stage-of-development cycle can be interrupted by a movement toward automation. Until now automation has been cost effective when production runs are sufficiently long and quality standards are high. This is how the Japanese have used automation in certain electronics production. As automated methods become more sophisticated, machines will be able to make the change over from handling one product line to another in much less time. This will reduce costs of operation and also make automation worthwhile in shorter production runs for articles with rapid technological and/or style changes.

It might still be economically rational to transfer automated assembly abroad. Already there are many examples of computer-controlled equipment being used in offshore assembly plants. While the operation itself is not labor intensive it uses unskilled labor and the ancilliary operations can be quite labor using. For example, materials handling, preparation work, cleaning and inspection require relatively low skilled workers. Only the maintenance of the

equipment requires skilled technical personnel.

The transfer of automated assembly abroad, however, involves substantial capital investment. Risks in foreign lands will have to be weighed much more carefully and sensitivity to political and social factors will be much higher than with manual assembly technology. Automated offshore assembly might therefore be severely limited, extending only to developing countries where these risks are perceived as low, including some in the Far East and possibly Mexico. Part of the investment risk might have to be borne by the offshore countries themselves.

It is likely, however, that when automation becomes profitable, a major portion of assembly operations might return to the United States but probably only with minor employment creation there. The net effect of automating assembly might well be a decrease in U.S. manufacturing employment. Paradoxically as labor costs have risen in Japan, the country in which automation seems to have been most extensively applied, Japanese firms have recently gone offshore for assembly work primarily for the export market. Japan has also started to use countries such as Mexico as an export platform in which it has its components assembled for penetration of the U.S. market.

There are thus two forces that might work against offshore assembly operations. Trade liberalization in developing countries, technical assistance and the upgrading of their labor force may eventually enable these countries to produce inexpensive high quality components that were imported from the United States for assembly. This would constitute import substituting industrialization for the export market (contrary to the traditional import substitution for the

home market).

The other force is the movement toward automation. Computer controlled equipment could conceivably eliminate firms' the motive for offshore assembly. Nevertheless, it would take an enormous improvement in the economic efficiency of automation to offset the economies derived from the vast, inexpensive and easily trainable labor pool of the developing world. Whether the United States will continue to share production with developing countries ultimately will depend not so much on purely economic factors, as on the U.S. perception of political stability existing abroad.

Footnotes

1. Mexican data show that apparel assembly contributed about 13 percent of total value added and employed about 16 percent of total employment in the maquila industry in 1980 (SPP data; see also Table III-17).

2. U.S. Department of Commerce and Report to the Congress on the First Five Years' Operations of the U.S. Generalized System of Preferences (GSP), Committee on Ways and Means, U.S. House of Representatives, April 17, 1980.

3. Estimated on the basis of value added per worker for U.S. offshore assembly in Mexico, applying these ratios to value added of assembly in Singapore, and allowing for offshore assembly there on behalf of other countries.

4. There is some evidence that female assembly workers tend to be younger in the developing countries than in the industrialized nations.

5. M. Richard Campbell, "Production Sharing, Implications for Industrial Parks in Latin America", Journal of Flagstaff Institute, Vol III, No. 1, Jan 1979, p. 36. Taking the approximate differences in U.S. and Mexican wages yields similar results. In 1978 the differences between Mexican minimum wages per hour at the border as calculated by Van Waas and the U.S. hourly earnings as reported by the U.S. Department of Labor, was $5.38 in all of manufacturing, $5.04 in the electronic industry and $3.15 in the apparel industry (Van Waas, Table 1, p. 83). The assumption (in using these differences for an idea of cost savings) is that there is no substitution between labor

and capital in the United States. These data are presented only to hint at the order of magnitudes involved and not to formally estimate cost savings.

6. The effective protection of US products assembled abroad will be higher than the nominal tariff if without 807.00/806.30 the entire product would be imported.

7. Since 1979 textile quotas also apply to the Dominican Republic.

8. This stylized scenario applies to offshore production only as part of the development process. Many countries started to industrialize long before offshore assembly production emerged, or fostered their industrialization through a much larger and broader set of policies.

ANNEX A

COUNTRY STUDIES

1. The Assembly Industry in Mexico

   Joseph Grunwald

2. Offshore Assembly in Haiti

   Joseph Grunwald, Leslie Delatour and Karl Voltaire

3. Offshore Assembly in Colombia

   Joseph Grunwald and Juan Jose Echavarria

The Assembly Industry in Mexico

Joseph Grunwald

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THE ASSEMBLY INDUSTRY IN MEXICO*

1. INTRODUCTION

It should not be surprising that Mexico has become the United States' most important partner in offshore assembly activities. As a developing country it shares a nearly 2,000 mile border with one of the world's highest wage countries and by far the world's largest producer. The border is fairly accessible and transportation from almost any point in the United States to the border is cheap when compared to overseas trade. Although the languages differ, the "cultural distance" between the two countries is not as great as between the United States and most other nations of the so-called "Third World". Many U. S. entrepreneurs and business executives have been to Mexico and for historical reasons as well as because of migration, its culture is diffused throughout many parts of the United States.

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*This chapter benefited from a report entitled "Evolucion y Perspectivas de la Industria Maquiladora de Exportacion en Mexico" (Version preliminar), by Federico Balli Gonzalez with the collaboration of Javier Villasenor B. , and Jose Meneses of Colegio de Mexico, Centro de Estudios Economico y Demograficos. That report was submitted to the second "Seminar on North-South Complementary Intra-Industry Trade", sponsored by the United Nations Conference on Trade and Development and the Brookings Institution, and held under the auspices of El Colegio de Mexico in Mexico City, 18-22 August 1980. Specific points drawn from the report are cited in footnotes below. The views expressed here are those of the author and should not be ascribed to Federico Balli, his collaborators, or other staff members or officers of El Colegio de Mexico.

In the mid-1960s when 806.30/807.00 trade data first became available, Hong Kong was more than five times as important and Taiwan nearly as important, as Mexico in processing and assembling U. S. components for re-export to the United States. By the end of that decade, the U. S. shipped almost $100 million of components to Mexico for assembly, nearly twice as much as to Hong Kong and more than four times as much as to Taiwan. (US ITC tables, various years). Because of the geographic and cultural proximity, the relative shift to Mexico from Hong Kong and Taiwan took place despite Mexico's higher wages. An important question is how wide wage differentials must become before the relative advantage of Mexico is offset. This will be discussed later.

The attraction of Mexico was reinforced by the Border Industrialization Program announced in 1965. Part of that program's objective was to absorb the border unemployment left by the termination of the "Bracero" program between the U. S. and Mexico in 1964 145/ It allowed the duty free imports of foreign machinery, equipment and components for processing or assembly within a 20 km strip along the border, provided that all of the imported products will be re-exported. 146/ Thus none of the output of the assembly operations, called "maquila" by Mexicans, could be sold within the country (the assembly plants are called "maquiladoras").

Subsequent Mexican legislation, decrees and administrative regulations expanded the scope of the maquila, first by exempting the maquiladoras from the "Mexicanization" requirement of Mexican majority ownership, 147/ and second by permitting the establishment of maquiladoras anywhere in the country subject to approval by the

authorities (Mexico City and two other cities were intended to be off-limits because of pollution problems, but several plants were established there by special permission; other locations have received special incentives). Foreign technicians and managerial personnel are given Mexican residence if considered necessary for the efficient functioning of the maquiladora. Customs procedures and other government formalities have been eased. As a further attraction for maquila operations (and following the Far Eastern example) industrial parks have been promoted, first along the border and then in the interior. 148/

The original conception by the promoters of an idealized co-production system with Mexico is the "twin plant" idea. U. S. firms would establish two plants under a single management, one on each side of the border. The U. S. plant would do the capital intensive, high technology operations and the factory on the Mexican side, the labor intensive processes. 149/ The U. S. plant would supply the Mexican counterpart with the component parts and the Mexican plant would return the assembled products to the U. S. side for further processing and/or shipment to the various markets. The two plants would be close enough so that transportation costs would be near zero and a single management would be optimal. Inventory costs, repair and maintenance and other problems in the Mexican plant could be held to a minimum because supplies and technical support would be just a short distance away on the U. S. side.

The logic of the concept has won sufficient acceptance so that the term "twin plant" has often been used incorrectly to describe all U. S. offshore assembly operations with Mexico. In effect, the great

majority of U. S. owned maquiladoras are supplied from plants quite distant from the border, primarily the Midwest but also the East and the far West. Apparently many U. S. corporations have felt the savings in transportation costs and the advantage of a single management do not warrant the investment in an additional plant on the U. S. side of the border when plants that could supply the components already existed elsewhere. Although quite a few twin plants have been established along the border, particularly in the El Paso-Juarez region, there are not enough of these to make that concept representative of the existing co-production activities between the United States and Mexico.

This chapter is divided into seven main sections. The first three, including this introduction, are primarily descriptive. Section 4, the main issues of offshore assembly operation in Mexico, is primarily analytical. Sections 5 and 6 are a combination of research findings and policy implications. The final section reflects on the future as its title indicates.

2. IMPORTANCE OF OFFSHORE ASSEMBLY FOR MEXICO

Since 1965, when the Border Industrialization Program got under way, a significant number of assembly plants have been established almost every year. At the end of 1980, 620 maquiladoras were in operation employing about 124,000 persons. 150/ (See also Table III-1).

The importance of the employment generation is difficult to judge because "there are no reliable unemployment and underemployment statistics in Mexico." 151/ It is clear, however, that within the context of Mexico's overall employment problem, the maquila labor force is very small indeed. Estimates range from an underemployment rate of

Table III-1. Mexico: Employment in Assembly Plants and Number of Plants 1969-1980*

Year	Number of Plants: Total	Number of Plants: Interior	Interior Plants as Percentage of Total Plants	Total Employment (All Workers): Number	Total Employment (All Workers): Change from Previous Yr. (Percent)	Interior Employment (All Workers): Number	Interior Employment (All Workers): Change from Previous Yr. (Percent)	Production Worker Employment: Number	Production Worker Employment: Change from Previous Yr. (Percent)
1969 a/	108			15,858					
1970	120			20,327	28.2	-			
1971 b/	251			29,214	43.7				
1972 b/	339			48,060	64.5				
1973	257	10 d/	3.9	64,330	33.9	4,200 c/			
1974	455	26	5.7	75,977	18.1	4,852	15.5		
1975	454	36	7.9	67,213	-11.5	5,069	4.5	57,830	
1976	448	42	9.4	74,496	10.8	6,964	37.4	64,670	11.8
1977	443	45	10.1	78,433	5.3	7,752	11.3	68,187	5.4
1978	457	37	8.1	90,704	15.6	8,317	7.3	78,570	15.2
1979	540	60	11.1	111,365	22.8	10,828	30.2	95,818	22.0
1980	620	69	11.3	119,546	7.3	12,970	19.8	102,020	6.5

Sources: Secretaria de Programacion y Presupuesto (SPP), Departmento de Estadistica Industrial
Secretaria de Patrimonio y Fomento Industrial (SEPAFIN).

a. From El Paso Chamber of Commerce as reported in Hearings, Committee on Ways and Means, U.S. House of Representatives, June 4, 1970, Exhibit C, p. 3284. Figures, which may not be comparable, as of July 31, 1969.

b. As of July 1971 and August 1972 from Leopoldo Solis, UNIDO, Investment Priorities in Mexico, Table 15, p. 109, figures may not be comparable.

c. Estimate, Banco de Mexico SA, Encuestas, Cuaderno Semestral #1, December 1978, Table 1, p. 15.

d. Computed by subtraction.

Note: Data prior to 1974 may not be comparable, except for 1970.

27.4 percent to 52 percent of the labor force in 1978. 152/ The unemployment rate at the border seems to be higher than in the rest of the country and, according to fragmentary information, appears to be rising. 153/ The nature of the maquila work force and more about its relation to the border employment problem will be discussed later. 154/

The maquila operations make a substantial contribution to Mexico's foreign exchange earnings. The precise magnitude is difficult to determine, primarily because of the leakage of Mexican maquila wages across the border to the United States. Various estimates have been made. Comercio Exterior, the monthly review of Mexico's National Bank of Foreign Trade, cites other sources for the estimate of 60-75 percent of wages earned on the Mexican side of the border being spent in the U. S. side during the 1970s. 155/ Survey data elaborated by the El Paso, Texas Real Estate Research Corporation show that in August 1966, 20 percent of retail sales of durable goods in the El Paso metropolitan area were made to patrons living across the river in Juarez, Mexico and surroundings. The corresponding proportion for downtown El Paso retail sales was 30 percent. 156/ On the other hand, data from the Banco de Mexico, Mexico's central bank, show a consistent surplus of Mexico's border transaction with the United States. In 1978 the surplus was $732 million in Mexico's favor, representing 45 percent of Mexican border income (not including earnings from maquila exports) 157/

Therefore, in the absence of specific survey studies, it is difficult to estimate the net leakage of the Mexican offshore assembly payroll. There is no doubt that a good part of Mexican maquila wages are spent in the United States, perhaps between 40 and 60 percent, to take the latest assertion. 158/ However, there is no estimate of the

expenditure of U. S. residents in Mexico due to the existence of offshore assembly operations. The facts are, according to Banco de Mexico data, that both the border transactions and tourism have been consistent and substantial net foreign exchange earners for Mexico, exceeding $1 billion since the mid-1970s. 159/ Whether, and by how much, the surpluses on these accounts would have been larger in the absence of offshore assembly operations, is still an open question.

The value added generated by the maquiladoras in Mexico has been increasing sharply since the beginning of the border industrialization program. (See the note to Table III-2 for the definition of value added in assembly operation). At the end of 1980 it was running at an annual rate of over $830 million according to figures from the Mexican Secretariat of Programming and Budget. 160/ (See also Table III-2).

As a net foreign exchange earner, maquila exports are equally important, since all of the value added is exported (See Table III-3). 161/

Thus since 1973 the exports of maquila services have earned for Mexico between 30 and 45 percent as much as total Mexican manufactured exports. 162/ They are considerably larger than Mexico's net earnings from tourism (expenditures of foreign tourists in Mexico minus expenditures of Mexican tourists abroad, not including Mexico's highly favorable balance of border transactions). Even if there are major net leakages -- Mexican workers' wages spent on the U. S. side of the border and not compensated by maquila induced expenditures of U. S. residents in Mexico -- say as high as 50 percent, net foreign exchange earnings from assembly operations would still make an important contribution to Mexico's balance of payments, equaling about

Table III-2. Mexico: Total Value Added and Total Payroll in Assembly Plants, by Location in Millions of Current U.S. Dollars and Index Numbers of Constant Mexican Pesos (1975 = 100).
1973-1980

	1973	1974	1975	1976	1977	1978	1979	1980
	(Millions of Current U.S. Dollars)							
VALUE ADDED								
All Plants	197.0	315.6	321.2	352.2	314.9	438.6	637.9	770.8
Border Plants	177.5	289.2	290.0	314.4	276.3	386.5	539.7	661.2
Interior Plants	19.5	26.5	31.1	37.7	38.6	52.0	98.2	109.6
TOTAL PAYROLL								
All Plants	115.5	194.7	194.4	215.6	200.3	262.5	371.4	456.4
Border Plants	107.7	181.4	180.1	199.9	183.8	241.8	339.6	413.7
Interior Plants	7.8	13.3	14.2	15.7	16.5	20.7	31.8	42.7
	Index Numbers of Constant Mexican Pesos (1975 = 100)							
VALUE ADDED								
All Plants	87.2	113.2	100.0	116.7	118.6	142.0	174.7	168.5
Border Plants	87.0	114.9	100.0	115.4	115.2	138.6	163.6	160.1
Interior Plants	89.2	97.9	100.0	129.0	150.1	173.8	277.4	247.3
TOTAL PAYROLL								
All Plants	84.4	115.3	100.0	118.0	124.7	140.5	168.0	164.8
Border Plants	85.0	116.0	100.0	118.1	123.4	139.6	165.7	161.1
Interior Plants	77.5	107.3	100.0	117.4	139.9	151.1	196.1	210.7

1. Interior plants calculated by subtraction.

2. Deflated by Mexican Consumer Price Index (CPI was chosen for the following reasons:
(1) Wholesale Price Index covers Mexico City only.
(2) Value Added in Mexico consists primarily of wages, services and profits, Mexican materials constituting only a small proportion).

Sources: Published and Unpublished SPP and SEPAFIN Tables.
For Rates of Exchange and Consumer Price Index: IMF, International Financial Statistics, 1980 Yearbook and July 1981 issue. See Table III A-1, below.

Note: The economic concept of "value added" includes only payments to the factors of production, such as wages, rents, interest and profits. In this and other tables, however, the concept represents the value added in Mexican assembly operations to the imported components and therfore includes local materials used and utilities.

Table III-3. Mexico: Comparison of Mexican and U.S. Data of Value Added in Mexican Assembly Plants, Exports of Mexican Assembly Services and U.S. Dutiable Imports of Assembly Products from Mexico.
(Millions of U.S. Dollars)

Year	Value Added in Assembly Plants	Net Exports of Mexican Assembly Plants	Dutiable Value of U.S. 807.00 & 806.30 Imports from Mexico
	(A)	(B)	(C)
1973	197	278	286
1974	316	444	464
1975	321	454	467
1976	352	536	536
1977	315	525	524
1978	439	452 a/	714
1979	638	638	1016
1980	771	773	1155

Sources: Column A: SPP tables; converted to U.S. dollars at prevailing rates of exchange (Table III A-1).
B: Banco de Mexico, Annual Reports 1973-1980.
C: U.S. International Trade Commission, Tariff Items 807.00 and 806.30, U.S. Imports for Consumption, various years.

a. The 1978 figure was originally $714.3 million (1978 Informe Anual, Banco de Mexico), but was revised downward by 37 percent in the 1979 and 1980 Annual Reports.

half of Mexico's earnings from exports of manufactures to the United States.

3. CHARACTERISTICS OF THE ASSEMBLY INDUSTRY

Products, Location and Size

The variety of Mexico's assembly activities is wide and has been increasing. It ranges from toys and dolls to sophisticated electronic equipment to the sorting of U. S. retail store coupons. The ten most important product groups averaged over 80 percent of total value of assembly output imported by the United States from Mexico during 1969-70 but only about 70 percent during 1979 (Table III-4). If T. V. parts are excluded, the percentage drops from 62 to 43 percent.

While the variety has risen, the composition of the product mix has changed. Textile products (including apparel), toys and dolls and similar simple light industry constituted almost one quarter of all maquila output in 1969, but in 1980 they accounted for only one-tenth. Television receivers and parts now make up well over one quarter of the total, thus being by far the most important single product group in Mexico's assembly operations. Semiconductors and parts which, with over 16 percent of the total, were almost as important as the T. V. group in 1969, accounted for only 5 percent in 1980. Motor vehicle parts were not a significant assembly product in 1969, but in recent years they have occupied between the third and sixth place in order of importance in Mexico's maquila operations.

The 620 maquiladoras operating in 1980 assembled at least $2.3 billion worth of total output. That is the amount that was imported by the U. S. under tariff items 807.00 and 806.30 that year (Table III-5).

Table III-4a. Mexico: The Most Important 807.00/806.30 U.S. Imports from Mexico (ITC Categories), 1969-1975

Most Important ITC Products	1969 % of Total 806/807 Value	1969 Rank	1970 % of Total 806/807 Value	1970 Rank	1971 % of Total 806/807 Value	1971 Rank	1972 % of Total 806/807 Value	1972 Rank	1973 % of Total 806/807 Value	1973 Rank	1974 % of Total 806/807 Value	1974 Rank	1975 % of Total 806/807 Value	1975 Rank
T.V. Receivers & Parts	17.1	1	19.7	1	24.2	1	22.3	1	22.3	1	18.8	1	20.7	1
Semiconductors & Parts	16.3	2	15.9	2	13.9	2	12.5	2	12.0	3	13.4	2	10.6	3
Toys, Dolls & Models	12.0	3	12.3	3	8.5	4	5.6	5	2.8	9	2.8	8		
Textile Products	11.5	4	9.9	4	12.9	3	11.8	3	12.2	2	11.4	3	12.2	2
Office Machines	9.0	5	8.6	5	4.9	5	6.0	4	7.5	4	9.8	4	7.1	4
Electronic Memories	3.9	6												
Scientific Instruments	3.8	7												
Piston-Type Engines & Parts, etc.	2.9	8	2.9	7	2.2	10	2.5	10	2.6	10			2.7	8
Hand Tools, Cuttery, etc.	2.4	9	2.4	9										
Resistors & Parts	2.2	10												
Elec. Motors, Generators, etc.			2.7	8	3.8	6	3.5	6	2.8	8	2.6	9	2.9	7
Lumber & Paper Products														
Recording Media			3.2	6	2.5	9								
Equipment-- Elec. Circuits, etc.					2.5	8	3.4	7	4.2	5	4.8	5	4.9	6
Motor Vehicle Parts, etc.					3.0	7	3.2	8	2.9	6	2.9	7	5.0	5
Capacitors			1.8	10			2.5	9	2.9	7	3.4	6	2.6	10
Electrical Conductors											2.5	10	2.7	8
% of 10 Most Important Products (excluding T.V.)	84.0		59.7		54.3		51.1		49.9		53.5		50.6	
TOTAL 806/807 Value (Millions Dollars)	145.2		213.3		260.5		426.4		651.2		1032.6		1019.8	

Table III-4b. The Most Important 807.00/806.30 U.S. Imports from Mexico (ITC Categories), 1976-1980

Most Important ITC Products	1976 % of Total 806/807 Value	1976 Rank	1977 % of Total 806/807 Value	1977 Rank	1978 % of Total 806/807 Value	1978 Rank	1979 a/ % of Total 807 Value	1979 a/ Rank	1980 a/ % of Total 807 Value	1980 a/ Rank b/
T.V. Receivers & Parts	22.7	1	19.1	1	25.0	1	27.8	1	27.2	1
Semi-conductors & Parts	8.3	3	6.2	4	5.0	5	4.1 c/	7	4.0 c/	7
Toys, Dolls & Models									1.2	14
Textile Products	11.6	2	11.4	2	10.2	2	8.5	2	8.8	2
Office Machines, etc.	4.2	6	2.8	9	2.8	10			2.9	11
Scientific Instruments	2.0	10							3.4	9
Elec. Motors, Generators, etc.	3.7	8	3.7	8	3.8	6	4.6	6	5.0	5
Lumber & Paper Products			2.6	10					2.4	12
Recording Media									.9	16
Equipment-- Elec. Circuits, etc.	6.0	4	6.2	5	5.7	4	5.8	3	6.0	4
Motor Vehicle Parts, etc.	5.8	5	8.3	3	6.2	3	4.7 d/	4	4.3 d/	6
Capacitors	3.8	7	4.0	6	3.7	7	3.3	8	3.0	10
Electrical Conductors, etc.	2.9	9	3.8	7	3.4	8	4.6	5	6.3	3
Radio Appar. & Parts									1.2	15
Other Misc. Elec. Prod. & Parts					3.4	9	3.2	9	3.5	8
Ceramic Products							3.1	10		
Luggage, Handbags, etc.									1.3	13
% of 10 Most Important Products excluding T.V.	48.3		49.0		44.1		41.7		44.3	
TOTAL 806/807 Value (Millions of Dollars)	1135.5		1155.5		1539.8		2001.7		2276.3	

a. Includes only 807.00 imports.

b. Ranking covers the 16 most important product groups.

c. Including 806.30 imports, these percentages would amount to 5.0 in both 1979 and 1980.

d. Including 806.30 imports, these percentages would be 5.1 in 1979 and 4.6 in 1980.

Sources: For 1969-1978, Special magnetic tapes prepared by the U.S. International Trade Commission (ITC). 1979-1980, "Tariff Items 807.00 and 806.30 U.S. Imports for Consumption, Specified Years 1966-80", U.S. International Trade Commission, June 1981.

Table III-5. U.S. Imports Under Tariff Items 807.00 and 806.30 from Mexico, Total, Duty-Free and Dutiable Value in Million U.S. Dollars and Percent Dutiable Value of Total Value 1969-1980

Year	Total 807.00 and 806.30 Imports	Duty-Free 807/806 (millions of dollars)	Dutiable Value of 807/806 Imports	Dutiable Value as Percent of Total Value (3 ÷ 1)
	(1)	(2)	(3)	(4)
1969	150.0	97.9	52.1	34.7
1970	218.8	138.3	80.5	36.8
1971	270.4	166.0	104.4	38.6
1972	426.4	256.3	170.1	39.9
1973	651.2	364.8	286.4	44.0
1974	1032.6	568.7	463.9	44.9
1975	1019.8	552.4	467.4	45.8
1976	1135.4	599.9	535.5	47.2
1977	1155.5	631.1	524.4	45.4
1978	1539.8	826.0	713.8	46.4
1979	2065.1	1049.4	1015.7	49.2
1980	2341.4	1186.3	1155.1	49.3

Source: U.S. International Trade Commission (ITC), Tariff Items 807.00 and 806.30, U.S. Imports for Consumption, various issues.

If Mexican assembly products for other countries (mainly Japan) are added, the maquila output may well have reached $2.5 billion in 1980. 163/ About half of the output destined to the United States consisted of U. S. components.

Most of the plants are located along the border, concentrating in six towns from Tijuana just south of San Diego, California on the Pacific Ocean to Matamoros opposite Brownsville, Texas near the Gulf of Mexico. 164/ A little more than 11 percent of the total (69 plants) were in the interior of the country in 1980 (Table III-1). The proportion, while still small, has been increasing steadily. (In 1973 there were only 10 plants -- or less than 4 percent of the total at that time -- located away from the border). The interior plants are situated now in nearly every part of the country, including the three largest cities, Mexico City, Guadalajara, and Monterrey.

Not only the number but also the size of plants in Mexico's maquila industry have been rising. Estimates based on data given in U. S. Embassy reports would indicate an average of about 120 workers per plant during the early 1970s. 165/ This rose to about 160 during the mid-70s and an average of about 200 workers per plant at the end of the decade (Table III-6).

The largest size plants tend to be located in modern industrial parks; in Cuidad Juarez, where the country's largest industrial park for maquiladoras is located, the average was 350 workers per establishment in December 1980. Small plants tend to prevail in the Far West: Tijuana averaged only 100 workers and Mexicali less than 90. 166/ There is no significant overall difference in size between border and interior plants (Table III-6).

Table III-6. México: Number of Workers per Assembly Plant; by Location and Industry
Monthly Averages
1974-1980

	1974	1975	1976	1977	1978	1979	1980	December 1980
LOCATION								
All Plants	167.0	148.0	166.3	177.0	198.5	206.2	192.8	199.8
Border Plants	165.8	148.7	166.3	177.6	196.2	209.5	193.4	199.4
Interior Plants	186.6	140.7	165.8	172.3	224.8	180.5	188.0	202.7
INDUSTRY								
Food	117.2 a/	143.5 a/	107.1	86.9	120.8	118.7	116.1 a/	115.2 a/
Shoes & Apparel	113.9	113.9	120.5	127.4	160.6	139.2	140.3	144.0
Furniture & Parts	80.4 a/	88.8 a/	75.5	84.8	84.6	85.5	54.7	54.9
Machinery, Transport Equipment, Non-Elec.	110.4	105.3	98.2	95.6	125.1	116.5	135.3	163.5
Machinery & Access., Electric	249.7	215.1	262.7	284.3	323.0	351.1	311.2	321.0
Other Manufacturing	62.7	46.9	59.7	73.5	74.1	83.1	132.9	127.6
Services	241.8 a/	201.6 a/	253.1	320.9	360.0	273.3	195.1	201.5

a/ Border plants only.

Source: SPP Tables.

The five plants in greater Mexico City were quite small, averaging about 30 workers, while in Guadalajara the 14 plants averaged over 300 workers. In addition to the available infrastructure such as industrial parks, plant size varies with the type of products. Furniture assembly is generally done in small plants, assembly of electrical machinery and equipment in large plants (Table III-6).

Ownership

As the concept of "offshore assembly" implies, the majority of the maquila output in Mexico is produced by foreign subsidiaries operating in that country. And since 90 percent or more of the assembly is for the U. S. market, most of these subsidiaries are U. S. owned or controlled.

It would be a mistake, however, to believe that Mexican capital has played no role in the maquila operations. While data are incomplete and contradictory, some patterns are apparent. One Mexican source indicates that in 1979, 259 of the 540 firms operating as maquiladoras had majority foreign capital (of which 95 percent came from the U.S.) 167/ That is only 48 percent. Another Mexican study says that 55 percent of the maquiladores are wholly foreign owned. 168/ The U.S. Embassy in Mexico cites a report that 35 percent of the firms had Mexican capital and managers in 1979. 169/ A recent publication by Mexico's Third World Center asserts that U.S. companies control 90 percent of all maquila operations in Mexico. 170/ But the same article provides a table in which it is shown that in 1978 only 11 of the 38 plants established in the interior of Mexico were wholly U.S. owned (less than 30 percent), while another 11 had 100 percent Mexican

capital, an additional 3 had Mexican majority ownership and 4 more were counted with between 16 and 40 percent Mexican capital. 171/ In other words, substantial Mexican capital participated in half of the maquiladoras located in the interior of Mexico in 1978. Mexican capital is also involved in industrial parks designed for maquiladoras. The largest park of maquiladoras in the country, located in Ciudad Juarez, is Mexican owned and operated. 172/

Most of the U. S. controlled maquiladoras are subsidiaries of medium sized multinational enterprises. Some of the giants in U.S. industry, however, have established offshore assembly operations in Mexico in recent years. At least 48 of the Fortune 500 had maquiladoras in 1976. 173/ In addition, three of the largest Japanese and four of the top European industrial concerns operated assembly plants in Mexico that year. The interest of Japanese and European companies in Mexican offshore production appears to be increasing. 174/ While it is natural that foreign participation would be higher in the maquila industry than in other economic activities, it should be noted that in general the share of Mexican manufactured output produced by foreign transnational companies has increased in the postwar period. 175/

Foreign companies, instead of establishing their own subsidiaries, also subcontract Mexican firms to undertake the assembly operation for them. Many of these are "captive" plants, i. e. they produce only for one foreign company; the majority, however, provide assembly services for two or more foreign companies. They can be found all along the border but a large number concentrate in the area bordering California where the U. S. contracting companies are nearby. Most of the captive

plants, principally in the apparel industry, and some of the others receive a major portion of the machinery and equipment from the subcontracting company in the United States on loan or on a rental basis. These are usually second hand items and seldom up-to-date hardware. The fact that the equipment belongs to the foreign (usually U.S.) contractor means that it can be withdrawn after completion of an assembly job. However, the usual agreement calls for a continuing contractual relationship.

A variant of subcontracting used in Mexico is a temporary arrangement, generally called a "shelter plan," under which local and special firms in Mexico, who "know the ropes," provide assembly services for a foreign concern until the foreign company is ready to establish its own subsidiary or enters into a long term relationship with a Mexican firm or decides not to assemble in the country. The firms offering shelter plans range from consulting businesses providing only advisory services to foreign companies wishing to set up shop in Mexico, to well equipped plants that can engage in a variety of assembly operations with machinery and equipment provided by the client.

Thus the shelter plan permits a foreign company to try out offshore assembly operations without immediately having to make long term commitments. The local firm "shelters" the foreigner from the red tape involved in starting up foreign production. This covers legalities in dealing with government offices, hiring and administration of workers and technicians and compliance with rules, regulations and customs. Since the foreign company's management will be on site, local procedures can be learned "on the job." After the

production experience of several months to a year or more, the company will be in a position to decide whether or not to invest in offshore assembly facilities or undertake long term commitments with Mexican firms. There is nothing that prevents the foreign company from continuing with the shelter plan firm except that it is expensive and probably defeats the purpose of offshore assembly in the long run. 176/

Capital Requirements

Almost by definition, assembly operations, even in foreign plants which generally make up the largest maquiladoras, tend to have very low capital-labor ratios compared to other manufacturing activities. According to a well known Mexican economist, capital investment per worker was less than 10,000 pesos in Mexico's maquila industries in 1974. This compares with 62,000 pesos in 1970 for the total Mexican manufacturing industry. 177/ This difference may be exaggerated because on the one side, capital in the maquila industry may be underestimated and on the other, Mexico has a very high capital-labor ratio in manufacturing compared to other developing countries. 178/ Nevertheless the gap between the capital requirements of maquila operations and the average for all manufacturing as reported in the Mexican industrial census is striking. Most likely the difference has narrowed since the 1974 estimate as larger and more capital intensive plants have opened operations in the country during the last decade. The available data are brought together in Table III-7, but comparisons over time should only be made with great caution (particularly with the 1977 data which are derived from a U.S. source and are not consistent with the Mexican statistics. See note to Table III-7).

Table III-7. Mexico: Capital per Worker, Available Dates, 1970-1977

	Total Manufacturing Gross Fixed Assets per Worker				Assembly Industries Machinery & Equipment per Worker			
	All Sectors		Electric & Electronic Industries		All Sectors		Electric & Electronic Industries	
	Pesos	US $	Pesos	US $	Pesos	US $	Pesos	US $
1970								
BORDER TOWNS	35,174	2,814			7,314	585	8,308	665
Mexicali	38,179	3,054			3,553	284		
Tijuana	19,476	1,558			5,586	446		
Nogales	9,235	739			2,595	208		
Matamoros	21,692	1,735			10,773	862		
Juarez					11,685	935		
TOTAL MEXICO	62,880	5,030	34,420	2,754	7,314	585	8,308	665
August 1972					5,200	416		
April 30, 1973					15,422	1,234		
June 1973					14,700	1,176		
January 31, 1974					14,536	1,163	12,439	995
October 1974					9,300	744		
1977		9,043		3,093		5,433		2,368

Sources: For 1970 Total Mexico, all Sectors and electric and electronics, IX Industrial Census as reported in Centro Nacional de Informacion e Estadisticas del Trabajo, Mexico 1977, Table 3.4.1.3, pp. 110 & 119.
For 1970 Border Towns, J. Xirau I. and M. Diaz, Muestra dependencia fronteriza, Table 3.7, based on IX Industrial Census Assembly Industries by border towns and electric and electronics sector, Direccion General de Industrias, SIC as reported in Secretaria de Industria y Comercio, Posibilidades Industriales del Programa de Maquiladoras, Mexico 1974, pp. 85 & 89.
For August 1972, June 1973 and October 1974, L. Solis, "Industrial Priorities in Mexico" in UNIDO, Industrial Priorities in Developing Countries, 1979. Table 15, p. 109.
For April 30, 1973, Xirau, Table 33.
For January 31, 1974, Victor Urquidi and Sofia Mendez Villareal "Economic Importance of Mexico's Northern Border Region" in Stanley R. Ross, editor, Views Across the Border, Univ. of New Mexico Press, 1978, Table 8, p. 150.
For 1977, U.S. Direct Investment Abroad 1977, U.S. Department of Commerce, Bureau of Economic Analysis, International Investment Division, Washington, April 1981.

Note: Under the Total Manufacturing columns, the Net Property of Plant and Equipment figure given for Mexican Affiliates of U.S. companies was divided by their number of employees (in Mexico). A similar calculation was made for the Assembly Industries, using the corresponding data for the Majority Owned Foreign Affiliates of U.S. companies (MOFA) in Mexico, under the assumption that MOFA are permitted to operate in Mexico only under the Maquiladora Program (elsewhere Mexican majority ownership is required). For obvious reasons, 1977 data are not comparable with previous years.

Value Added

The difference in capital per worker between assembly and the rest of manufacturing also means that value added by the worker in the maquiladoras is lower than in other manufacturing plants. In 1975, the only year for which Mexican industrial census data and information from the Secretariat of Programming and Budget coincide, the statistics indicate that the maquila value added per worker is somewhat less than two-thirds of the total manufacturing value added per worker (approximately $4,830 as compared to $7.500). 172/ If it is considered that average fixed capital per worker in all of manufacturing may be at least three times as much as in the assembly industries (adjusted for underestimation of capital requirements in maquiladoras, unadjusted the ratio is 6:1 for 1974 as reported by Solis [1979] and almost 9:1 as reported in the 1970 census [Table III-7]), then the output that can be obtained from a unit of capital in the latter is obviously much greater than in manufacturing as a whole.

Using the relationships of 3:1 for the capital-labor and 1.5:1 for value added-labor ratios, the value added-capital ratio in the assembly industry is twice as high as in the total manufacturing sector in Mexico. In other words, a unit of capital in assembly operations would, on the average, contribute to national income twice as much as the unit of capital in all other manufacturing. Data indicate that while value added per worker in assembly industries has increased smartly since the early 1970s in current dollars, Mexican prices have risen sharply so that it is not clear whether it has kept up in real terms (See Table III-14). (Inflation accelerated during that period, the higher rates starting with the oil price explosion in 1973, when

Mexico was still a substantial oil importer. An even stronger shock came in 1976, induced in part by economic policies, such as sharp wage increases and a dramatic devaluation. At the end of the 1970s, inflation was also fed by the expansion of oil production).

Because of the absence of data it is difficult to compare changes in real value added per worker in the assembly industry with the rest of manufacturing. Industrial census data indicate a more than 80 percent increase in all of manufacturing between 1970 and 1975 (in constant dollar terms) 130/ This is not inconsistent with the corresponding maquila increase because, if only the sectors most closely related to the maquila industries are considered, there was hardly any growth at all. 131/

Wages

Maquila wages appear to have risen steeply during the mid-1970s, outpacing the consumer price index. The payroll per employee (blue and white collar workers) increased by about 16 percent in real terms in 1974 over the previous year and about 7 percent from 1975 to 1976. Since 1978, remunerations per worker in maquiladoras have declined in constant prices so that by 1980 they were -- in real purchasing power -- just 5 percent above the 1973 level (Table III-9). Other Mexican wages appeared to have done somewhat better according to changes in average minimum wages and an index of monthly wage as reported by the Banco de Mexico to the International Monetary Fund (Tables III A-1 and III-9).

Table III-8. Mexico: Payroll per Employee[a] in Assembly Industries by Location
1973-1980

Year	All Plants	Border	Interior	All Plants	Border	Interior
	(in current U.S. dollars)[b]			Index of Current U.S. dollars 1975=100		
1973	1794	1898	1022	62.0	65.5	36.4
1974	2563	2551	2737	88.6	88.0	97.4
1975	2892	2899	2810	100	100	100
1976	2895	2962	2256	100.1	102.2	80.3
1977	2554	2601	2129	88.3	89.7	75.8
1978	2895	2935	2489	100.1	101.2	88.5
1979	3335	3377	2937	115.3	116.5	104.5
1980	3794	3881	3299	131.2	133.9	117.4

a. Includes fringe benefits.

b. Converted at average rate of exchange prevailing during year.

Sources: SPP Tables and Table III A-1.

Table III-9. Mexico: Real Wage Indices of Assembly Plants, Other Monthly Wages and Average Minimum Wages 1973-1980

Year	Assembly Plants Payroll per Worker Index in 1975 Prices 1975=100			Monthly Wage Index in Constant 1975 Prices	Average National Minimum Wage Index in 1975 Prices
	All Plants	Border	Interior	1975=100	1975=100
1973	88.3	93.2	51.8	91	91
1974	102.1	101.4	112.2	97	100
1975	100	100	100	100	100
1976	106.5	108.7	85.4	111	111
1977	106.8	108.5	91.6	113	110
1978	104.1	105.3	92.1	111	108
1979	101.4	102.5	91.9	109	106
1980	92.7	94.0	82.4	107	99

Note: Assembly plant payrolls include fringe benefits.

Sources: Tables III-1, III-2, III-8 and III A-1.

Data for the hourly compensation for production workers (which is calculated as production worker payroll in assembly plants, excluding fringe benefits, divided by production worker hours worked, a series that is available only beginning with 1975) also show the 1976 rise and the decline afterwards in real terms. Real hourly wages in interior assembly plants did not reach their peak until 1978 and then declined (See Table III-10).

This does not mean that real maquila wages have fared much worse than wages in other manufacturing sectors. The average national index of official minimum wages 182/ put into constant prices, showed similar changes and so do the fragmentary average wage data (Table III-9 and III-10). Minimum wages for the border areas behaved somewhat differently from the national average. First of all they tended to be considerably higher than the national average, exceeding the latter by more than half at the beginning of Mexico's border industrialization program. 183/ Mexican government policy reinforced the economic effects of the high wages on the U. S. side to create this differential. The gap diminished slightly until 1968 and from then until 1975 the increases in minimum wages at the border kept up with the national average. Since then the border average has fallen behind so that by 1980 the difference with the rest of the nation was reduced to well under 30 percent (Table III-11). This may be due to the announced government policy to equalize wage rates across the country 184/ or to a policy, stimulated by the down turn in assembly activities in the mid-1970s, to put the brakes on border wages in order to increase the attractiveness of maquiladoras there to potential investors, or, simply, to weaker labor unions at the border.

Table III-10. Mexico: Index of Hourly Wages Paid to Production Workers in Assembly Plants a/ and of Minimum Wages at the Border and National Average, in Current and Constant Prices.

1975-1980

	Hourly Wages Paid to Production Workers in Assembly Plants (1975 = 100)						Minimum Wages Constant 1975 Prices 1975 = 100	
	Current Prices			Constant 1975 Prices				
Year	All Plants	Border	Interior	All Plants	Border	Interior	Border	National Average
1975	100	100	100	100	100	100	100	100
1976	122.9	124.3	116.3	106.1	107.3	100.4	108.8	111.5
1977	155.0	155.9	165.0	103.7	104.3	110.4	107.5	110.5
1978	178.9	178.4	198.8	102.0	101.7	113.3	102.4	107.5
1979	200.9	200.9	228.8	96.9	96.9	110.3	98.1	106.2
1980	234.9	236.9	255.0	89.6	90.4	97.3	87.9	98.9

a. Not including fringe benefits.

Source: Tables of SPP and Table III A-1.

Table III-11. Mexico: Minimum Wages, Unweighted Averages for the Country and for the Border Region and their Relationship 1970-1980

Year	Daily Minimum Wage (Unweighted Average) Converted to U.S. Dollars a/ National	Border	Border Minimum as Percent of National Average
1970	2.00	2.86	143
1971	2.00	2.86	143
1972	2.34	3.37	144
1973	2.45 b/	3.52 b/	144
1974	3.32 b/	4.78 b/	144
1975	3.84	5.52	144
1976	4.03 b/	5.65 b/	140
1977	3.51	4.91	140
1978	3.97	5.44	137
1979	4.64	6.16	133
1980	5.41	6.91	128

a. Converted from pesos to dollars at average yearly exchange rate.

b. Minimum wage was changed during year, rate for year averaged proportionately.

Source: M. Van Waas, Multinationals' . . . , 1981, Table 10, pp. 276-77 Exchange rates from International Financial Statistics, IMF 1980 Yearbook, and July 1981 issue. See Table III A-1.

As can be expected, wages in the maquiladoras followed the minimum wages in the border region quite closely. 185/ Both rose in real terms in 1976, both fell afterwards, the border average minimum wages somewhat more so than the maquila remunerations. Despite some problems in comparability, the data clearly show that average remunerations in the assembly industries at the border have been significantly higher than official minimum wages, averaging almost 10 percent above the border minimum level. Interior plant wages averaged about 14 percent above the national average minimum wages during 1975-1980 (Table III-12). 186/

Assembly wages paid in plants in the border region have been consistently higher than in maquiladoras in the interior of Mexico. While the gap appears to have declined in recent years, it still averaged over 25 percent during 1978-80 (Table III-13).

To summarize the analysis of wage levels: Mexican wages in the border regions adjoining the United States are on average considerably higher than in the interior of the country. The difference has been declining, apparently as a result of deliberate government policy. Wages in the assembly industries have followed this pattern. The relative difference in wages between the maquiladoras at the border and in the interior roughly corresponds to the relationship between the border and national minimum wage averages. Nevertheless in both cases the wages paid in assembly industries have been higher than respective minimum wages.

Insofar as wage differentials are important for offshore assembly operations, the lower wages in the interior of Mexico provide a powerful attraction relative to the border areas. The operations of

Table III-12. Mexico: Production Worker Payroll per Hour in Assembly Industries Compared with Mexican Official Minimum Wages per Hour, by Region (1975-1980)

	Assembly Production Worker Wages Paid per Hour a/ (Pesos)		Minimum Wages Per Hour (Pesos) b/		Relationship of Assembly Wages to Minimum Wages (Percent)	
	Border Plants A	Interior Plants B	Border Region C	National Average D	Border A ÷ C	Interior B ÷ C
1975	11.1	8.0	10.1	7.0	109.9	114.3
1976	13.8	9.3	12.7	9.0	108.7	103.3
1977	17.3	13.2	16.2	11.6	106.8	113.8
1978	19.8	15.9	18.1	13.2	109.4	120.5
1979	26.3	20.4	23.2	18.2	113.4	112.1

Notes: a. Assembly Production Worker Payroll does not include fringe benefits.

b. The Official Minimum Wages are given as a per day wage, including non-working Sunday pay. In order to calculate the hourly wage, the daily minimum wage is multiplied by 7/6 and then divided by 8 (following method by Van Waas - see sources below). Since the minimum wage was changed in October of 1976, a month-weighted average was calculated for that year.

Sources: Columns A and B: calculated from published and unpublished tables of SPP, Mexico; Columns C and D: calculated from Van Waas, Table 10, pp. 276-277; method of multiplying daily minimum wages by 7/6 was stated in note to Table 1, p. 83. See footnote 42 in this chapter).

Table III-13. Mexico: Hourly Wages Paid to Production Workers in Assembly Industries a/ (1975-1980)

Year	Hourly Wages in Assembly (Current Pesos) Border Plants	Interior Plants	All Plants	Relation of Border to Interior (Percent) A ÷ B
1975	11.1	8.0	10.9	138.8
1976	13.8	9.3	13.4	148.4
1977	17.3	13.2	16.9	131.0
1978	19.8	15.9	19.5	124.5
1979	22.3	18.3	21.9	121.9
1980	26.3	20.4	25.6	128.9

a. Not including fringe benefits.

Sources: Calculated from SPP data. (The total wage bill for production workers ("obreros") was divided by the total number of hours worked by "obreros" during the year).

the maquiladoras in the interior appear to have been successful. Value added by worker there averaged well over one-third above the value added by worker in the border maquiladora during 1974-1980 (Table III-14a. The value added concept used here is somewhat different from the strict economic concept. See the note to Table III-2).

As might be expected from the previous discussion, the wage component of value added in the interior maquiladora in this period was only about two-thirds of the corresponding share for the border assembly plants. Therefore, other components of value added, such as domestically produced materials, have contributed a higher proportion of the total in the interior than at the border plants. Profit levels in the maquiladoras of the interior were far below those at the border until 1977 but substantially higher afterwards. In 1979-80 they averaged about 24 percent of value added in the interior plants compared to less than 18 percent at the border (Table III-15).

Use of Mexican Materials

For Mexico, the significant component of value added is the share of materials and supplies provided by the domestic economy. This proportion was very small for the border plants, only ranging from 2 to 3 percent of value added between 1977-1980. The corresponding share for the interior maquiladoras was significantly larger, averaging between 10 and 16 percent (Table III-15).

The relative magnitude of local materials and supplies in maquiladora output is an important indicator of the linkages that offshore assembly activities have for the Mexican economy. Overall, the percentage of raw materials, components, and supplies of Mexican

Table III-14a. Mexico: Value Added per Employee in Assembly Plants, by Location & Industry
(in Thousands of Current U.S. Dollars)
1973-1980

	1973	1974	1975	1976	1977	1978	1979	1980
				(Thousands of U.S. Dollars)				
LOCATION								
All Plants	3.1	4.2	4.8	4.7	4.0	4.8	5.9	6.4
Border Plants	3.1	4.1	4.7	4.7	3.9	4.7	5.6	6.2
Interior Plants	2.6*	5.5	6.1	5.4	5.0	6.3	9.1	8.5
INDUSTRY								
Food	2.5	3.1 a/	3.6 a/	8.3	4.6	9.6	8.3	8.6
Shoes & Apparel	2.6	3.1	3.6	3.6	3.2	3.9	4.5	5.3
Furniture & Parts	5.7	6.2 a/	8.8 a/	11.0 a/	8.4 a/	7.2	9.2	9.0
Machinery, Trans. Equip., Non-Elec.	5.0	5.6	7.0	7.3	5.5	6.3	8.5	8.1
Machinery & Accessories Elec. & Electronic	3.0	4.6	4.9	4.7	4.1	4.8	6.0	6.3
Other Manufacturing	3.6	4.8	5.6	4.7	4.4	5.8	6.5	7.5
Services	2.8	3.8 a/	4.0 a/	3.6	3.0	3.8	4.7	5.2

* May not be comparable with subsequent years.

a. Border Plants only.

Source: Published and unpublished SPP Tables; data corrected to U.S. dollars, see Table III A-1.

Note: See Note to Table III-2.

Table III-14b. Mexico: Value Added per Employee in Assembly Plants, by Location and Industry
Index Numbers of Constant Mexican Pesos a/, 1973 - 1980
(1975 = 100)

	1973	1974	1975	1976	1977	1978	1979	1980
	(Index Numbers of Constant Mexican Pesos) 1975 = 100							
LOCATION								
All Plants	92.5	100.2	100.0	105.4	101.7	105.2	109.0	94.6
Border Plants	94.7	100.3	100.0	106.2	101.4	104.6	105.3	93.3
Interior Plants	59.4*	102.3	100.0	93.9	98.2	105.9	129.8	96.6
INDUSTRY								
Food	98.5	98.5 b/	100.0	245.1	152.4	274.8	200.7	166.6
Shoes & Apparel	102.9	100.9	100.0	106.2	107.8	113.6	110.7	103.8
Furniture & Parts	92.6	80.9 b/	100.0	133.5 b/	116.3 b/	85.5	92.1	72.1
Machinery, Trans. Equipment, Non-Elec.	101.1	91.4	100.0	110.0	93.7	93.2	106.0	80.7
Machinery & Accessories	87.3	108.5	100.0	102.6	100.3	101.5	106.8	90.2
Other Manufacturing	92.1	98.8	100.0	90.1	96.7	108.9	103.6	94.2
Services	100.4	109.1 b/	100.0	97.0	01.1	98.6	103.2	91.1

a. Deflated by Mexican consumer Price Index (See note b, Table III-2).
b. Border plants only.
Source: Published and unpublished SPP Tables.
IMF, International Financial Statistics, 1980 Yearbook and July 1981 issue.

Note: See Note to Table III-2.

* May not be comparable with subsequent years.

Table III-15. Percentage Composition of Value Added in Assembly Plants, by Location, 1975-1980

	Wages & Fringe Benefits						Materials						Rent & Utilities						Profits a/					
	75	76	77	78	79	80	75	76	77	78	79	80	75	76	77	78	79	80	75	76	77	78	79	80
All Plants	60.5	66.2	63.6	59.9	56.3	59.2	3.0	7.4	3.9	3.8	3.4	3.9	21.3	20.8	21.8	21.1	19.6	20.1	15.2	5.6	10.8	15.2	20.7	16.7
Border Plants	62.1	63.6	66.5	62.6	60.5	62.6	1.8	4.9	2.9	2.8	2.3	2.0	20.3	18.2	19.3	19.7	17.6	19.4	15.8	13.3	11.2	14.9	19.6	16.0
Interior Plants	45.7	41.6	42.7	39.8	32.4	39.0	13.9	22.8	10.6	11.2	9.8	15.6	30.3	29.0	39.0	31.5	30.9	24.4	10.1	6.6	7.8	17.5	26.9	21.0

a. Includes some undefined concepts, such as taxes.

Source: SPP Tables

Note: See Note to Table III-2.

origin, etc., which are processed and assembled in maquiladoras, is exceedingly small. With the exception of 1976 when it was 3 percent, it varied around 1.5 percent of the total use of components and supplies (imported and domestic) during 1975-1980. In the border plants it was even less and a slight tendency can be noted for this tiny percentage to decline after 1976. In the plants in the interior, however, the usage of domestic materials was considerably higher and after 1976, an exceptional year when the proportion of the total was over 15 percent, there was an increase reaching in 1980 a domestic content of 10 percent of total materials used (Table III-15).

A note:

At this point it is useful to point out that examination of U. S. import data may give an erroneous picture of the changing importance of offshore assembly operations for the "host" countries. As discussed in the first chapter, U. S. imports under tariff items 807.00 and 806.30 are divided into duty free and dutiable imports. The former represent the U. S. components which are reimported exempt from tariff, while the latter represent the value added abroad that is subject to tariffs. U.S. International Trade Commission data show that the proportion of dutiable imports of total 807.00/806.30 from Mexico rose steadily between 1969 and 1980, with a minor and temporary setback during 1977-78 due to the after effects of the Mexican devaluation in the fall of 1976. In 1980 almost one-half of these imports were dutiable, compared to slightly over one-third in 1969 (Table III-5).

Table III-16. Mexico: Use of National Materials and Supplies as Percent of Total Materials and Supplies Used by Assembly Plants by Location and Industry, 1975-1980

	1975	1976	1977	1978	1979	1980
			(Percent)			
TOTAL						
All Plants	1.4	3.0	1.5	1.5	1.4	1.7
Border	.8	2.1	1.6	1.0	.9	.8
Interior	9.9	15.4	6.1	6.9	7.9	10.0
INDUSTRY GROUPING						
Food						
Border	1.5	37.6	.7	10.5	3.5	12.9
Interior	-	1.5	89.4	49.4	31.0	-
Shoes & Apparel						
Border	2.3	1.4	.7	.8	1.1	1.0
Interior	7.2	17.2	5.0	4.7	13.0	11.0
Furniture & Parts						
Border	18.5	53.3	38.3	18.3	12.7	9.5
Interior	-	-	-	75.3	90.6	3.6
Machinery, Transport Equip. (Non-Electric)						
Border	.7	.5	.2	1.1	3.9	.3
Interior	44.7	71.2	68.5	47.5	39.1	.2 a/
Machinery & Access. (Electric & Electronic)						
Border	.3	.3	.3	.2	.1	.2
Interior	6.6	5.0	1.2	2.2	2.6	17.3
Other Manufacturing						
Border	.8	1.4	1.2	1.5	2.3	.8
Interior	5.9	31.0	34.5	22.3	16.7	77.2
Services						
Border	20.5	20.2	34.8	32.0	2.7	11.3
Interior	-	100.0	100.0	91.3	16.0	65.2

a. Transportation equipment only.

Source: SPP Tables.

One must be skeptical of the interpretation that, because the share of value added in Mexico increased, the linkages of U. S. offshore assembly activities to the Mexican economy increased. First, not only non-U. S. , but also non-Mexican components are included in dutiable imports under 807.00/806.30 and, therefore, in this definition of value added in Mexico. As noted earlier these components, primarily Mexican imports from the Far East for use in U. S. assembly plants, seem to have increased during recent years. Second, the product mix appears to have changed in favor of assembly sectors in which Mexican value added is more important, particularly television receivers and parts and motor vehicle parts, moving away from textiles (including apparel) and toys and dolls where the relative value added is below the average (Tables III-4, II-A.2 and V-4). Third, Mexican wages and prices of value added components such as rents, utilities, etc. , have risen faster than the value of U. S. components, thus contributing to raise the share of Mexican value added in U. S. 807.00/806.30 imports from that country. It is this effect, the rapid rise of the wage and utility bills, that does signify an important expansion of the linkages between the maquiladoras and the Mexican economy. 187/ U.S. import data, however, do not indicate whether or not the share of Mexican materials used in assembly plants has increased.

4. THE MAIN ISSUES OF OFFSHORE ASSEMBLY OPERATIONS IN MEXICO

Because of the magnitude of Mexico's involvement in offshore assembly activities, its merits for the country have been debated extensively. Benefits have been questioned and serious negative effects for the Mexican economy and society as a whole have been attributed to the assembly arrangements. 188/ The critique centers on three principal issues: (1) The enclave nature of assembly activities within the Mexican economy; (2) The effects on the labor force and on society in the areas where maquiladoras concentrate; and (3) The vulnerability of maquiladoras to swings in the U.S. business cycle and their general dependency on decisions made in the United States and elsewhere outside of Mexico. These three issue areas are discussed below.

Linkages

A persuasive argument can be made that by their very nature assembly services provided to foreigners constitute an enclave in the Mexican economy. First, it was noted that only a tiny percentage of the materials used in these operations is of Mexican origin. Second, according to several recent studies discussed below, the employment generated by the maquiladoras tends not to absorb "traditional" unemployment and underemployment. Third, the bulk of the maquiladoras concentrate in towns along the border with the United States. Many of the towns are fairly isolated from the economic heartland of Mexico due to geography and the lack of adequate infrastructure. Fourth, the jobs created are mainly unskilled and almost by definition, it is argued, will remain so. The labor force therefore receives little training.

Fifth, although many of the assembly plants use sophisticated equipment and technologies, there is little transfer of technology to the rest of the Mexican economy. Sixth, it is said that wages are destined to remain low, due to the low skill requirements of assembly production and in order to keep these activities attractive to foreign manufacturers. In addition, only part of the wages paid to assembly workers are spent to buy Mexican goods and services because the population near the border is accustomed to shop across the frontier for a significant portion of its requirements. Thus, it is argued, the income generated by offshore assembly production will provide only a very limited stimulus to the Mexican economy.

The institutional framework for maquila operations reinforce their economic isolation. In general, maquiladoras are not permitted to sell on the national market but must export their total production. 189/ This is understandable since these are "in-bond" industries, their imports of components being exempted from Mexican import duties provided that they be re-exported after assembly. 190/

Thus most of the commercial relations of the maquiladoras are with foreign companies, especially with U. S. multinationals, rather than with Mexican producers and consumers. Add to that the fact that even when maquiladoras are not U. S. subsidiaries, many plants, particularly in the apparel industry, operate with machinery and equipment provided and owned by the U. S. contractors, and one gets a picture of an enclave of Mexican assembly activities that is tied much more strongly to the United States than to the rest of Mexico.

There is little doubt that this picture is close to reality as it has existed until now. It is open to question, however, whether the co-production relationship between industrial and developing countries is such that it creates an ironclad straight jacket that does not permit the eventual integration of assembly production into the national economy. The experience of Korea and Taiwan seems to point in the opposite direction. 191/

Interviews with U. S. as well as Mexican managers of maquiladoras indicate that attempts were made to increase the usage of Mexican components and materials in assembly operations. 192/ According to the managers, most of the attempts failed because of one or more of the following reasons: rigorous specifications could not be met due to deficiencies in quality control (important particularly in the electric and electronic industries); delivery schedules could not be met; production capacity was insufficient; and, mentioned most often, prices were too high. All of these are typical symptoms of industries of the newly industrializing countries. They are also characteristic of the import substituting type of industrialization in which the firms have not yet been sufficiently exposed to international competition 193/ In principle, these weaknesses can be overcome as the national economy becomes more open to the outside world, and the incipient industries mature and become more efficient.

The other side of the coin is that there are no strong incentives for Mexican firms to do business with maquiladoras or to branch out and establish assembly operations themselves. Given the protected environment of the economy, producing for the rapidly growing domestic market probably yields higher returns; moreover, Mexican companies may

find this easier to do than to than to expose themselves to the demanding requirements of foreign consumers and/or companies producing for the international market. It has also been observed that the image of the maquiladora as the foreigner with weak roots in the domestic economy, does not encourage Mexican firms to engage in long-term commitments in the assembly business. 194/

Thus a vicious circle operates. As long as there is no greater participation of Mexican capital and entrepreneurship in maquiladora activities, transfer of technology from offshore production to the Mexican economy will be limited. This limitation is itself a barrier to greater Mexican involvement in co-production with foreign companies and linkages will remain weak. Unless the circle is broken, Mexican enterprises will continue to furnish primarily packing materials and janitorial supplies for the maquiladoras rather than the manufactured components for assembly in substitution of foreign materials.

The enclave image is fostered also by the near absence of any "forward" linkages, because the sale of maquiladora output on the domestic market is all but forbidden. Among other things, maquiladoras could provide Mexican producers with sophisticated subassemblies at low cost, possibly constituting an important element in the technological upgrading of the Mexican economy. The official government decree for maquiladoras seems to permit Mexican assembly plants, under certain circumstances, to also supply the internal market in addition to exporting. 195/

In practice, however, by the end of 1979 only four such plants had been approved and "all operate under rigidly imposed conditions." The government "has been under pressure from domestic producers to repeal

this enabling legislation because of claims of unfair advantage." 196/ Protected Mexican firms fear the competition of the low priced products from the maquiladoras. The perception of an "unfair advantage" is particularly great if the assembly plants are U. S. subsidiaries. Informal conversations with Mexican officials make it clear that the government will not promote maquiladora sales in the Mexican market.

The Employment Issue

The striking aspect of the work force in assembly production is the high percentage of female employees. More than three-quarters of all production workers in Mexico's maquiladoras are women (Table III-17). The proportion is slightly higher for the plants in the interior and also in certain industries such as apparel and electronics.

Several analysts argue that the high female proportion is the result of deliberate hiring policies of the maquiladora managers, in order to obtain a docile labor force. They find that while the long run objective is to insure that wages remain low, the real motivation of managers in employing women is that women are more pliable, less militant and therefore less apt to provoke labor trouble. 197/

The argument runs roughly this way: 198/ The hiring practices of assembly firms result in the employment of young women who were previously outside the labor force and entered the labor force only because of the increasing job opportunities at existing and new assembly plants. 199/ These women have neither a "class consciousness" as workers nor do they have any knowledge of their legal rights or of available means to improve their working conditions and wages. Because

Table III-17. Mexico: Composition of Production Workers in Assembly Industries by Sex, Location and Industry 1980

	Production Workers in Assembly Industries				
	Number of Persons			Percentage Composition	
	Total	Men	Women	Men	Women
ALL PLANTS	102,020	23,140	78,880	22.7	77.3
Border	91,308	21,455	69,853	23.5	76.5
Interior	10,712	1,685	9,027	15.7	84.3
INDUSTRY					
Food	1,260	334	926	26.5 a/	73.5 a/
Shoes & Apparel	17,307	3,359	13,948	19.4	80.6
Furniture & Parts	2,839	2,485	354	87.5	12.5
Machinery, Transport Equipment (Non-elec.)	7,851	3,092	4,759	39.4	60.6
Machinery & Accessories, (Elec. & Electronic)	58,151	10,241	47,910	17.6	82.4
Other	9,108	2,988	6,120	32.8	67.2
Services	5,504	641	4,863	11.6	88.4

a. Border plants.

Source: SPP Tables.

their level of education is significantly above the average, they are easier to train than the average member of the labor force and their productivity will tend to be higher. 220/

Relatively few of the female maquiladora workers are heads of households and most of them provide only supplementary income for their families. The lower job dependence of these workers would make them vulnerable to easier dismissal or forced resignation (in order to avoid severance pay) when their productivity declines at these exacting jobs after a few years. 221/

It is argued, therefore, that the maquiladoras create their own labor pool. They do not draw their employment from the traditionally unemployed or underemployed but from a sector of the population which never worked or looked for work. When the border industrialization program was introduced, however, one of the principal objectives was to absorb the unemployment of the Mexican migrant workers who were left stranded after the termination of the "bracero" arrangement with the United States. Probably very few of these men found employment in the new assembly industries. Instead, the formerly "unemployable" women took their places.

Women who enter the labor force through maquila employment do not tend to leave the labor force when they become separated from their jobs. Once they have gained a certain measure of independence through working, they will probably look for work after they have lost their first job, particularly if they are under pressure to continue making the financial contributions which have helped them and their families to achieve higher living standards.

It is easy to conclude from this that, rather than aiding to reduce unemployment, the introduction of offshore assembly production into Mexico has worked to increase the "reserve army of the unemployed." 202/ In this manner the maquiladora managers assure themselves of a relatively unlimited supply of labor. This permits them, it is said, to maintain high productivity levels by replacing the "older workers" (those approaching their mid-twenties) who cannot maintain their previous speed or who cannot take the pressures and tedium of their work any longer.

Questioning of maquiladora executives about the high female worker proportion in their plants almost invariably brings the same responses: women are more dexterous for assembly tasks than men (also their hands are smaller, which is an asset particularly in the assembly of electronic micro components), they are more used to and, therefore, more patient with routine assignments, and in any case, according to the managers, comparatively few men apply for such jobs. 203/

There is little support for the assertion that women workers have greater manual dexterity than men, even for delicate, small size assembly operations. Interviews with plant managers in Mexico and Haiti indicate that men on the assembly lines, whether in sewing or electronics, are at least as efficient as women. 204/

The employment of women in occupations such as sewing appears to be culturally determined in most parts of the industrial and industrializing world. It seems to be a small step from experience with the needle to the learning of electronics assembly, which requires detailed attention to small components. It may also be culturally determined that men are more impatient with delicate repetitive

routines. It is not clear therefore whether the employment of women is based on a design for exploitation in order to maintain lower wage scales, easier control and manipulation of a more docile work force. What seems to be clear is that Mexican assembly plants are not unique in employing a high proportion of women.

Not only is Mexico not alone among developing countries in the preponderance of women workers in assembly production, but a similar labor force structure also exists in assembly plants in industrial countries. In the United States, for example, in 1979, 81.4 percent of workers in the apparel industry were women. 205/ In the U.S. semiconductor industry, 92.4 percent of the assembly operators were women (94 percent in the Southern states and "only" 90.4 percent in the Northeast) in September 1977. Curiously enough, there was no significant difference for the country as a whole in the female proportion between the most highly and least skilled assembly tasks. For the South, however, there was a significant difference, but it was contrary to what one would expect: 97.0 percent females for the highest skills, 90.5 percent for the lowest skill level. 206/ All these percentages appear to be higher than for Mexico's maquiladoras. On the basis of these industrial country data, one could make an argument that it is surprising that the proportion of women employed in Mexican assembly plants is not higher.

Consideration of other aspects attributed to the preponderance of female employment in maquiladoras, such as working conditions, health effects and, particularly, the impact on the family and society are beyond the scope of this study. 207/ It seems safe to say, however, that the employment of a greater proportion of women previously out of

the labor force is a phenomenon of the path of economic development in modern times. There will be social role confusion (not only male-female, but also parent-daughter) and other disintegrative effects on the traditional family. Social adjustments of this type are painful and sometimes costly, but they are an important part of the process of economic development. Perhaps the introduction of offshore assembly activities into particular regions of Mexico has accelerated the coming of the adjustment problems there. They would have come sooner or later in any case, given the direction of Mexico's economic development.

A further argument about the maquila labor force, which goes beyond the employment problem, bears on the linkage effects of maquila labor. Far from contributing to the upgrading of the labor force, it is said, assembly production causes the "deskilling" of the workers.

Some of the discussion is reminiscent of the debates surrounding the industrial revolution. Before being employed in the maquila sewing operations, for example, many of the women workers had acquired high level skills, (e.g. in needlework), perhaps applied only in the home. In their present work place, however, they must perform the most elementary, although precise, operations again and again. These maquila workers who had previous experience, often used their judgment and skills to a higher degree before than in their current assembly tasks. 219/

A general observation, made frequently in Marxist literature, 209/ points to the tendency in manufacturing, no matter how high the level of technology and sophistication of the product, to break down complex production into ever more simple component processes. At each successive stage of decomposition, less and less skill is required to

perform the tasks. Assembly operations, more than other aspects of production, may be especially subject to continuing simplification, an ongoing process in order to make workers (and machines) ever more efficient.

Whether or not maquiladoras are unique in this context is open to question. Although the deskilling claim was made in an above-cited work when maquila and previous jobs are compared, the same study also contains information which indicates an upgrading of the labor force in assembly production. 210/ Assembly line supervisors are almost invariably drawn from among the line workers and upward mobility does not appear to differ from assembly plants in the United States. The average skill level in certain assembly industries can also rise, when wage increases make the lowest skilled operations unprofitable so that they have to be transferred to other locations where wages are lower. 211/

In surveying the negative aspects of offshore assembly production regarding labor, it is important to put them within the context of the whole Mexican economy lest one loses perspective. It was found that maquiladora wages have averaged above minimum wages everywhere and minimum wages at the border are still well above those in the rest of the country.It can safely be said that maquila wage averages are probably higher than the Mexican levels for equivalent work. Labor unions seem to be as active in maquiladoras as elsewhere,although they are unevenly distributed along the border. 212/ The picture painted in the literature is that, with some notable exceptions, labor unions in assembly plants, as well as in some other Mexican economic sectors, tend not to be very representative of the interests of its

members. 213/ This, however, seems to have little to do with the proportion of women in the maquila workforce. It would also be useful to make comparative studies of labor conditions, upward occupational mobility and other employment characteristics in maquiladoras with those existing in non-assembly plants. At present, reliable data resulting from such comparisons are not available, but impressionistic information indicates a not unfavorable position of maquiladoras vis-a-vis other factories in Mexico (assuming that a high proportion of women workers is not considered as "unfavorable").

One important point regarding the supply of labor in Mexico remains to be made. The usual discussion centers on the large pool of persons available to do low skilled jobs. The scarcity of skilled and highly trained persons urgently required by the growing Mexican economy has not often been an important concern. Yet this scarcity has become a significant obstacle to efficient economic development. The assembly plants also are in constant need of trained manpower (engineers, technicians, managers, plant supervisors, accountants, etc.) Technical and administrative personnel have constituted about 13-14 percent of the total maquiladora work force (Table III-18).

To some extent maquiladoras import their skilled labor, in some cases they train high level manpower, and also they hire trained Mexicans. In this last case, the assembly plants compete with other Mexican enterprises. This competition will be to the detriment of the country's economic development if the maquiladoras have "unfair" market power because of their foreign connections and resources. 214/ From the Mexican economic point of view, it would be better to import the technicians from abroad, but it would be best to train Mexicans either

Table III-18. Mexico: Percentage Composition of Work Force in Assembly Plants by Production, Technical, and Administrative Workers, and by Location (1975-1980)

	1975	1976	1977	1978	1979	1980
			(Percent)			
ALL PLANTS						
Production	86.1	86.8	86.9	86.6	86.0	85.3
Technical	8.8	8.3	8.1	8.3	8.6	9.1
Administrative	5.1	4.9	5.0	5.1	5.4	5.6
BORDER PLANTS						
Production	86.5	87.1	87.3	87.0	86.4	85.7
Technical	8.4	8.1	8.0	8.2	8.6	9.0
Administrative	5.1	4.8	4.7	4.8	5.0	5.3
INTERIOR PLANTS						
Production	80.5	84.2	83.3	83.0	82.6	82.6
Technical	14.0	9.8	9.3	9.4	8.8	9.2
Administrative	5.5	7.0	7.4	7.6	8.6	8.2

Source: SPP Tables.

by setting up new training facilities or by sending them abroad for training.

The Dependency Issue

The U. S. recession of 1974-75 was a traumatic experience for the promoters of Mexican assembly industries. Some maquiladoras closed down; many workers were laid off. The Federal Reserve Bank of Dallas reported the closing of 30 maquiladoras by April 1975 and the loss of about 35,000 jobs or over 40 percent of the 1974 labor force. 215/ The decline for all of 1975 turned out to be less dramatic. The net loss was only one plant between 1974 and 1975 and another 11 in the following two years. But almost one hundred additional plants opened between 1977 and 1979. The net job loss was less than 9,000 persons or less than 12 percent between 1974 and 1975 and by 1977, employment was about 2,500 persons above the 1974 level (Table III-1). Value added did not decrease in nominal terms but fell 12 percent in real terms between 1974 and 1975. Only border plant production declined, in the interior real plants value added increased by 2 percent between the two years. (See Table III-2) 216/ Thus while the impact of the U. S. recession on maquiladora operations appeared swift and severe for a few months, assembly activities bounced back relatively quickly.

A closer examination of Mexican SPP and USITC data reveals that the shock wave of the U. S. recession concentrated on the electrical and electronics assemblies. Apparel and textiles were not affected. Their employment increased slightly between 1974 and 1975. Geographically, only the border maquiladoras appeared to have been affected. Average yearly employment in the interior kept increasing.

On the border, the impact was uneven. Nogales, bordering Arizona, and Tijuana, bordering California, suffered the most. Between 1974 and 1975 the former lost almost one-third of its employment and more than a quarter of its output, the latter about one-seventh. Cuidad Juarez, the major maquiladora center in terms of value added, suffered no net declines in employment and production. Although many plants closed there, new maquiladoras opened and employment increased by 45 percent between 1974 and 1977.

The most striking relative drop in both employment and output starting in 1974 and continuing through 1976, seemed to have had nothing to do with the U. S. recession and took place in Nuevo Laredo, on the far eastern Texas border. Employment fell by almost 70 percent during that period and value added in real terms by more than that. What happened there was what one observer calls a "worker rebellion," provoked in part by inter-labor union conflict. 217/

Nuevo Laredo accounts for more than one-third of Mexico's temporary total net loss in assembly employment attributed to the 1974/75 U. S. economic downturn and a similar proportion for the temporary decline in Mexico's assembly production. If that town's experience, which is unrelated to the U. S. recession, is deducted from the national totals, recovery in Mexico's assembly activities is even faster, employment reaching 1974 levels by the end of 1975.

The bulk of the remainder of Mexico's temporary job and production losses of 1975 in the maquiladoras can be accounted for by Tijuana and Nogales. Most of the affected maquiladoras in the two towns were plants of "fly-by-night" firms with small easily portable investments. 218/ Such firms are particularly sensitive to the business

cycle as well as to increases in wage rates.

A sharp rise in Mexican wages aggravated the effects of the U. S. recession. There was an average 36 percent jump in minimum wages between 1973 and 1974 when the consumer price index increased only 23 percent. Wage increases kept on outpacing Mexican inflation until 1976, reaching 23 percent above the 1973 level in real terms for the country as a whole and 20 percent for the border regions (Table III-9). However, since all of the output was exported, primarily to the United States, and the peso rate of exchange remained fixed, wage costs rose with the nominal wage increases (especially for the U. S. subsidiaries that would use dollars for working capital). Minimum wages in U.S. dollars doubled between 1971 and 1976 and even if this increase were deflated by some U. S. price index relevant to the import of assembly products from Mexico, real wage costs in the assembly plants would have risen by well over 50 percent during that period (Table 11).

The jump in minimum wages was reflected in the payroll cost per employee which rose in dollar terms by more than 60 percent between 1973 and 1975 (Table III-8). If the sharp price rises of the other components of Mexican value added are also considered, such as rent and utilities, which follows the much higher inflation in Mexico (compared to the U.S.), then it can be seen that the weaker assembly companies could not withstand the cost squeeze in the face of a declining U. S. demand. The major devaluation of the Mexican peso during the final months of 1976 reduced the wage bill and other local costs of Mexico's export industries -- including especially assembly production -- whose accounting must be in terms of their dollar earnings. 219/

Despite the devaluation relief, many of the small firms that closed their Mexican plants during the mid-1970s did not return. Although there has not been an explicit government policy to keep out the "fly-by-nights" (firms that want to take a quick profit and run), a certain self-policing by the assembly industry has taken place since that time. All the major industrial parks screen the applications for the establishment of plants with an eye toward keeping out plants that do not promise reasonable stability and continuity. 220/

Therefore, the composition of assembly plants in Mexico changed and by the end of the decade there was a considerably higher proportion of well established and reputable companies operating in the country than during the early 1970s. 221/ Investment per worker in U. S. majority owned subsidiaries (MOFA), 222/ as reported by the industrial census of the U. S. Department of Commerce for 1977 was about ten times the level recorded by the Mexican industrial census for 1970 and a 1972 estimate (Table III-7). For 1973 and 1974, the Mexican government estimates were more than double the 1970 and 1972 figures, but still only a fraction of the U. S. census numbers. Although the U. S. data include net assets of plant property which is not recorded in the Mexican figures and the MOFAs probably encompass the largest enterprises, the data still point to a significant increase in capital per worker toward the end of the decade. 223/

Thus, given a mix of more responsible companies and a higher investment in assembly operations, one can assume that maquiladoras will be less prone to "pack up and go" whenever negative, but temporary, forces are encountered. Of course a severe and prolonged deterioration of economic conditions, such as a confluence of a

substantial U.S. recession and steep Mexican wage and price rises relative to U.S. inflation combined with a fixed rate of exchange, can again lead to dramatic losses of maquiladora income and employment.

In summary: the dependency issue merits concern. Assembly production may be more sensitive to external economic conditions and decision making than other economic activities within Mexico. After all, offshore assembly has been exclusively oriented toward exports and it is natural that sales will depend on foreign markets. These activities also are tied to foreign decision making, either through operation of foreign subsidiaries or through international subcontracting. Sensitivity and, therefore, instability will be larger when the role of weaker and short run profit maximizing firms in the assembly operations is greater.

Yet it was shown that, despite the presence of such unstable firms, the downturn in assembly operations beginning in 1974 that could be attributed to the U. S. recession was relatively mild and short lived. Other factors which were internal in nature, such as the "worker rebellion" in Nuevo Laredo, sharp wage increases and a general acceleration in inflation accounted for a large part of the setback in maquiladora activities lasting through 1976. In this connection it is important to note that the growth of Mexico's economic activities as a whole declined significantly between 1974 and 1976. It was the most prolonged and severe slowdown in Mexico's recent history. 224/ Manufactured exports, not including assembly plants, decreased in nominal dollar terms by 14 percent between 1974 and 1975 225/ (in volume terms the decrease was considerably higher). This general slowdown had much more to do with Mexico's internal policies than with

external events and decisions.

5. POLICY IMPLICATIONS FOR MEXICO

The maquiladoras are of more than trivial significance for Mexico. While they are not the engine for Mexico's economic development, they have been important generators of income, employment and foreign exchange. Despite their positive and important contributions, however, assembly activities have been viewed with some ambivalence by Mexican policy makers. Most Mexicans are not proud of assembly operations. They are considered by some as a demeaning activity, a service performed for foreigners, such as taking in their dirty laundry. 226/

The special treatment of these activities is reflected in the way a sale of assembly products abroad is accounted for in Mexico's balance of payments, not as an export but as a service, just like tourism, transportation and insurance.

The government does not seem to go out of its way to promote investments in offshore assembly operations. In a recent 16 page special advertising supplement sponsored by Mexico, maquiladoras or assembly activities were not mentioned once, although investment in manufacturing was featured conspicuously. 227/ The U.S. businessman would not know by reading the supplement that offshore assembly opportunities existed in Mexico, much less that such activities generated over $2.3 billion of U.S. imports (including U.S. components) from Mexico in 1980.

In part, the lack of enthusiasm is due to the isolated nature of assembly activities. Not only do they tend to be geographically concentrated, but their products are generally not permitted to be sold

to Mexican users and consumers. Other linkages are also missing or weak. Besides labor, rent, and utility services, assembly plants buy very little from Mexican suppliers. Add to that the perception that maquiladoras constitute a stage of international capitalism serving the interests of foreign owners, that maquiladoras do little to train and upgrade the labor force, and that because of this and other poor linkages there is hardly any transfer of technology to the rest of the economy, and the image emerges of an enclave activity that indeed makes a small contribution to Mexico's economic development.

Not only that, but whatever contribution there might be is perceived as unreliable because the activities depend so much on outside economic conditions and on the whims of foreigners who, searching the world for opportunities for easy profit, are quick to transfer their business to the lowest wage country. This instability, seemingly built into the offshore assembly production system, would thus destroy the possibility of long term planning for the use of maquiladoras in the country's economic progress.

That this picture is a caricature of the real world was shown. As in all caricatures the basic features that provoke the exaggerations are present. Some need little exaggeration to be outstanding. Among these is the tiny proportion of national materials used in the assembly process.

Supplier Factories

Minimum national content requirements in assembly production are unlikely to be effective in improving its backward linkages. They may, however, have negative effects, driving some assembly plants out of

business and restricting the operation of others. Raising efficiency in order to lower costs, better quality control, higher production capacity, better planning of delivery schedules, and the other basic prerequisites for becoming a successful supplier of maquiladoras cannot be decreed but must be achieved through subtle policy and technical assistance.

As long as trade restrictions insulate the Mexican producer from foreign competition, and there is domestic economic growth, he will find it easier to work only for the national market because he need not worry about world prices or the more exacting requirements of exporting and of the assembly plants. Under those circumstances, special incentives to enable Mexican producers to pay for technical assistance services would help to expand the benefits of assembly production for Mexico's economic development. 228/

It should be noted that raising the Mexican content of assembly exports to the United States would increase the share that is dutiable under 807.00/806.30 tariff items. This should not prove to be a deterrent, if Mexican supplies become cost competitive with the production of U.S. components, because the additional U.S.duties -- which are generally low -- are unlikely to offset the saving in the transportation of U.S. components for most products. For those products where the net cost would be positive, special subsidies may be appropriate if the integration benefits are considered high in the long run. 229/

Movement to the Interior

A small but significant shift in the location of maquiladoras has taken place which, if it accelerates, can greatly strengthen the linkages of assembly operations. Ever since the Mexican government regulation issued in October 1972 permitted the establishment of in-bond plants almost anywhere in Mexico, assembly plants have emerged in the interior in increasing numbers (Table III-1). 230/ They constituted less than 4 percent of the total in 1973 and more than 11 percent in 1980, still a small proportion, but apparently growing. As shown in this chapter, the interior plants have consistently bought a much larger proportion of Mexican materials than the border plants have done. In 1980 about ten percent of the materials used in the assembly operations of interior plants were domestic, compared to the border plants that imported over 99 per cent of their requirements from abroad. Although a ten percent national materials content is still small it is more than ten times larger than for the border plants and the proportion is on the rise (Table III-6). 231/

From the geographic viewpoint alone, decentralizing the plants from the border to the interior would have integrative effects on assembly industries. Not only would there be less geographic isolation from the rest of Mexico, but the payroll generated by maquiladoras could not leak easily across the border to the United States. The further removed the plants are from the border the greater the proportion of payroll that would be spent within Mexico.

Another advantage of opening the whole country to in-bond assembly operations is that special attention can be given to seriously depressed areas of Mexico in the location of maquiladoras. Some

incentives were already provided in Mexico's current industrial development plan (such as differential rates for energy), and a recent decree (published in the Diario Oficial, September 12, 1980) provides for tax credits and/or accelerated depreciation for investments in industrial parks, the magnitude of the credits depending on where the industrial park is developed. Incentives especially oriented toward maquiladoras may be needed to accelerate the establishment of assembly plants in Mexico's poverty areas that suffer from vast underemployment. It really does not matter whether assembly industries give employment primarily to women because any income generation will be of great benefit in regions of abject economic misery. 232/

The natural attraction of the interior for maquiladoras is the significantly lower wage levels there compared to the border regions (Tables III-10-13). Offsetting this attraction are increased transportation cost and generally poorer infrastructure for linking the interior to the north, as well as greater delay and "hassle" in the Mexican and U. S. customs procedures in getting the products across the border. 233/ While these problems have affected mainly transportation and communications with the United States, the maquiladoras in the interior have had closer contacts with Mexican firms that are nearby or more accessible. Shorter distances and/or better transportation facilities enable Mexican suppliers to comply more easily with delivery schedules. To some extent at least, this would explain the higher use of domestic materials by the interior maquiladoras.

Nationality

Another important aspect of the integration problem is the degree of foreign ownership of the maquiladoras. The higher that degree, the greater the ties with the foreign country -- mainly with the United States -- rather than with Mexico. It can be argued, therefore, that increased Mexican ownership would strengthen the links of assembly industries with the rest of the national economy.

Since relatively more of the smaller than of the larger maquiladoras are Mexican held , a change in the ownership pattern would require either that control of at least some of the major subsidiaries of giant multinational companies must pass into Mexican hands or that more Mexican capital must be involved in the expansion of existing assembly plants or in the establishment of new large maquiladoras. To achieve such a shift in ownership, two major obstacles must be overcome. First, the U.S. company might not feel comfortable subcontracting with a Mexican firm for assembly operations that deal with complex and high technology products if the U. S. international company does not control the manufacturing process. Not only might closely held production technologies be exposed to potential competitors, but it is risky to let outside subcontractors do delicate precision operations for which the U.S. companies must still bear full responsibility.

The second problem is that Mexican firms may not find maquila ownership a very attractive business. Mexican capitalists may feel much more comfortable in economic activities oriented to the domestic market with which they are more familiar and where trade restrictions protect their profits. Ownership and operation of maquiladoras may

look like too much effort if performance standards are higher and specifications more exacting than working for the domestic economy; in addition, foreign demand for assembly production is not guaranteed and it may seem risky to depend on the ups and downs of inscrutable foreign markets.

Some of these difficulties can eventually be overcome through appropriate public policy. Thus if Mexican policy makers conclude that lowering trade barriers would be desirable for the nation's economic development, measures toward that end might also lower the opportunity costs for Mexican firms to go into the assembly business. In addition, a powerful inducement for Mexican capital to venture into maquila activities would be to eliminate the restrictions on firms to carry on production activities for the domestic market and undertake assembly operations for foreign markets at the same time. Incentives would be reinforced by lifting restrictions on the sale of in-bond assembly products on the domestic market (but these sales should not be exempted from paying customs duties on the imported materials). 234/

Such an arrangement, which at first sight might appear difficult to administer, would permit the fuller utilization of excess capacity in existing companies; it will also reduce the risk in establishing new plants for assembly operations because the plants can be used for domestic production as well, thus helping to smooth out business fluctuations. The administration of this would be no more complex than, say, administering an export subsidy program that applied to plants that produce both for exports and the home market. In order to avoid charges of unfair competition from powerful foreign maquiladoras, it might be considered that, at least initially, the opportunity to

sell on the domestic market be limited to companies that have Mexican majority ownership as would, under current Mexican law, apply in any case to non-maquila investment. For the reasons indicated earlier, however, maquiladoras in high technology and specialty machinery industries would probably remain under foreign (primarily U. S.) control for some time to come.

While a Mexican movement toward freer trade might lay the groundwork for raising the efficiency of Mexican firms, that process could be accelerated through technical assistance. Just as foreign assembly plants could assist Mexican firms in meeting cost, quality and other criteria in supplying materials required by maquiladoras, Mexican firms interested in doing assembly on a subcontracting basis might also need technical assistance. Such a program would be under the sponsorship of the Mexican government which would also help finance it through subsidies for Mexican businesses that wish to become suppliers or operators of maquiladoras. 235/ To some extent this situation would resemble the manner by which Japanese companies absorbed U. S. technology in the postwar years.

Summary of Integration Policies

The thrust of the maquiladora program as sketched in this section is directed toward increasing Mexican involvement in assembly activities. This appears to have been the intent of the Mexican government since the early promotion efforts. 236/ In presidential speeches and pronouncements, as well as in special government reports, the theme of maquiladora induced stimuli to Mexican industrialization has come up repeatedly. 237/

The main points made here are that a movement toward greater Mexican participation in assembly activities would require (a) transfer of technology through technical assistance for new and existing Mexican firms that plan to establish assembly operations or plan to supply maquiladoras with materials and components that were previously imported; (b) training of Mexican personnel for the assembly plants and for the suppliers of assembly plants; and (c) easing of maquiladora restrictions in order to enable Mexican firms to produce for the home market and assemble for exports as well as for the home market (with payment of the appropriate customs duties), all within the same plant. The implicit argument here is that the best technical assistance and training can be provided "on the job" by the companies directly involved in assembly production. Foreign collaboration in (a) and (b) would not be cost free. Therefore subsidies would be needed. In addition, disincentives may be required in order to prevent the companies from bidding for scarce technical and skilled personnel. Tax incentives or disincentives could be applied to insure that foreign companies assume the training responsibility.

An important note: The integration policies suggested here can be viewed as being detrimental to Mexico's economic development. Mexican capitalm it can be argued, could bring greater long run social returns in sectors other than the supply and operation of assembly production. This thinking would emphasize investment in capital intensive manufacturing as well as in infrastructure, including education, rather than putting scarce national capital into export production with as yet limited linkages.

The choice between policies to promote and nationally integrate assembly production, and policies to ignore that activity in favor of investing domestic resources elsewhere, depends on the evaluation of the magnitudes of the external economies and long run social benefits involved in both sets of policies. The choice is also related to the existing degrees of protection, both in Mexico and Mexico's trading partners. These could help determine how profitable it is to produce for the domestic market compared to export production.

In the discussion in this chapter the conclusion was reached that, given the facts of low capital-labor and captial-output ratios in assembly production, it would make sense to continue and expand this activity in Mexico, provided that it could be better integrated into the country's economic development in order to maximize long term external economies. The judgement was made here that maintaining the foreign enclave nature of assembly operations will become increasingly objectionable in Mexico.

Nothing in the integration policies suggested here is intended to diminish the total capital availability for the country. Foreign investment in maquiladoras should not be discouraged, but Mexican involvement in this sector should be encouraged. The idea is to increase the role of Mexican captial in the expansion of assembly activities.

It is unlikely that these policies will be at the expense of vital human and physical infrastructure investment. It is still open to question whether they will reduce availability of national capital in other sectors, and, if so, whether this is an appropriate allocation of scarce resources. As with many economic development questions,

however, answers depend on the evaluation of short and long run social costs and benefits. That evaluation often defies the capacity of empirical economic research and therefore rests on the judgements of policy makers.

Wage Policies

Mexican policies on behalf of assembly industries have been viewed with suspicion by Mexican intellectuals and also by some government officials. It has always been assumed, not without some justification given the historical record, first, that the key to maquiladora development is foreign investment; second, that the key to increased foreign investment in assembly plants is to maintain the wage gap between Mexico and the United States as wide as possible; and, three, that therefore all incentives to promote assembly activities in Mexico must take the form of reducing Mexican labor costs. 238/ This would inevitably lead to making concessions to the foreign companies by bending national labor, tax and other laws. Various requests for concessions have been reported, including "the establishing of a special labor code to. . . employ workers on temporary contracts," 239/ easier dismissals, tax relief for workers who would receive less than minimum wages, lower social security payments for a shorter work week, etc. 240/ In effect, some of these proposals imply sacrificing for a special group of Mexican workers many of the social gains earned by Mexican labor over many years.

The policies proposed here to increase the benefits of assembly activities for Mexico, can be implemented without reducing fringe benefits and without keeping wages artificially low. "On the other

hand, the effect of labour and income policies has been to increase the price of labour services due to social security payments, pay-roll taxes and the safeguarding by trade unions of high wages achieved through restrictive hiring practices." 241/ Therefore, "that the social price of . . . labour [is] less than the market price increases the social profitability of the maquila industries." 242/

It is not at all clear that labor has been disadvantaged by maquila operations. Even in the more subtle area of a possible "deskilling" of the labor force, no convincing evidence has been found that points in that direction. Not all assembly work is at the same skill level. The industrial countries first will transfer offshore the lowest skilled operations. As the labor force in offshore countries becomes more adept and international competition in the affected product lines becomes more keen, more skilled assembly work will move abroad. These movements may coincide with wage shifts in the assembly countries. As wage levels rise in some countries (relative to others), more sophisticated assembly operations may be transferred to them. This seems to have been the case in Singapore and Mexico.

As was mentioned earlier, the evidence points to shifts of lowest skilled assembly operations within Mexico from the border to the interior where wages are lower. In the aftermath of the U. S. recession and more recently, as wage levels continue to rise, several assembly firms at the border have spun off maquiladoras into the interior, transferring the most unskilled operations there and keeping and receiving more skilled assembly processes at the high wage border. If such movements become generalized across countries, the "deskilling" arguments discussed earlier will have to be viewed with

skepticism.

Judging by the mix of industries in various countries with similar transportation costs to the United States, there appears to exist a fairly significant relationship between wage levels and average skills of assembly work associated with the industries prevalent in the countries. Thus Haiti with the lowest wage levels in the Caribbean Basin (including Mexico and Central America) has the highest proportion of its assembly jobs in sporting goods, toys and dolls, and apparel, product lines usually considered as requiring the least skilled labor (Table IV-1). El Salvador, which has higher wages, has also a higher proportion of electronics and other assembly jobs associated with a somewhat higher skill level than Haiti's product mix. And Mexico, with the highest wage levels, appears to have the mix of the most sophisticated assembly industries requiring the highest skill level of the countries in the region. Furthermore, over time, the skill level in assembly operations will tend to rise within a given country, as appears to have been the case within Mexico, based on the change in the composition of its assembly products (Tables III-4 and II-A.2).

For a long time labor costs in Mexico have been considerably higher than in other countries offering offshore assembly opportunities (Table II-3). Yet for the reasons mentioned earlier, non-wage advantages of Mexico have tended to offset the wage disadvantage. It will take additional large increases in wages and labor benefits before U. S. companies will shift their offshore assembly activities away from Mexico to a significant extent.

The major wage rises during the early and mid-1970s did affect production and employment in the maquiladoras but only in combination with the U. S. recession. While employment in the border maquiladoras dropped, the employment level in the interior plants was at first almost unaffected (only a 4 percent decline over a period of two or three months), but later increased substantially, as firms shifted some production from the border to the lower wage interior.

There is no evidence that there has been a significant loss of assembly work from Mexico to other developing countries, although the wage gap may have widened during the 1970s. 243/ Of the major product groups, only in semiconductors did Mexico's world share of assembly production collapse, from a high of about 28 percent in 1971 to less than 4 percent in 1980 (Table II-A.2). On the other hand, in other electrical and electronic assemblies, Mexico has done rather well compared to other countries. In TV apparatus and parts, for example, Mexico is now far ahead of any other assembler, having doubled its world assembly share from about one-third during the late '60s-early '70s to more than two-thirds in 1980 (Table II-A.2 and III-A.5).

Before Mexico loses significant assembly business, the wage differential between Mexico and other developing countries must grow substantially and not be offset by transportation and other costs. In the case of semiconductors, the items are small and light, and transportation costs (even by air) are almost insignificant. Thus the labor cost gap between Mexico and Malaysia, always sizeable, has apparently become large enough during the 1970s to overwhelm Mexico's advantage of geographic and cultural proximity. 244/

In the case of the product group motor vehicle parts (which includes motorcycles, tractors and off-the-highway type work vehicles), Mexico's share of world assembly operations also declined significantly, from about 62 percent during 1974-1975 to about 16 percent in 1980 (Table II-A.2). This drop, however, had nothing to do with losing out to other developing countries because of higher Mexican wages, but was due to the fact that during the mid-1970s Japan started to export to the United States products in this broad IIC category under U. S. tariff item 807.00. Japanese production qualified to enter the United States under 807.00 by using U.S. components, although in relatively small amounts. 245/ These imports from Japan cannot be considered "offshore assemblies"; in 1980 almost 99 percent of the 807.00 imports consisted of value added (including components) in Japan.

The corresponding proportion for Mexican motor vehicle parts (consisting of Mexican and non-U. S. components and Mexican value added) was 69 percent. This is the highest percentage of non-U. S. value for any major group of products assembled in Mexico. Nevertheless these are assemblies produced for U. S. automobiles and automotive products and not, as in the case of Japan, foreign (Japanese) automotive products -- with a tiny proportion of U. S. components -- exported to the United States.

Thus Mexico's partial loss of the U. S. market was not to the benefit of some other developing countries whose wage costs may have been lower. Except for Brazil, which had about 5 percent of the U. S. market in 1978 (when Mexico's share was 22 percent), there are no other developing countries that export products in the "motor vehicle

parts" category to the United States under tariff items 807.00 and 806.30. Even Brazil is not a developing country in this respect, because, like Japan, it produced its own automotive products for exports to the U. S. , using only a minute proportion of U. S. components (about 1 percent in 1978) which qualified the imports from Brazil for inclusion in U. S. 806.30/807.00 statistics.

The value of Mexican assembly of automotive products continued to increase even after the precipitous decline of Mexico's world share started in the mid-1970s, rising from $30 million in 1974 to $109 million in 1980. During this time, Mexican wages remained substantially higher than in other developing countries, but the wage disadvantage was offset by transportation costs which are very high in this product category. Mexican wages would have to approach U. S. wages much more closely before they overwhelm the proximity advantage and expel the offshore production of the items in the motor vehicle parts category to other developing countries.

In sum, there have been remarkably few major shifts in offshore assembly activities at the expense of Mexico. Thus the perception of the high sensitivity of offshore assembly operations to changes in relative wages seems to go counter to Mexico's experience.

The U.S. Business Cycle

A similar conclusion can be drawn regarding the perception of Mexico's assembly sensitivity to changes in the U. S. business cycle. As discussed earlier in this chapter, the severe U. S. recession of 1974-75 did have a significant impact on maquiladora operations. The notion, however, that in an economic downturn in the United States, the

first activities to be closed down would be offshore assembly was not borne out by the facts in Mexico despite the presence at that time of a high proportion of unstable companies seeking a quick profit. The drop in maquiladora employment from the pre-recession peak in the second quarter of 1974 to the trough in the first quarter of 1975 was somewhat over 15,000 persons or about 19 percent. 246/ This is serious enough, but less than half of what was stated in several accounts of the impact, 247/ and, as discussed earlier, much of the decline was unrelated to the recession.

The important question is what are the likely effects of future U. S. recessions. It can be argued that the impact on Mexico will be less dramatic than in 1974-75. There is now a higher proportion of stable maquiladora firms because many of the small and fly-by-night operators were shaken out during the last recession. Furthermore, given the more established nature of assembly activities since the mid-1970s, economic considerations may motivate U. S. companies to cut their high cost assembly operations in the United States first before reducing their lower cost offshore activities. This was the usual response of maquiladora managers when interviewed in Nogales and Juarez during March 1980 when a new U.S. recession threatened. The same reaction was also noted in a U. S. Embassy cable from Mexico City which stated that "managers emphasize that . . . maquiladoras will look even more attractive to U. S. corporations in a recession as a means of cutting costs, and minimizing the effects of a business slowdown in the United States" (cable dated January 21, 1980).

What could prove to be a major hazard to maquila operations in Mexico, however, is the combination of a U. S. recession with a serious overvaluation of the Mexican peso relative to the U. S. dollar. This would make wages and other peso expenditures in Mexico expensive for U. S. companies and raise the costs of Mexican operations relative to U. S. production. As of this writing (mid-1981), the overvaluation of the peso is as great as it has been during recent history 241/ and may vitiate the optimism of the maquiladora managers expressed above. 242/

6. IMPLICATIONS FOR THE UNITED STATES

What remains to be explored is whether the policy thrust suggested on behalf of Mexico's economic development is also in the economic interest of the United States. Viewed only from a short run perspective, there is no way whereby suddenly delinking assembly operations from the United States will not negatively affect profits of U.S. companies and incomes of U.S. workers. If Mexican capital succeeds in taking over and in running efficiently a larger share of assembly activities, including the supply of some of the materials and components that were formerly imported from the United States, then it will appropriate part of the profits previously earned by U.S.companies and reduce the employment of U.S. labor producing components for assembly.

It can be argued, however, that in the long run the economic interests of Mexico and the United States will coincide. The objective of U. S. manufacturers is not only to have their products assembled at

the lowest costs possible, but also to have long run stability in this process. A major implication of this chapter is that a gradual modification of the offshore assembly system as it currently exists in Mexico will be necessary in order to avoid a growing political fallout from Mexico that may eventually do serious damage to, if not destroy, assembly activities there. If Mexican skepticism about the system can be eliminated or reduced by increasing and strengthening the linkages of assembly with the Mexican economy, it will be in the long run interest of U. S. manufacturers to cooperate in this objective. While U. S. business might derive some short run benefits from the image of an enclave of U. S. economic activities along the border in Mexico, it will be better off in the long view by subcontracting with Mexican firms whom they may have supplied with technical assistance and training, as recommended here.

A similar cooperation from organized U. S. labor cannot (and should not) be expected. By its very nature, job security, the principal labor union objective, is a short run aim. Therefore efforts to increase the use of Mexican components in assembly production will be opposed, even if it might be beneficial to U. S. workers in the long run, both as workers and consumers. It is of little consolation for a worker to know that a change in the offshore production system will make future jobs secure and keep prices low, if the same change may also cost his or her job.

Precipitate changes would be highly destructive. They could not benefit Mexico; neither U. S. business nor U.S. labor could accept them. For example, a new Mexican decree which would immediately institute a minimum requirement for Mexican materials and/or for

Mexican capital in assembly production would surely provoke U. S. companies to bring their operations back home or shift them to other countries with more hospitable climates.

The policies proposed earlier are intended to work in a gradual fashion. The ownership and location of existing maquiladoras should not be affected, although eventual changes in their purchasing practices are expected. Modifications should take place in a dynamic setting: as the demand for offshore assembly expands, incentives should work to enable Mexican capital to establish new assembly plants, preferentially in the interior of the country which contract with U. S. manufacturers. At the same time Mexican firms could become successful suppliers of the maquiladoras.

U. S. companies could continue to establish new assembly plants in the future, particularly in new or rapidly changing or high technology product lines where U. S. firms would still have a clear comparative advantage. A special case is the automotive industry where recent Mexican interpretation of a 1977 decree 250/ has enabled U. S. companies to count maquiladora production and exports as part of the Mexican domestic content and export requirements for foreign majority owned automobile companies. 251/ This has proved to be a strong incentive for the three large U. S. automobile companies to establish several maquiladoras in various places in or not far from the Mexican border region. 252/

Thus, as the changes in the way assembly activities are carried on in Mexico result from the growth of the U. S. and Mexican economies, the impact on U.S. labor would be minimized. The rising share of Mexican materials and components would come from increases in assembly

production fed by the expansion of the U.S. economy. It will continue to be hard, however, to avoid pockets of dislocation of U.S. workers who find it difficult to relocate and transfer to other jobs. In those cases, U.S. public assistance would be called for in order to ease the burden of readjustment.

That the direction of the intended changes leads to an alteration in the assembly relationship between the United States and Mexico was already noted. Mexico and the United States would become more equal partners in the sharing of production insofar as Mexico would not only furnish "cheap" labor but also provide more skilled labor and manufacture parts for assembly into the final product. This would be reflected in a higher Mexican share of value added and a corresponding increase in Mexican net exports. 253/

The Migration Question

Three assertions have been made about the role of maquiladoras in the migration problem. The first is that the establishment of assembly plants at the border has stimulated massive internal migration of persons from the interior of Mexico to the border; the second is that the maquiladora serves as a jumping-off place for the persons it has brought to the border from the interior for migration to the United States; and the third, inconsistent with the former assertion, is that the creation of assembly jobs in Mexico will diminish migration to the United States.

Regarding the first point, the fact is that the border population has grown faster than any other major region in the country except for greater Mexico City. A few of the border municipalities, notably

Tijuana, have increased more rapidly than Mexico City. About five percent of Mexico's population live there now. A significant part of the growth, however, took place before the start of the maquiladora program. The average yearly growth rate between 1950 and 1960 was 6.3 percent compared to 3.1 percent for the whole nation. Between 1960 and 1970, the period during which the maquiladora program started, the growth rate slowed down to 4.1 percent, still higher than the national rate of 3.4 percent. Some attribute the slowdown to the ending of the Bracero Program in 1964. 254/

Another fact is that a high proportion, about 29 percent in 1970, of the border population was not born there, (almost one-third of the three largest border cities, Juarez, Tijuana and Mexicali) compared to a national average of only 15 percent. 255/ Census data for 1980 are not yet available but all indications point to a continuation of the migration to the border at a rate which exceeds the internal migration rate for the country as a whole.

How important the maquiladoras have been in attracting the migrants is a debatable question. They had nothing to do with the highest recorded migration rate to the border during the intercensal years of 1950-1960. Subsequently they must have played some role, similar to the attraction of any focal point of employment. The studies of maquiladora workers, cited earlier, found that about 80 percent of the workers interviewed in Tijuana were not born there and more than two-thirds came from non-border states; 256/ in Juarez somewhat less than two-thirds of the respondents were not born there and about one-fifth came from non-border states. 257/ Both studies found that a minority of the migrants came to the towns in order to

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work in maquiladoras (about 10 percent of the migrant workers in the Tijuana assembly plants or about 20 percent, if the motive to emigrate to the United States is also included).

The more comprehensive study by Seligson and Williams found that "at maximum 5 percent of the entire 1978 work force of the BIP [Border Industrialization Program = Maquiladoras] may be defined as contributing to interstate migration to the North." 258/ Part of the apparent discrepancy between this figure and the above cited studies, is that "the vast majority [of the worker migrants] arrived. . . as children accompanied by their. . . mothers and fathers." 259/ Also plant managers tend to prefer to hire persons who had a few years of residence in order to get more stable employees. 260/ About 80 percent of the interstate migrant maquiladora workers lived in the city where they were interviewed more than 3 years and only 3 percent less than 1 year. 261/ In conclusion, the answer to the question of how important the assembly plants have been in provoking internal migration to the northern border is: "not very much," at least until the late 1970s.

Regarding the second assertion mentioned at the beginning of this section, the response is similar: none of the above mentioned studies have found any evidence that maquiladoras at the border have served as a significant jumping off point for migration to the United States. Compared to the sample of all maquiladora workers, "the interstate migrants demonstrate no significant difference in their propensity to remain in their city of residance or to move to another locale." 262/ Only 15 percent of maquiladora workers had been in the United States, legally or illegally. Among the male workers, the percentage was higher, about 29 percent, but even this is much lower than a recent

survey showed for Jalisco, a Mexican state over 1,000 miles south of the border, where 50 percent of male workers had migrational experience in the United States. 263/ Only 13 percent of interstate Mexican migrant assembly workers said that they planned to work in the United States. 264/

These results are not surprising, given the nature of the maquiladora work force. Most of it consists of women, primarily of urban background, a quite different population group from the male rural workers and peasants usually constituting the aliens who have entered the United States illegally.

This same reason invalidates the third assertion often made that "for each job that is created by the maquiladora industry there is possibly one less alien that would go to the United States." 265/ The people who cross the border into the United States without documents are generally not potential maquiladora workers. Just as the establishment of the border industrialization program through the creation of the maquiladora system could not absorb, as intended, the unemployed and underemployed men who were left stranded when the Bracero Program ended, this system also cannot stem the migration to the United States. Two different populations are involved: the erstwhile bracero and present undocumented alien who is generally a rural male and the assembly worker who is generally an urban female.

Of course, one should not exaggerate this point. Any kind of job creation at the border in Mexico cannot be entirely neutral in respect to migration across the border. It will have some holding effect on people, keeping some from migrating. Even if a female assembly worker never thought of emigrating, her earnings may keep a man who did intend

to cross the border from doing so.

In this respect the establishment of maquiladoras in the interior of Mexico may be much more effective. They may help keep potential interstate and inter-country migrants in place. Here it is interesting to note that Seligson and Williams found that almost half of the migrants working in assembly plants at the border said that they would go back home (to the interior of Mexico) if similar employment were available there. 266/

7. SOME REFLECTIONS FOR THE FUTURE

A major part of this chapter has been devoted to analyzing the impact of the assembly industries on the Mexican economy. Many of the policy implications deriving from this study point in the direction of delinking the operations of assembly plants from the United States and strengthening the ties with the rest of the Mexican economy, in order to reverse what some Mexicans view as the "denationalization" of the border region. 267/ Four broad avenues were explored: measures to (a) increase the investment of Mexican human and physical capital in assembly activities; (b) raise the use of Mexican intermediate products in assembly plants; (c) accelerate the movement of plants to the interior of Mexico; and (d) facilitate the sales of assembled products in Mexico. 268/

The long-run effects of these measures would be not only to integrate assembly activities with the Mexican economy but also to change the nature of offshore assembly operations. Mexico's input into the assembly relationship with the United States would shift from providing only pure labor services to also contributing materials and

manufactured components. Thus the association between the two countries would move toward a more genuine co-production relationship. Both partners would contribute labor and components, similar to the production sharing arrangements that exist among developed countries.

To many, the offshore assembly system currently reflects the traditional international division of labor between developed and developing countries, the latter being seen as relegated to the role of the "hewers of wood and carriers of water." Moving away from this pejorative image held by some intellectuals and government officials -- although not necessarily by the Mexican assembly workers themselves -- can only embolden Mexican public policy to develop a healthy and enhanced production sharing relationship.

This does not imply that the character of offshore assembly operations all over the world should be modified at the same time and at the same rate. Mexico is fairly unique among developing countries. It is one of the most industrialized nations in the Third World and it has, comparatively, high proportions of professionals, technicians and entrepreneurs, not to speak of intellectuals. It is, therefore, easier for Mexico to move to higher levels in the international production system than for other developing countries whose industrialization is just beginning and whose human and physical capital is severely limited. They could not contribute more than low skilled labor services.

As nations climb up the development ladder their capabilities to participate in more advanced international assembly activities would rise as well. 269/ The international offshore assembly system would therefore be in continuous but gradual flux, associating the least

developing countries in tasks requiring only basic labor services and moving to more advanced developing nations with more sophisticated assembly operations that demand higher labor skills and greater material inputs.

A FINAL NOTE

It is doubtful that offshore assembly production is an inevitable stage in international capitalism as some studies assert. 270/ Automation appears to be a viable alternative in many cases 271/ The fact that plants exist which assemble an identical product, some with automation and others with manual labor, signifies that, at least for certain product lines, there is a tradeoff between the two processes. 272/ However, it does not appear to be a delicate balance, and would not be affected by short run fluctuations in relative costs.

In the case of Mexico it was found that the offshore assembly system is fairly well entrenched. It was shown that even significant wage differentials, not offset by transportation costs, will not affect Mexico's position substantially. The implication is that it would take considerable Mexican wage hikes that would be perceived as irreversible relative to other countries, or major labor or other internal problems, such as long-lasting political instability, popular unrest or violence, before there would be a massive flight of offshore assembly operations from Mexico. These same factors, furthermore, could lead to substitution of automated for manual assembly, if other prospective assembly countries also become unstable or otherwise inhospitable or if U. S. manufacturers do not wish to transfer their operations too far afield.

Other countries have not engaged in offshore assembly operations to the extent the United States has done. Japan has been among the first to automate assembly in some product lines (see chapter on semiconductors). The preference of its business managers apparently is to keep all production activities close to home and, if possible, not far from the principal plant. 273/ Yet, besides U. S. firms, Japanese companies are the major foreign operators of maquiladoras in Mexico. However, the output of those assembly plants, which are among the largest in the country and assemble mainly electronic products, does not return to Japan but is destined primarily for the U. S. market. In that case, manual assembly close to the United States seems more cost effective than automation in Japan and transportation of the finished product to the United States. It might still be rational for Japanese and/or other foreign plants to automate assembly for the U.S. market in labor abundant Mexico as long as there are significant savings in transporting components rather than finished products across the ocean; it would avoid the "hassle" associated with having to manage a foreign and (for Japan) culturally very different labor force.

Although Mexico has a clear comparative advantage in assembling for the U.S. market, a deterioration -- even if slow -- in Mexico's attractiveness not compensated by any greater economic allurement of other places, could accelerate U. S. movement toward automation. If under those circumstances assembly operations return to the United States, but in automated plants, it is not clear that U. S. labor will benefit significantly. Traditionally more jobs have been lost in the United States through internal technological change than through any international causes (foreign competition, the movement of U. S. plants

abroad, etc.). Bringing offshore assembly operations back home with automation, will cost many Mexican jobs but will create few unskilled and not many highly skilled jobs in the United States. 274/

In the meantime, offshore assembly operations in Mexico continue to benefit U.S. industry and U.S. consumers. And they provide scarce foreign exchange and seem to be still the most cost-effective way to create full time employment south of the border, although they may not be the best way to absorb un- or under- employment there, given the characteristics of the assembly workforce.

Table III A-1. Mexico: Various Indicators
1969-1980

Year	Consumer Price Index (1)	Index of Monthly Earnings 1975 = 100 (2)	National Minimum Wages (average for year) (3)	Rate of Exchange Pesos per U.S. dollars (average for year) (4)
1969	54.0	47	51.9	12.5
1970	56.6	50	51.9	12.5
1971	59.7	54	51.9	12.5
1972	62.7	57	61.0	12.5
1973	70.3	64	63.7	12.5
1974	86.8	84	86.5	12.5
1975	100	100	100	12.5
1976	115.8	129	129.1	15.4
1977	149.5	169	165.2	22.6
1978	175.4	194	188.5	22.8
1979	207.4	226	220.2	22.8
1980	262.1	282 a/	259.2	23.0

a. August 1981.

Sources: Columns 1,2,4: IMF, International Financial Statistics, 1980 Yearbook and July 1981 issue.

Column 3: Minimum Wage Index calculated on basis of Van Waas Table 10, pp. 276-77.

Table III A-2. Mexico: Average Number of Hours Worked per Production Worker in Assembly Plants, by Location and Industry 1975-1980

	1975	1976	1977	1978	1979	1980
TOTAL	186.4	190.0	192.3	192.2	192.1	188.7
Border Plants	185.0	189.4	192.3	192.6	192.1	187.7
Interior Plants	204.8	195.3	192.4	187.8	191.4	196.8
INDUSTRY:						
Food	142.1	164.4	173.6	181.4	182.1	173.9 a/
Shoes & Apparel	194.4	196.5	195.2	196.8	194.7	193.1
Furniture & Parts	205.9 a/	195.9 a/	194.8 a/	286.3	230.5	191.9
Machinery, Transport Equip. Non-Electric	202.6	208.0	214.1	207.2	206.2	185.1
Machinery & Accessory, Electric & Non-Electric	183.2	187.5	191.2	191.0	188.7	189.3
Other Manufacturing	188.8	188.8	191.4	196.8	196.5	196.6
Services	193.1	183.4	180.2	169.2	188.5	178.2

Source: Secretaria de Programacion y Presupuesto (SPP).

a. In border plants only.

Table III A-3. Mexico: Percentage Distribution of Value Added in Assembly Plants, by Location & Industry 1973-1980

	1973	1974	1975	1976	1977	1978	1979	1980
Border Plants	90.1	91.6	90.3	89.3	87.7	88.1	85.1	85.8
Interior Plants	9.9	8.4	9.7	10.7	12.3	11.9	14.9	14.2
All Plants & Industries	100	100	100	100	100	100	100	100
INDUSTRY								
Food	1.6	1.5 b/	1.8 b/	2.9	1.5	2.6	1.9	1.6
Shoes & Apparel	10.8	13.3	15.3	15.5	16.6	15.7	13.1	13.7
Furniture & Parts	5.9	2.7	2.4	3.3	3.6	3.2	3.9	3.8
Machinery, Transport Equipment, Non-Electric	2.8	8.9	7.4	6.7	5.3	5.0	6.0	9.8
Machinery & Accessories, Electric & Electronic	65.3	69.1	64.8	63.3	62.6	61.4	63.2	56.8
Other Manufacturing	12.5	6.9	6.1	6.1	7.7	9.0	8.2	9.5
Services	1.1	1.7 b/	2.2 b/	2.3	2.7	3.1	3.7	4.8

a. Percentage for interior plants (9.9%) was imputed by subtraction. Data by industry available for border plants.

b. Border plants only.

Source: SPP Tables.

Note: See Note to Table III-2

Table III A-4. Mexico: Composition of Value Added in Assembly Plants, by Industry, in 1980.
(Percent)

	Wages and Fringe Benefits	Materials	Rent and Utilities	Profits a/	Total Value Added b/
INDUSTRY					
Food	40	36	18	7	100
Apparel & Shoes	61	6	15	18	100
Furniture & Parts	47	11	27	15	100
Machinery & Transport Equipment (non-electric)	50	1	34	15	100
Machinery & Accessories (elec. & electronic)	61	2	19	18	100
Other Manufacturing	54	10	19	17	100
Services	71	5	16	9	100
ALL SECTORS (weighted average)	59	4	20	17	100

a. May include other undefined concepts that are not expenditures.

b. Due to rounding components may not add up to totals.

Source: SPP Tables.

Note: See Note to Table III-2.

Table III A-5. Ranking of Mexico Among All Countries in Respect to U.S. 807.00/806.30 Imports by Selected ITC Categories, 1970-71 and 1980

	Relative Standing of Mexico Among All Countries	
	1970-71	1980
T.V. Receivers & Parts	2	1
Semiconductors & Parts	1	7
Textile Products	1	1
Office Machines	3	3
Motor Vehicle Parts	3	2
Equipment for Electric Circuits	1	1
Electric Motors & Generators		1
Electrical Conductors		1
Capacitors		1
Other Miscellaneous Electrical Products		1
Radio Apparatus & Parts		3
Recording Media		1
Luggage & Handbags		1
Toys and Dolls		1
Lumber and Paper Products		1
Scientific Instruments		1

Sources: For 1970-71, Special magnetic tapes prepared by the U.S. International Trade Commission (ITC)
For 1980, "Tariff Items 807.00 and 806.30 U.S. Imports for Consumption, Specified Years 1966-80", U.S. International Trade Commission, June 1981.

Offshore Assembly in Haiti

Joseph Grunwald, Leslie Delatour

and Karl Voltaire

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OFFSHORE ASSEMBLY IN HAITI*

Haiti is among the poorest countries of the world. In Latin America its income levels are below the average. The next poorest country in the Americas, Honduras, has more than twice Haiti's per capita GNP which was estimated in 1979 by the World Bank at $260. Its neighbor, the Dominican Republic, with whom it shares the island and which had a population just a few percent higher than Haiti's 5 million in 1979, has earnings of nearly four times as much per person. 275/

Manufacturing in Haiti is of recent origin. It is confined primarily to the processing of food, beverages, agricultural materials and basic items such as shoes, clothing, soap and cement. National income figures -- as well as most other statistics -- are still rudimentary but the World Bank estimates the contribution of manufacturing to GDP to have reached 13.3 percent by 1979. 276/ Most of the increase took place during the

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Underlying this chapter is a detailed case study by Leslie Delatour and Karl Voltaire entitled, International Subcontracting Activities in Haiti. It was prepared especially for the present volume and was submitted to the second Seminar on North-South Complementary Intra-industry Trade", sponsored by the United Nations Conference on Trade and Development and the Brookings Institution, and held under the auspices of El Colegio de Mexico in Mexico City, 18-22 August 1980.

Two sample surveys make up the core of the case study. Specific references to it and other parts of the underlying document will be cited here as "International..." with the page and/or Table number.

1970s, after a decade of near stagnation.

THE IMPORTANCE OF ASSEMBLY PRODUCTION IN HAITI

The growth of assembly industries has been an important element in the recent dynamism of the Haitian economy. Between 1970 and 1980 the value added in Haitian assembly plants increased by over 23 times or at an average annual rate of 37 percent (Table IV-1). Even in real terms, the growth was 22 percent per year (deflated by the implicit import price deflator of the United States). In part the dramatic upsurge was aided by government incentives and by changes in the political environment.

Assembly activities have benefited from two types of incentives: new production firms are exempt from income taxes for five years and then are subject to partial payments in increasing yearly proportions so that after ten years they must pay the full tax; the other incentive is a franchise granted to assembly firms which exempts them from any tariff duties on imports. The franchise is given indefinitely for production that is entirely exported. This covers offshore assembly production. For production that is sold on the domestic market, the franchise is given on a temporary basis because the firm is expected to use local materials as inputs after the first few years.

There are no free trade zones in Haiti which cater to export industries. While there is a successful industrial park in Port-au-Prince (run by a government agency), it emerged as a result of the growth of assembly plants rather than contributing to the emergence of the assembly sector. 27/

Table IV-1. Haiti: U.S. Imports from Haiti under Tariff Items 807.00 and 806.30 by Total, Dutiable and Duty Free Components, and Dutiable as Percent of Total 1969-1969-1980

Year	Total Value 807.00 and 806.30	Duty Free (Value of U.S. Components)	Dutiable Value Added in Haiti	Dutiable As Percent of Total 3÷1
	millions of U.S. dollars			
	(1)	(2)	(3)	(4)
1969	4.0	2.4	1.6	39.8
1970	6.1	4.0	2.1	34.7
1971	9.1	5.9	3.2	34.9
1972	16.1	11.0	5.1	31.7
1973	28.5	20.3	8.2	28.9
1974	56.5	43.0	13.5	23.9
1975	54.7	40.2	14.5	26.4
1976	78.1	56.6	21.5	27.5
1977	84.3	61.3	23.0	27.3
1978	104.9	76.1	28.7	27.4
1979	133.7	94.5	39.2	29.3
1980	153.8	105.3	48.5	31.5

Source: Special Magnetic Tapes from U.S. I.T.C. and U.S. I.T.C., U.S. Tariff Items 807.00 and 806.30-Imports for Consumption, Various Issues

Thus, unlike other countries, Haiti's assembly production is not an "in bond" activity in the strict sense. Although assembly production cannot be sold domestically, any firm can get a duty free import franchise whether it exports or not. In view of the fact that more than half of all manufacturing output (including assembly) is exported, there are many firms that produce both for the home as well as the export market.

With the advent of the current government, investors' perceptions of political stability seem to have improved. The new environment permitted the huge wage gap between Haiti and the United States to become an enormous attraction for offshore production. Many Haitian professionals and entrepreneurs who were abroad during the previous regime returned and established businesses designed to assemble U.S. components.

While there are no exact figures, estimates by the U.S. embassy in Haiti and by the World Bank put the number of assembly plants in 1980 at about 200, employing roughly 60,000 persons. All of the assembly plants are in Port-au-Prince, Haiti's capital and by far the largest city. Assuming a dependency ratio of 4 to 1, this means that assembly operations supported about one quarter of the population of Port-au-Prince in 1980.

Haiti's principal assembly activities have concentrated on sporting goods, particularly baseballs, and textiles (including apparel) (Table IV-2). Haiti is the world's principal exporter of baseballs and ranks among the top three in offshore assembly of textile products and stuffed toys. During 1969-1972, more than half of Haiti's assembly exports that entered the United States

Table IV-2. Haiti: Ten Most Important U.S. Imports from Haiti under Tariff Items 807.00 by ITC, Categories as Percent of Total 807.00 Imports from Haiti, Total 807.00 Value and Ranking* 1970 and 1978

ITC Product Group	1970 % of Total 807.00 Value	1970 Ranking a/ "Within"	1970 Ranking a/ "Between"	1978 % of Total 807.00 Value	1978 Ranking a/ "Within"	1978 Ranking a/ "Between"
Baseballs and Softballs	52.2	1	I	23.3	2	I
Textile Products	24.6	2	VI	37.8	1	III
Equipment for Electric Circuits, etc.	1.9	6	IX	2.9	7	IV
T.V. Receivers and Parts	2.9	4	VII			
Fur and Leather Products	2.4	5				
Office Machines, etc.				5.3	4	XI
Toys, Dolls and Models	3.6	3	V	7.2	3	II
Resistors and Parts	1.3	10				
Electric Motors, Generators, etc.	1.6	8		1.9	9	III
Tape Recorders and Players, etc.	1.6	9				
Valves and Parts, etc.	1.8	7				
Capacitors				3.4	6	III
Misc. Electr. Products and Parts				4.1	5	
Gloves				1.7	10	III
Other Misc. Art Articles				2.4	8	
Total 807.00 Value in Millions of dollars	6.1			104.9		

* Negligible amounts were imported from Haiti under tariff item 806.30

a/ "Within" ranks in arabic numberals the ten most important product groups for Haiti in each year. "Between" ranks in roman numerals selected product groups among all countries, indicating the position Haiti holds among other countries for the particular product group.

Source: Special Magnetic Tapes from U.S. I.T.C.

under U.S. tariff items 807.00 278/ consisted of baseballs. While still growing in absolute amounts, their importance in the total declined to less than one quarter during the mid-1970s. Clothing and textile products grew much faster, from less than one quarter of U.S. 807.00 imports between 1969-1972 to well over one-third of U.S. 807.00 imports since 1973. The textile quotas imposed by the United States apparently did not constitute a binding constraint, although they may have limited the expansion of particular categories, such as brassieres. 279/

Stuffed toys and dolls became number three in Haiti's assembly production, reaching between 7 and 8 percent of exports to the U.S. after 1975 (1978 is the last year for which breakdowns by commodity groups are available). Aside from office machines and parts which have recently become significant in Haiti's assembly exports, the remainder consists primarily of electric and electronic articles. At the beginning of the 1970s, they accounted for between 10 and 15 percent of exports and in the second half of the decade, for more than one quarter of the total (Table IV-2). 280/

Available data indicate that value added in assembly plants now constitute about one-quarter of all industrial value added in Haiti compared to less than 6 percent in 1970. 281/ Contributing more than half of the country's industrial exports, assembly production earns about one-fifth of Haiti's yearly foreign exchange receipts. 282/

It is clear that in the case of Haiti, the impact of assembly operations on employment, income, and balance of payments is of major importance. These effects and some more subtle ones will be discussed later in this chapter. At this point, let it be noted that Haiti's weight in the world offshore production system is far greater than its size (in population and income) in the world community. Of the 47 countries in 1980 which imported non-trivial amounts of U.S. components for assembly, Haiti ranked ninth with imports of more than $195 million (Table A-1). It held a similar position among developing countries in respect to value added in the assembly production which was exported to the United States (Table A-2). While its share in Third World offshore operations is still tiny (about one-twenty-fifth of Mexico's value added and one-sixth of that of Hong Kong) the proportion has been rising and is now 50 percent above what it was during the early 1970s.

A Note on the Sample Surveys Used

Much of the analysis in the rest of this chapter is based on two surveys conducted under the direction of Leslie Delatour and Karl Voltaire during December 1979 and January 1980 in Port-au-Prince, Haiti. The details of these surveys are published in their study cited at the beginning of this chapter. In the discussion that follows below, frequent reference will be made to that work.

The surveys were based on two questionnaires, one for enterprises, the other for workers in assembly industries. They were administered by two Haitian contractors chosen for their

intimate knowledge of the assembly sector in Haiti and their privileged access to industrialists.

In Haiti the designation "assembly" is also given to firms using local materials for export production. Thus "assembly" activities are divided into firms using local materials and those using imported materials. The former do not concentrate on actual assembly operations but produce a complete product, usually for export, although some of it may be sold on the home market. Those "assembly" firms using local inputs are not as significant as the true assembly industries using imported components, exporting only about $16 million of light manufactures in 1978 compared to $29 million for the latter. 283/ They are not considered assembly firms here. The survey was confined to those enterprises assembling, at least in part, imported components. However, some of the firms included in the sample do both exporting and selling on the domestic market.

The enterprise sample, consisting of 51 firms, some of which had more than one plant, was selected from a list of assembly companies supplied by the Haitian government and the U.S. embassy in Port-au-Prince. The selection was made at random within four major categories: Electronics, Textiles (including clothing), Sporting Goods (primarily baseballs and softballs) 284/ and Miscellaneous. 285/ The absence of formal accounting and managerial information techniques, as well as the aura of secrecy regarding sales and profit figures, limited the amount of hard data that could be extracted. Nevertheless enough information was obtained to make an examination of the basic features of the industry

possible.

The sample of 500 workers was spread among the 51 firms, selecting at random about 10 from each. Only piece rate workers (no foremen or supervisors) were included. The questions, although printed in a formal questionnaire, were asked orally, in Creole rather than French, in order to facilitate communications.

Given the absence of precise information about the universe, it is impossible to determine the representativeness of the samples. There are disagreements between the various reports consulted as to how many firms there are in the assembly sector, and as to how many workers they employ. The sample used here with 51 firms employing 20,000 workers appears consistent with figures of the World Bank and the American embassy.

Since these are the first in depth surveys of enterprises and workers taken in Haiti, most of the information obtained can not be compared with data previously available.

CHARACTERISTICS OF ASSEMBLY OPERATIONS IN HAITI

Ownership and Structure

Unlike Mexican offshore production which is done largely through subsidiaries of U.S. companies, Haitian assembly activities still rest on Haitian entrepreneurship to a great extent. Almost 40 percent of the firms in the sample are Haitian owned, one-third are foreign owned and 30 percent are joint ventures. 286/ Most of the Haitian owned firms concentrate in textile assembly, where almost two-thirds of the firms are locally owned. In electronics

and the miscellaneous category joint ventures predominate; in baseballs, foreign companies. Even in foreign firms, most of the managers are Haitian. About three-quarters of the firms in the sample had local managers. 287/

It should be noted that several previously wholly owned Haitian firms, especially in the baseball category, were sold to foreign interests before the sample was taken. The oldest assembly enterprises are Haitian with an average age of 10 years. The youngest are foreign owned with the average age of 7 years and the age of the joint ventures are in between. No change in the pattern of ownership can be discerned during recent years. Less than one-third of the firms were established during the five years prior to the survey, with a greater number being wholly Haitian owned than wholly foreign owned (and joint ownership making up almost one-third of the total).

Most of the companies interviewed do assembly work for U.S. principals. 288/ Those that are not wholly owned by the U.S. manufacturer usually work with machinery and equipment supplied by U.S. principals. About three-quarters of the firms in the survey said that the principals usually furnish the machinery and two-thirds said that the principals always do so. 289/ This arrangement, which is a special form of an "arm's length" relationship, reduces the risks faced by both the subcontractor and the principal. The former does not have to venture his own capital and having his customer's machinery is some assurance that the principal will not run away from his contract. The principal, on the other hand, can have his offshore production without having to

establish a subsidiary company and risking his investment. The machinery which he lends to his subcontractor is usually second hand and often fully depreciated and in any case, he can take it back when a contract is completed.

That there is Haitian entrepreneurship is demonstrated by the fact that about three-quarters of the local firms reported that they initiated the relationship with the principal. 290/ In many cases the Haitian enterprise will have a relationship with more than one principal. The overall average is three U.S. principals per Haitian firm, and it goes up as high as an average of nine for local firms in the electronics sector. 291/

Size of Firms

As might be expected, foreign firms are larger than locally owned assembly companies. While the labor force is roughly equally distributed among Haitian, U.S. and jointly owned enterprises, the average number of workers per foreign enterprise is about 480 and for Haitian firms about one-third less. 292/ Since some firms have more than one plant, employment per plant is significantly lower than the overall sample average of about 400 workers per firm. The best available estimate is about 300 workers per plant which is much higher than for other manufacturing enterprises in Haiti. About two-thirds of employment in assembly plants is provided by the one-third of enterprises which employ more than 400 workers each. Export oriented assembly firms are therefore the largest employers in the country.

By far the biggest plants, both in terms of employment and square feet, can be found in baseball assembly, followed by electronics which is only slightly above average and textiles, somewhat below average. The smallest plants are in the miscellaneous category.

Contrary to the relative magnitude of labor in assembly operations, capital investment in assembly is extremely low. An average figure is difficult to determine because, as already indicated, so many of the local firms receive machinery and equipment from their principal, the value of which could not be included in the survey. Taking only those firms for which the principal never provided the machinery, the average capital invested was about $740,000 in 1979. It was nearly three times as high in electronics, but only about one-third in textiles. 223/ Capital requirements for most local assembly companies are, of course, much less because the principals furnish most of the machinery and equipment. Capital is therefore not a great restraint for a Haitian who wants to enter the assembly business. Finding a principal in the United States is probably a greater barrier.

Similarly the capital-labor ratio is very low. The approximate average of $1,500 for assembly operations is far lower than the $25,000 found in Haitian import substituting enterprises. 224/ On the other hand, average capacity utilization of about 75 percent in assembly plants is double the level in industries producing for the domestic market. 225/ It is not surprising that foreign firms work at a higher level of capacity

than Haitian firms because subsidiaries can be expected to have a regular relationship with their parents.

Wages

Haiti, like most countries, has minimum wage legislation. No matter how low minimum wage levels might be in developing countries, the temptation is for economists to claim that they are too high, even in very poor countries, as long as there is as vast a pool of underemployed persons as there is in Haiti. That minimum wages are above the opportunity cost of labor in Haiti can be demonstrated by the fact that the daily earnings of persons who work at home under contract to more formal enterprises (put-out system) usually are between one-half and one-tenth of the official minimum wage. 296/

It might therefore be claimed that more capital intensive methods are employed in Haiti than would be warranted by the true opportunity cost of labor ("shadow price"), particularly in industries working for the domestic market where, as indicated above, the average capital per worker is over $25,000. On the other side of the coin, however, capital is not particularly subsidized in Haiti unlike the situation in many developing countries. Long term financing is generally not available, and there are neither special interest rates nor special exchange rates and/or licenses for the import of capital. Moreover, it was shown that in the export oriented assembly sector the capital-labor ratio is less than one-tenth of the average in the home market oriented industries. As long as there are non-economic factors underlying

some private and public policy decisions, certain capital intensive enterprises (such as a still mill) will be established even if the official minimum wage would drop to zero.

The wages reported by the enterprises in the survey averaged more than one-quarter above the official minimum wage of $51 per month, if a 5-day week is taken as the norm, the usual work week in assembly operations (Table IV-3).

Although the implications of the law are not clear, its strict interpretation could result in a legal monthly minimum of $69 per month (including non-working Sunday pay), compared to the average wage in the enterprise sample of $65 per month. Foreign firms pay a little more, local firms somewhat less and, as expected, wages are higher in electronics than in textiles (for details and explanations, see Table IV-3). 297/

In the worker survey, the respondents reported about $10 per month less in the various categories than the figures given by the managers in the enterprise survey. It should be noted that the wages reported by the worker are the take-home pay and therefore will be less than the levels given by the firms. Nevertheless the average monthly wage of $55 reported by the workers was almost 8 per cent above the official minimum under the 5-day week assumption. This compares to an average monthly wage paid in Port-au-Prince in 1975-76 of $45 in clothing manufacturing and $49 in industries similar to other assembly operations. 298/ The workers in the sample who had previous experience, reported an average monthly wage of less than $40 in their former job, about 70 percent of the wages they reported in their present job. 299/

Table IV-3 Haiti: Wages Reported in Surveys Compared with Official Minimum Wages
December 1979
(in U.S. dollars)

Sector	Monthly Wages Reported by Firm	Monthly Wages Reported by Workers	Minimum Wages Per Month A 22 days/ mo.	B 24 days/ mo.	C 26 days/ mo.	D 30 days/ mo.	Official Daily Minimum Wage
Textiles	64	54	48	53	57	66	2.20
Electronics	72	59	57	62	68	78	2.60
Baseballs	60	51	53	58	62	72	2.40
Miscellaneous	63	59	51	55	60	69	2.30
Average	65	55	51	55	60	69	2.30

Note: Detailed information of the Haitian minimum wage law could not be obtained. A provision of the law provides for non-working Sunday pay under certain circumstances (after working 28 hours in a 6 day week). Most assembly plants, however, work only a 5 day week. Therefore the monthly minimum wage was calculated on the basis of four assumptions:

A 5 day week
B 5½ day week
C 6 day week
D 7 day week

Sources: Intl. . . , Tables IV-11 and V-4; IBRD, Report No. 3079 HA. Feb. 17, 1981. Table 2.5, corrected by the authors.

There is no question about the fact that their wages put assembly workers in the upper income groups in Haiti. According to a 1976 survey, 70 percent of the households living in Port-au-Prince had incomes of less than $40 per month. 302/ Even allowing for inflation this would be still below the average take-home pay reported by the assembly workers in the present survey.

Given that fact and the existence of the "put-out" system in the subcontracting industry in Haiti, one would expect to find that a majority of the firms would consider the minimum wage too high. The survey did not show this. In reference to worker productivity, only 10% of the managers considered the minimum wage too high, but 73% considered it adequate and 17% considered it too low. 303/ In reply to another question in the enterprise survey, more than 80 percent of the respondents said that they would not hire additional workers if the minimum wage were abolished. This included even a majority of those who considered the minimum wage too high.

This does not mean that the minimum wage is irrelevant. It only indicates that the existence of the minimum wage in 1979-80 did not noticeably affect the level of employment. It should be noted that almost 60 percent of the assembly subcontractors in the sample charge their principal a piece rate based on the piece rate paid to the workers plus overhead and a profit mark up. The number of jobs created, therefore, is determined to a great extent by the demand for Haitian labor by the principal in the United States. That demand, in turn, largely depends on the gap between U.S. and Haitian wages, productivity differential tariffs and transportation

costs. According to the response in the survey, about half of the firms reported that their productivity was about equal to U.S. levels for comparable product lines and activities, while about one-fifth said that it was superior. Available evidence seems to support these results. 302/

As long as the gap in labor costs between the United States and Haiti greatly exceeds transportation costs plus the U.S. tariffs on Haitian value added, there will be an economic incentive for U.S. companies to subcontract the labor intensive parts of their production processes in Haiti. This does not imply that minimum wages, if enforced, can be pushed higher and higher as long as the gap covers the other costs mentioned. First of all, it may cause severe distortions in the Haitian economy, such as major substitutions of capital for labor which have serious implications for a labor abundant, poverty stricken economy. Second, if the gap is not large enough, it may still cover transportation, tariff and other direct costs, yet may not be able to offset the bureaucratic and political risks in Haiti which are still perceived as formidable. Thus assembly business may be lost if wages rise to much higher levels, although they may remain below those of relevant international competitors.

The Labor Force

Haiti is not different from other countries in having a high proportion of women in assembly plants. The 74.6 percent found in the survey is slightly lower than in Mexico (77.3 percent in 1980; see Chapter 3). In Haiti, however, women seem to constitute a much

larger share of the labor force than in Mexico and in many other countries. 303/ Abject poverty makes unemployment almost impossible. Most adult women have to go to work. It is also reported that women in Port-au-Prince outnumber men by 30 percent. 304/

Before working in the assembly plants where they were interviewed, more than half of the women held other jobs or were looking for work. Well over 90 percent said that they would remain in the labor force if they were to lose their present jobs. These responses were not substantially different from those given by men. 305/ The major difference was that almost one-quarter of women workers were going to school before taking the assembly job, compared to half of that proportion for men.

In Haiti, as in other counties, two main reasons are invoked to explain the predominance of women in assembly plants: women, unlike men, possess the manual dexterity needed in assembly operations, and they are more docile and less militant than men. Regarding dexterity, the survey found that wages for men averaged nearly ten percent above those for women. 306/ Given that workers are paid a piece rate, the wage should reflect productivity. 307/ Regarding docility, labor militancy is still unknown in Haiti. Indeed more than three-fourth of the workers did not know what a labor union is and in none of the 51 firms in the sample was labor organized. The high proportion of women in the assembly work force in Port-au-Prince is probably due in part to the more abundant supply of female labor there and in part to cultural factors already referred to in the study of Mexico. 308/

Almost three quarters of the assembly workers were born outside of Port-au-Prince. Yet the assembly industries have not constituted a particularly strong stimulus to migration. 309/ At the time of the survey, the migrant worker had been in Port-au-Prince an average of 14 years, long before the assembly industries emerged as a significant force in Haiti's economic development. 310/

The existence of a large labor pool for assembly work is demonstrated by the selectivity exercised by the firms in their hiring practices. Since minimum wage is above what needs to be paid for unskilled labor in the informal sector, assembly managers give preference to persons with some skills, such as literacy and previous experience. In the face of a literacy rate of only one-quarter of the adult population in Haiti, 311/ more than half of the enterprises always require literacy (in electronics it is more than three-quarters) and generally pay a higher wage than those that never require it as an employment condition. Vocatonal training, surprisingly, was not required by many firms; the highest level is in textiles where only one-quarter of the companies insist on it. Although about half of the firms require prior experience (in textiles it is much higher, in electronics much lower), they do not pay a higher wage than firms that do not require it. 312/

Although few assembly enterprises say that they require vocational training, about half of the workers in the sample reported such training. About one-third of the workers interviewed had previous assembly experience and another 5 percent worked in non-assembly jobs. 313/ While neither vocational training nor

previous experience seemed to make much difference in workers' earnings, 314/ education is positively correlated with assembly wages. 315/ The surprising fact is that nearly 90 percent of the assembly workers reported at least one year of schooling. One-third had some high school and 44 percent completed elementary school. 316/ These levels are far above those for the country as a whole and also significantly above those for Port-au-Prince where the educational level is much higher than for the rest of the country. 317/ It is not surprising, given the difference in wages, that the highest educational level was found in electronics and the lowest in baseball assembly.

Compared to Mexico and other countries in which offshore assembly activities take place, the average age of assembly workers is relatively high in Haiti, about 29 years. 318/ It is somewhat lower in electronics and a little higher in the other assembly categories. Age, unexpectedly, tends to be inversely correlated with wages. 319/ This survey result is consistent with another that indicates that seniority of workers in the factories is unrelated to their earnings. This surprising finding appears to say either that learning on the job is not rewarded or that productivity declines with time spent on the job. The latter maybe due to boredom with routine tasks or decline in efficiency with age. Given piece rate pay, lower wages would result in either case. It may be too early, however, for any pattern to emerge since the average seniority is just below 4 years and about half of the workers have been in their present job for less than three years.

Linkages

From the perspective of developing countries, much is made of the apparent weak linkages of offshore assembly activities with the rest of the economy. In Haiti, however, the rudimentary status of overall industrial development combined with the predominance of imported inputs would lead one to believe that intersectoral linkages are weak in general.

Although assembly plants in Haiti are not isolated from the rest of the economy as they are in other places through "in bond" and free zone restrictions, the output of sophisticated assembled intermediate goods such as computer harnesses, integrated circuits, etc. could hardly serve as inputs for Haitian industries in a "forward linkage." Nor, for that matter, could the output of assembled finished goods such as baseballs, wigs, stuffed toys and relatively expensive clothing find a ready market in the country.

In respect to backward linkages, however, significant progress has been made. For example, in the assembly production of cassettes, the plastic shells are purchased from a local producer; in baseballs and softballs, the core is now fabricated in Haiti and the glue is supplied locally; some threads are also purchased on the domestic market even though the price/quality relation may not be up to international standards. All these items were previously imported. 320/

Despite the increased use of local materials in baseballs, there was no increase in the share of dutiable value (value added in Haiti) as a percent of total value of U.S. baseball imports from Haiti under U.S. tariff item 807.00. Value added in Haiti averaged

around one-third of total assembly value exported to the United States, according to data obtained from the U.S. International Trade Commission. In most other product groups there was no noticeable expansion of use of Haitian materials (Table IV-4).

Yet, if one examines the overall proportion of Haitian value added in total U.S. imports from Haiti over time, one notes a decline until 1974 and then a gradual increase (Table IV-1). The early decline appeared to be due to the use of more expensive U.S. components, as U.S. producers become more confident in Haitian assembly capabilities. The subsequent rise in the Haitian value added share can be attributed to the greater attention being given to quality control in Haitian assembly plants, thus increasing the payroll component of value added through the employment of higher paid supervisory and quality control personnel. 321/ This is especially true of the assembly of office machines, where the dutiable value (value added in Haiti) rose from 6 percent of total U.S. (807) imports from Haiti in 1973, the first year of production, to 18 percent in 1978; assemblies of electrical and electronic equipment, such as electric motors, etc., where the value added proportion rose from 10 percent in 1970 to 36 percent in 1978 (Table IV-4). Aside from "miscellaneous electrical products", in other categories generally more than one quarter of total export value is added in Haiti (in 11 resistors and parts" it was one-third in 1978 and in "gloves 11 over one-half, probably because of the increased use of local leather) 322/

Table IV-4a. Haiti: Total U.S. 807.00 Imports from Haiti and Dutiable Value as Percent of Total for Selected Products, 1969-1978

	TEXTILES		BASEBALLS		TOYS & DOLLS		OFFICE MACHINES		EQUIPMENT FOR CIRCUITS	
	Total 807 Value	Dutiable % of Total	Total 807 Value	Dutiable % of Total	Total 807 Value	Dutiable % of Total	Total 807 Value	Dutiable % of Total	Total 807 Value	Dutiable % of Total
1969	1.0	46.4	2.0	38.6	0.1	44.2			0.1	25.2
1970	1.5	38.3	3.2	34.7	0.2	37.7			0.1	21.4
1971	1.8	36.2	5.0	36.7	0.3	38.4			0.4	18.2
1972	4.1	35.0	8.0	31.8	0.4	40.0			0.8	17.1
1973	10.1	29.9	9.2	29.7	1.2	33.0	1.7	5.9	1.0	27.0
1974	19.7	25.3	12.4	29.8	2.2	28.9	4.6	4.4	1.9	21.2
1975	19.4	25.2	13.6	31.8	3.0	28.3	3.1	6.9	1.1	25.5
1976	27.1	23.8	16.8	37.6	6.1	31.4	6.3	10.4	2.2	23.6
1977	30.7	24.7	17.4	29.2	7.2	30.3	5.5	13.7	2.3	30.6
1978	39.7	27.6	24.4	25.6	7.6	29.6	5.5	17.6	3.1	25.8

Table IV-4b. Haiti: Total U.S. 807.00 Imports from Haiti and Dutiable Value as Percent of Total for Selected Products, 1969-1978 (con't)

	CAPACITORS		ELECTRIC MOTORS		GLOVES		MISC. ELECTRICAL PRODUCTS & PARTS	
	Total 807 Value	Dutiable % of Total	Total 807 Value	Dutiable % of Total	Total 807 Value	Dutiable % of Total	Total 807 Value	Dutiable % of Total
1969								
1970			0.1	10.1				
1971			0.1	13.8	0.1	38.6		
1972			0.1	13.3	0.1	40.8	0.1	28.6
1973			0.2	16.4	0.3	38.3	0.3	14.9
1974	0.3	24.0	0.2	24.8	1.1	40.9	1.1	10.4
1975	2.8	21.1	0.5	39.0	1.2	35.7	1.3	7.5
1976	6.0	23.9	1.3	31.4	1.4	44.3	2.0	9.8
1977	4.5	27.2	1.8	33.1	1.5	50.0	2.6	11.8
1978	3.5	20.7	2.0	35.6	1.7	53.2	4.3	13.4

Note: The absence of a number signifies zero or less than $50,000.

Source: Special magnetic tapes from U.S.I.T.C.

The most important indirect linkage of assembly operations to the Haitian economy is through the consumption expenditures of assembly workers. If one uses the U.S. embassy figure of 60,000 workers and the $55 average monthly wage reported by the workers in the survey, a total annual wage bill of almost $40 million results. 323/ If most of this amount is spent on food, shelter, simple clothing and transportation, items which would have a very low import content, the impact on Haitian economic development would be substantial. 324/ Incomes of managers and profits might have a smaller effect since substantial portions would be spent either abroad or on imported luxury items.

In respect to transfer of technology, there is a flow of technical assistance between the foreign principals and the Haitian assembly plants. Well over half of the firms in the survey reported that foreign principals always provide technical assistance and an additional few indicated that they sometimes do. 325/ Much of the assistance comes through foreign technicians sent by the principal on a temporary basis. About 60 percent of the assembly firms said that foreign technicians visit on a steady basis and well over one-third reported that they regularly send their own technicians abroad for training. 326/ Since the majority of assembly factories are in Haitian hands, new working methods and production techniques can easily be transferred to other sectors of the Haitian economy, particularly because some Haitians simultaneously operate assembly plants as well as other businesses.

Stability

The general perception is that subcontracting is a volatile business and so assembly operations will be rather unstable. Instability in these activities can be due to two main reasons: sensitivity to the external business cycle, particularly in the United States, and the involvement of footloose U.S. industries and fly-by-night enterprises out to make a fast profit and run.

Regarding the first, a look at Table IV-1 shows that Haitian assembly exports to the United States increased by leaps between 1969 and 1980. The only interruption of the monotonic expansion occurred in 1975 when there was a 3 percent decline in total export value after doubling in 1974 over the previous year. This slight break can probably be attributed to the U.S. recession of 1974-75 and was entirely due to a 7 percent drop in the value of U.S. components used for assembly. Haiti, however, was not adversely affected; to the contrary, assembly activities generated an over 7 percent rise in the country's value added in 1975. In textiles there was a barely noticeable 1975 hesitation in the steady increase and the only product group where a significant decline can be found is in equipment for electric circuits where the total drop in value added hardly amounted to $250,000.

The assembly firms in Haiti seem to have a sanguine outlook regarding the fragility of their operations. Nearly one-half of them believe that a U.S. recession will not affect them, according to the survey which was taken at the beginning of 1980 when a business downturn abroad threatened. Textile companies are the less optimistic of the assembly firms. 327/ Depending on the

industry, either a supply side or a demand side explanation is given. In the former, the assumption is that in a business downturn the U.S. principals will have an additional incentive to reduce production costs and therefore will move more operations abroad; in the latter, the assumption is that consumers will shift from expensive to cheaper products (i.e., instead of buying fancy electronic gadgets for children, adults will give them stuffed toys).

In this respect, it is interesting to note that in Haiti light manufactured exports that use local materials appear to have been deeply affected by the U.S. 1974-75 recession. There was a drop of about one-quarter in these exports between 1974 and 1975 and a further decline in the following year so that 1976 was almost one-third below 1974. Only in 1978 were 1974 export levels reached in nominal terms (in real terms probably not until 1980). 328/

In respect to the argument that footloose industries impart instability, the record shows that only a few offshore assembly products have emerged and disappeared, while most product lines have steadily increased. 329/ Almost by definition, footloose industries are those that require a small capital investment. Obviously Haiti's assembly plants qualify under that definition. For that reason it is surprising that so few industries disappeared. This does not mean that there have been no fly-by-night operators and that subcontractors in Haiti did not get hurt, but one may conclude that this kind of instability appears to have had trivial effects on the Haitian economy.

Furthermore, Haitian assembly operators have learned how to protect themselves against the ups and downs of subcontracting. Almost all of them work with more than one U.S. enterprise and the majority subcontract with more than two principals. 330/ Often this will reduce the risk by tending to smooth the fluctuations in the total orders. It will be especially true if the local enterprise assembles several different product lines, each of which may be subject to diverse seasonal and cyclical variations.

The low capital requirements in this business permits the local entrepreneur to diversify his assembly operations so that he can work for U.S. firms in different industrial sectors, either simultaneously or by shifting his work force from one assembly production to another according to the external demand. It was observed in the survey that the low capital-output ratio enables some firms, with only minor modifications in their factories and equipment, to move from baseballs to cassettes or from electronics to textiles, as they lose contracts in one area but find them in another. Thus, it is not the foreign principal who is "footloose" but rather the Haitian firm, by displaying a high mobility between foreign principals and/or production sectors. It is this flexibility, a manifestation of perceptive Haitian entrepreneurship, which has given stability to the growth of the country's assembly activities.

CONCLUSIONS AND POLICY IMPLICATIONS

Assembly production has become an integral part of Haiti's economic activities. It is not a marginal appendix as in some other countries engaged in these operations, but it is a major contributor to Haiti's economic development and the leading edge of the country's industrialization. The best estimate is that value added in assembly activities now constitute close to a quarter of all income generated in Haiti's manufacturing sector and provides about the same proportion of the country's export earnings. 331/ While the employment it creates, estimated at 60,000 persons in 1980, may appear small in relation to the total labor force of over 2.5 million, it is probably much larger than employment in the rest of the modern manufacturing sector in the country. 332/

An Enclave Sector?

It would be difficult to support the assertion that, as in Mexico, assembly activities form an economic enclave in Haiti. First of all, Haiti is at the bottom of the development ladder so that linkages among its economic sectors are weak and it is still far from being an integrated economy. Second, assembly production is concentrated in the economic and population center of the country, metropolitan Port-au-Prince, and not in a remote region far removed from the capital, as in Mexico. There are no laws explicitly restricting assembly plants to a free trade zone or to "in-bond" operations. However, there is a formal legal barrier to selling assembly items produced with imported components on the local market. As of now, assembly firms have no strong economic

incentives to sell at home in view of the weak demand for their products relative to export demand.

The lack of tight integration of offshore assembly operations into the rest of the economy is not too different from the relatively weak linkages of other industries that use imported materials. This is particularly true of many of the new import substituting industries that are very import intensive in respect to inputs.

The basic problem of national economic integration is one of the levels of economic development. As income levels rise and improved public policy helps ease supply constraints, the various economic sectors, including assembly industries, will be tied more closely together and therefore raise their contribution to the country's economic development.

In the meantime, the linkages of assembly production have not been trivial and compare favorably with those of other economic activities in the country. Not only do the incomes generated by assembly create a significant demand for local goods and services but assembly production has provided a substantial stimulus to the banking, transportation and communications sectors, as well as catering services. 333/ While some local components, such as materials for baseball cores, leather for shoes and handbags, plastic cases for cassettes, and correguated carton boxes and other packing materials are used in assembly production, any substantial increase in the use of local inputs in assembly operations must await the elimination of supply problems in other sectors, in particular, agriculture.

Within the context of an underdeveloped economy such as Haiti's, assembly operations help transfer technology to a significant degree. The mere existence of these activities which comprise perhaps half of the country's modern sector, introduces workers to factory discipline, new equipment and working methods. Even an average training period of only two months provides skill levels far above the mean of the Haitian labor force. 334/ As was shown there, is a considerable interchange of technicians between the Haitian plants and the U.S. principals. And the mere fact that assembly operations and other production activities often are carried on within the same firm, makes an unusual economic and technological isolation of the former highly unlikely.

Dependency

The strong linkages of assembly plants to foreign companies do not appear to have introduced extraordinary instability into the Haitian economy. While there is a dependence on foreign orders or contracts, Haitian entrepreneurs have learned to protect themselves against the extremes of this dependency, often by spreading the risk among several foreign firms and assembly products.

Interestingly, the foreign principal, in turn, apparently wants to keep the dependency relationship to a minimum: while prepared to provide machinery and equipment to the Haitian assembly plant, the principal does not provide much financing. Only 7 percent of the firms interviewed in the survey reported that they were in debt to the principal. Nearly all of the rest borrowed from private banks in Haiti. 335/

Policy Implications

The enclave argument implies that the resources devoted to assembly production could be more efficiently used in economic activities with greater linkages, especially those that produce for the domestic market with domestic materials. At best, according to an expanded version of the argument, subcontracting creates employment without creating corresponding increases in goods and services. The result will be addditional pressures, (a) on imports leading to a worsening of the balance of payments, and (b) on prices resulting in an acceleration of inflation. 336/

Apart from the fact that the notion of an assembly enclave is only weakly applicable to Haiti, if at all, the evidence shows a significant underutilization of resources in the country. Not only is labor massively un- and underemployed, but, outside of the assembly plants, between half and two-thirds of installed capacity in the modern sector apparently is not utilized. 337/ While it cannot be assumed that there is enough flexibility in Haiti's productive system so that, given excess capacity, output will increase in response to increased demand from new assembly workers, neither can it be assumed that resources shifted from assembly to other sectors would be fully employed. Indeed, a contrary argument can be made that, insofar as assembly operations have a higher average capacity utilization than other industries, shifting resources out of assembly would decrease the already low level of efficiency of the Haitian economy.

On the other side, even a vague familiarity with Haiti's economy, could lead one to argue on behalf of putting resources into physical infrastructure and agriculture. The long run returns from such investments could be considerably higher than risking funds elsewhere. However, before Haiti can effectively use large resources for those purposes, it will require enormous improvements in the country's public administration and institutions, not to speak of general education. Because of political and bureaucratic deficiencies, the country's absorptive capacity is severely limited. Agricultural and infrastructure investments clearly must be part of a long term development program, but in the short run do not compete with manufacturing ventures. Moreover, resources for assembly industries are generally not available for other activities; if they are fungible, it would be only with other components of the modern sector.

If to these factors the evidence is added which indicates that jobs can be created in assembly plants at a much lower cost than elsewhere in modern activities in Haiti, then it becomes clear that public policies should not be neutral in respect to the promotion of assembly production. The assertion that assembly activities, by creating incomes without the counterpart of available goods and services, will lead to increased imports and inflation more than other modern economic activities, seems to be without foundation.

Bureaucracy and Public Policy

One of the most critical elements in the expansion of the assembly sector in Haiti is the need to reduce bureaucratic red tape. Inefficient bureaucracy is perceived to be the most important drawback of doing business in the country, despite the fact that Haiti has gone further toward the "free enterprise" ideal than most nations in the Third World. Documents for imports and exports take a long time to obtain and/or to be approved, and necessary information is difficult, and sometimes impossible to come by. 338/

It can be reasoned that these problems brought about the high proportion of local ownership of assembly plants in Haiti (relative to Mexico, for example). Foreign companies hesitate to establish subsidiaries in this environment and some prefer to subcontract with Haitian firms who know their way around their country's bureaucracy. This reasoning leads to the deduction that as the foreign enterprises get used to doing business with Haiti and learn "the ropes", more of them will invest directly in offshore assembly production. 339/ Several Haitian assembly firms, particularly in baseballs, one of the oldest assembly activities in the country, were bought by U.S. companies during the second half of the 1970s.

One may expect, therefore, that streamlining bureaucracy in Haiti will induce more U.S. firms to set up their own offshore assembly production there. This does not necessarily mean that the composition of ownership of assembly plants will change in favor of foreigners. First, it can be assumed that Haitian entrepreneurship has become well entrenched in subcontracting activities and will

continue to participate in their expansion. Second, there is a large pool of potential entrepreneurs among the well educated Haitians residing in the United States and elsewhere abroad, who would return as technicians and businessmen if the public environment in their country were less cumbersome.

There is another face to the current weakness in the bureaucracy. Because of lack of coordination and duplication of efforts, some of the laws applying to productive activies are enforced sporadically and unevenly. This applies to minimum wages as well as to income and other taxes, some of which affect the assembly industry. Even the wage levels declared by the firm managers implied that the 7th rest day, required by a strict interpretation of the law, was not paid. This means that a substantial number of workers receive less than the minimum, not necessarily because of a head-on violation of the law, but because the piece rate is set so that the norm is minimum. If the norm is the average, at least half of the workers would earn less than the minimum. Even an employers' association, Association des Industries D'Haiti (ADIH), recently recommended that the minimum wage should be considered a floor rather than a ceiling. 340/ If the piecework earnings of a worker fall below the norm, he or she should not be paid less than the minimum. 341/

Bureaucratic rigidities seem to prevent a better coordination within the public sector itself and result in lost tax revenues. For new industrial firms the law provides for a five-year complete income tax exemption and an additonal five years of reduced taxes. About one quarter of the firms interviewed in the survey had

changed their names and by so doing have, in effect, rolled over their tax exemption period. All in all, according to the survey well over half of the enterprises are evading taxes. 342/ This loss of revenues is costly since it does not result in job creation and amounts to a disguised subsidy to capital. A tax holiday to attract foreign companies may be too high a price to pay for a low tax country like Haiti. It is dubious whether income tax exemption plays a role in the locational decision of a U.S. firm, given the existence of the foreign tax credit. At any rate, a tightening up of the income tax administration should be high on the policy list.

The other fiscal incentive for assembly operations is the system which permits a firm that received a franchise to import inputs duty free. This system lends itself to abuse. Aside from the possibility of bribery, it encourages smuggling since there is little, except its conscience, to prevent a franchised firm from importing for resale consumer goods not used in the firm's production. It would be wise to abolish the franchise system and substitute an automatic duty free importation of machinery, equipment, and intermediate goods, such as raw materials and components for assembly plants. In this connection it might be useful for the government to consider the establishment of a free zone, which ordinarily would have no place in a relatively open economy such as Haiti's. Bureaucratically, a free zone might be efficient because imports could be gotten through customs much faster, since, by definition, they would not be subject to the usual entry procedures.

In the past, the government appears not to have ranked economic development, and industry in particular, very high on its scale of priorities. Recently, industrial promotion has received more attention. 343/ The revamping of the tax structure, as suggested, is an important step towards helping economic expansion. While income taxes must form the primary basis for public revenues, import tariffs can become a significant policy tool for development.

Haiti has been rather unique among developing countries in respect to the scant use of tariffs for industrial promotion. The real level of protection has declined over time, not because of deliberate government policy to liberalize trade, but because the country relies on specific rather than ad valorem tariffs. In an inflationary situation it means that import duties will represent a diminishing proportion of total import value.

If this erosion of protection is combined with a creeping overvaluation of the currency, as domestic inflation exceeds external price rises, incentives for domestic production will be weakened. Therefore, the trend is to substitute imports for domestic materials. This tendency is exacerbated by public policies that have an unintended disincentive effect for the production of such items as cotton and wood. Add to this strctural rigidities introduced by such factors as the land use and tenure patterns, and the inelasticity of domestic supply becomes one of the most serious problems for the country's economic development.

Economic Integration

The reversal of this trend does not call for all out import substitution such as was practiced in many Latin American countries during the 1950s and 1960s. This indeed would be a disastrous policy for a country like Haiti. But it is almost as absurd for some existing import substituting industries to have increased the import content of their material inputs to close to 100 per cent. With rational policies Haiti could supply more inputs to its industries.

Such policies might include carefully designed protection (for a limited period of time) to foster the production of items in which the country had already demonstrated efficient production or which it could clearly develop. Automatic drawback of tariff duties would provide incentives for assembly and other export industries. The elimination of currency overvaluation as well as the rationalization of pricing and other policies should also be essential ingredients in a program to ease supply constraints.

Such a program would be a necessary prerequisite for raising the domestic materials content in assembly industries. In order to encourage the trend, Haitian firms that would supply assembly plants should be made eligible for the fiscal incentives as export industries. On the demand side, there should also be incentives for subcontractors to increase their purchases from local producers (for example, tax credits for the amounts of materials bought domestically).

U.S. companies could make a contribution toward the greater integration of the assembly export industries with the Haitian domestic economy by providing technical assistance to potential Haitian supplier firms. The assistance should focus on helping the Haitian producer meet the requirements of the assembly plants and their U.S. principals in respect to specifications and quality standards, planning of production and delivery schedules, and cost saving methods. This transfer of technology is bound to spill over into the rest of the Haitian economy.

Forward linkages are also important for strengthening the integration of subcontracting activities into the economy. Thus assembly plants should be permitted to sell part of their output on the local market after payment of corrresponding duties (or a proportion thereof). 344/ As already noted, there may not be a ready market for many of the products of the subcontracting industry in the short run. There has to be continued economic growth before Haitian incomes rise to levels where there would be an effective demand for the final consumer goods as well as for the subassemblies and intermediate goods put out by assembly plants.

Nevertheless, the authorization to sell some assembly output in Haiti should be a stimulus for the emergence of local industries that would benefit from using the subassemblies (presumably cheaper than imports) as inputs for their domestic production. For the subcontracting firm the authorization would help to smooth out fluctuations. When external demand slackens, production levels need not drop because more output could be sold at home. The opening up of the domestic market is particularly important for

Haiti's assembly plants which were operating at an average of only three quarters of capacity at the time of the survey. 345/

Another element in national integration is decentralization of industry. As was noted, as of 1980 all of Haiti's assembly plants were located in the Port-au-Prince metropolitan area. Only recently have attempts been made to install additional industrial parks elsewhere in the country. Feasibility studies are now proceeding for a park in Cap-Haitien in the North, the country's second largest city, and for one in Les Cayes in the South-West. 346/ These actions may have to be supplemented by a system of variable minimum wages differentiated according to region. In parts of the country where living costs are lower than in Port-au-Prince, but where the pool of underemployed persons is very large, minimum wages should be lower than in the capital in order to help absorb the labor force in the area.

Final Remarks

Assembly production has been the most buoyant sector of the Haitian economy for the past decade. Indication are that the dynamism will continue. The vast majority of the firms interviewed (84 percent) expected a further growth of subcontracting activities and said that they planned to expand their own operations. 347/ As of this writing the optimism of the managers has been borne out by the facts: value added generated in assembly production in Haiti in 1980 was nearly one quarter higher than in the previous year (Table IV-1) and a substantial increase can be expected in 1981. 348/

There are comparatively few obstacles in the way of furthering expansion. The "abundant supply of cheap, unskilled but dexterous manpower" 349/ is unlikely to disappear for a long time to come; given the availability of foreign aid and low capital-output ratios in assembly production, capital does not appear to constitute a binding constraint, at least at this stage of Haiti's economic development. Indeed, the only factor of production that might be in tight supply is managerial and technical personnel. However, as was demonstrated by the assembly industry in the past, there is an available pool of trained Haitians abroad who will return to the country given suitable financial incentives.

The Haitian subcontracting relationship need not be confined to the United States. The country is in a favorable position to serve as an "export platform" for Japan and European countries. Products assembled for those countries could be exported to the nearby U.S. market. Japan has been using far away South East Asian developing countries for this purpose. Because Haiti's wages are still competitive with the Far East and other things being equal except transportation costs, Haiti would make a lower cost export platform for shipping certain products to the United States, under the assumption that transporting components is cheaper than transporting assembled products.

The main economic thrust, however, will continue to depend on the relationship with the United States. However, compared to most other countries in Latin America, Haiti is still not well known in the U.S. business community. Many U.S. companies still hesitate to establish offshore assembly arrangements there. Insofar as this is

due to the perception of an unfavorable bureaucratic climate, the impression can be improved by making the public sector more efficient and focusing its policies more on development as recommended here.

This should not be taken to mean that the U.S.-Haitian assembly relationship is highly tenuous. To the contrary, the evidence points to fairly well-entrenched existing business arrangements. The activity can only grow as additional U.S. companies become involved. Despite rising minimum wages, Haitian labor costs still are by far the lowest in the Hemisphere and among the lowest in the world. The day when Haitian labor would be priced out of the market is so far into the future as to be beyond any reasonable policy making horizon. 35a/

Expansion of U.S.-Haitian assembly operations may be in the interest of both countries. For Haiti, the sector has become a key ingredient not only for its industrialization, but also for the country's overall economic development. For the United States, offshore assembly in Haiti is not only a profitable business activity, but also significant from a foreign policy viewpoint.

First of all, Haiti, as one of the world's poorest countries situated in a highly volatile region close to the shores of the United States, needs economic development desperately. Foreign aid alone is not enough. U.S. official assistance could be crucial in helping to expand the country's infrastructure, raise agricultural productivity, and improve public administration in order to increase Haiti's absorptive capacity. Given that, any kind of productive investment, including assembly plants, will become more

efficient and yield higher returns.

In the meantime, fostering the growth of U.S. offshore assembly activities in Haiti will promote economic progress there. Most of the effort, of course, must be private, such as the provision of technical assistance to enterprises and the training of technicians. But public encouragement and incentives, however small, are important.

Another policy objective of the United States is to reduce the inflow of Haitian illegal migrants. Unlike in Mexico, migrants and workers in Haiti's assembly industries seem to come from the same population groups. A rapid expansion in subcontracting activities in Haiti is bound to absorb some of the persons who would otherwise arrive clandestinely in the United States.

A U.S. policy to promote offshore assembly for U.S. companies is certain to be conflictive. There will be the perception of, (a) harmful effects for U.S. labor from the exporting of assembly jobs, and, (b) exploitation of Haitian labor. The latter can be addressed more easily than the former. Although the question of exploitation could be raised in Mexico, even there it is not possible to answer in the affirmative, as discussed in the previous chapter. In the case of poverty stricken Haiti, it is clear that the available alternatives to employment in assembly activities are generally much less desirable.

In regard to the possible harm to U.S. labor, the issue is examined elsewhere in this volume. Let it be noted here that unless it is demonstrated that specific U.S. workers are <u>not</u> affected by offshore assembly, U.S. adjustment assistance should be

provided to them. The costs will be small relative to the benefits.

It would be wise to take precautions lest the greater involvement of U.S. companies in assembly production in Haiti does not result in U.S. subsidiaries taking over all of these activities in the country. This would be in conflict with the objective to promote Haitian entrepreneurship. As was pointed out, Haiti is unusual in the region in that about two thirds of the assembly firms are Haitian owned (either wholly or through majority control). There probably has been a declining trend as Haitian firms have been bought up by U.S. companies. It is in no country's interest to stifle the incipient, but dynamic, Haitian entrepreneurship in modern manufacturing activities. This does not imply that no new U.S. subsidiaries should be established in the future, but care should be taken that they do not overwhelm Haiti's private sector. It means that U.S. companies should continue and expand their reliance on subcontracting with Haitian firms rather than always insist on their own direct assembly production in Haiti.

Aside from the aid giving function, the most fundamental U.S. policy move would be to remove remaining quotas on textile imports from Haiti. Such restrictions point up a lack of coherence in U.S. economic cooperation policies. "While flexible norms are applied in furnishing financial resources, restrictive measures are imposed on trade which do not take account of their effects on the economies of the countries it is aimed to help". 351/

The future of assembly operations in Haiti looks bright. A significant expansion of these activities will undoubtedly accelerate the country's economic development. Ultimately, however, the future will depend on the improvement in public administration and the political environment.

OFFSHORE ASSEMBLY ACTIVITIES IN COLOMBIA

Joseph Grunwald and Juan José Echavarría S.

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OFFSHORE ASSEMBLY ACTIVITIES IN COLOMBIA*

INTRODUCTION

During the first half of the 1970s Colombia promised to rapidly become a major country for offshore assembly of materials from the United States. In only four years, from 1970 to 1974, United States reimports from Colombia under tariff item 807.00 increased sixty fold. Their dutiable value, which approximately reflects the value added in Colombia, multiplied about 25 times during that period (Table V-1).

The growth stopped in 1975 and after a severe decline in 1976, Colombian assembly operations have fluctuated without regaining their early momentum. It is the purpose of this chapter to explore the reason for this loss in dynamism and for the small size of the sector, as well as to uncover implications that are applicable from the Colombian case for offshore production in general.

Colombia is in the middle of Latin America in income level as well as geography. Because of its size (with a population of 27.3 million in mid-1981 it shares third place in Latin America with Argentina) Colombia's industrialization potential is substantial. Through import substitution since World War II it has made progress

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This chapter benefitted from a study entitled "Colombia: A Typical Non-Assembly Country" prepared by Juan Jose Echavarria for this project. It provides background material as well as some research findings underlying this chapter. The Echavarria study was also presented to the second "Seminar on North-South Complementary Intra-Industry Trade", sponsored by the United Nations Conference on Trade and Development and the Brookings Institution, and held under the auspices of El colegio de Mexico in Mexico City, August 18-22, 1980. This study will be referred to as Echavarria (1980).

Table V-1. Colombia: U.S. Imports from Colombia Under U.S. Tariff Items 807.00, Dutiable, and Duty-Free, and Major Products, as Percent of Total[a]
1969 - 1981

U.S. 807.00 Imports from Colombia

Year	Values: Total (millions of dollars)	Values: Dutiable (millions of dollars)	Values: Duty-free (millions of dollars)	Dutiable as Percent of Total	Textiles as Percent of Total	Toys & Dolls as Percent of Total
1969	.4	.1	.2	34	99.7	
1970	.3	.2	.1	69	94.5	
1971	.7	.5	.2	68	94.7	
1972	1.5	.8	.7	52	99.2	
1973	6.7	2.2	4.5	33	99.2	
1974	18.7	5.6	13.1	30	98.9	.1
1975	20.4	6.0	14.4	30	99.8	
1976	14.3	5.1	9.2	36	98.4	.8
1977	14.6	5.5	9.0	38	96.0	3.7
1978	21.5	8.2	13.3	38	95.6	4.2
1979	25.2	9.6	15.5	38	95.2	4.8
1980	19.9	7.8	12.1	39	NA	NA
1981 Jan. - May	9.6	3.9	5.7	41	92.4	7.6

a. U.S. 806.30 imports from Colombia are zero or less than $50,000

NA - Not available

Sources: Printouts of special magnetic tapes prepared by U.S.I.T.C.; U.S. Bureau of the Census, U.S. Imports for Consumption and General Imports 1979, FT 246 Annual 1979, 1980.

in that direction. Its manufacturing sector contributes about 22 percent of its GDP (1980), and its industrial production is now the fifth largest in Latin America (after Brazil, Mexico, Argentina and Venezuela). 352/

As in most of Latin America's import substituting economies, exporting of manufactures came late. Before the mid-1960s it was almost trivial and gained momentum only late in the decade. At that time textiles, particularly clothing, became established as the most important product group in manufactured exports. They alone account for about 40 percent of the foreign exchange earned by manufacturing industry which by 1979-80 averaged well over half a billion dollars annually. (Table V-2)

Nevertheless, the contribution of the sector to Colombia's balance of payments is minor, being completely overwhelmed by coffee exports. Coffee still earns 3-4 times as much as industrial exports, providing about two thirds of Colombian foreign exchange. Industry brought in an average of less than 18 percent during 1978-1980 and textiles only 7 percent. 353/

Table V-2. Colombia: Importance of Value Added in Textile Assembly Exports to the United States Compared to Total Textile [a] and Total Manufactured Exports to the World, Selected Years 1970-1980

YEAR	Total Manufactured Exports (Millions of Dollars)	Textile Exports		Dutiable 807.00 Exports to U.S.		Total 807.00 Exports to U.S.	
		Millions of Dollars	As Percent of Total	Millions of Dollars	As Percent of Total Textile Exports	Millions of Dollars	As Percent of Total Textile Exports
1970	75.7	21.8	28.8	.2	.9	.3	1.4
1975	256.5	87.3	34.0	6.0	6.9	20.4	23.4
1976	301.0	124.3	41.3	5.1	4.1	14.3	11.5
1977	329.2	122.9	37.3	5.5	4.5	14.6	11.9
1978	365.4	143.6	39.3	8.2	5.7	21.5	15.0
1979	564.7	225.4	39.9	9.6	4.3	25.2	11.2
1980	547.2	219.8	40.2	7.8	3.5	19.9	9.1

a. Textiles include clothing.

Sources: Table V-1 and Banco de Republica as reported in World Bank, Economic Position and Prospects of Colombia, 1981; Volume II, Statistical Appendix, Table 3.9. The Colombian export concept used is the "exchange surrender" (when the foreign exchange proceeds are converted to pesos), see World Bank Table 3.7. The registration data (planned exports) often run at more than one quarter higher level than the exchange surrender values.

See Statistical Note in Appendix to this Chapter.

THE CHARACTERISTICS OF ASSEMBLY ACTIVITIES IN COLOMBIA

The most important aspect of offshore assembly in Colombia is that it is small in relation to the country's economy. Rough calculations show that value added in assembly operations are not much more than one half of one percent of value added in all of manufacturing and perhaps 2 percent in textiles. The contribution of assembly exports to Colombia's balance of payments is somewhat higher. Assembly exports to the United States under tariff items 807.00 constituted between 4 and 23 percent of total textile exports to the world between 1975 and 1980. 354/

Only in the exports of specific product groups to the United States is assembly output of major importance. Almost two-thirds of all U.S. textile imports from Colombia came in under 807.00 in 1978 (Table V-3).

In women's blouses and men's shirts, assembly exports accounted for over 97 percent of total exports to the United States. In other men's and women's apparel it was well over 80 percent in 1978 (Table V-5).

Before the early 1970s there were almost no offshore assembly activities in Colombia.

The Products

With the exception of some insignificant electronic and other assemblies in the early 1970s, almost all offshore assembly on behalf of U.S. firms has been in the apparel industry. Assembly exports to the United States are about equally divided between women's and men's clothing (Table V-5). Unlike the Philippines,

Table V-3. All Textiles:[a] U.S. Imports and the Importance of Related Party Imports, 807.00 Imports, and Transportation and Insurance from Selected Countries, 1978

Country	Total Textile Imports (Millions of Dollars)	807.00 Imports as Percent of Total Imports	Related Party Imports[b] as Percent of Total Imports (%)	Transportation & Insurance as Percent of Total Imports
Mexico	181.7	86.5	62.6	.4
El Salvador	30.8	83.9	54.0	2.9
Brazil	29.7	.03	12.8	6.6
Haiti	43.5	91.1	19.1	3.5
Dominican Republic	47.3	97.9	70.8	2.9
Colombia	31.8	64.7	25.5	4.8
Korea	632.5	.9	7.6	10.2
Hong Kong	1,153.5	.1	2.7	8.8
Taiwan	807.6	.03	1.3	9.5
Singapore	113.7	.03	.3	8.0
Philippines	139.6	13.3	37.4	10.1
Malaysia	23.0	0	0	8.5
Canada	38.9	4.9	46.5	.2
West Germany	57.8	.06	24.2	5.6
Japan	33.6	.09	18.7	6.9
TOTAL 15 COUNTRIES	3,668.0	8.7	11.5	8.2
Costa Rica	28.0	99.8	61.3	2.9
TOTAL WORLD	4,641.0	8.8	11.9	8.2

a. Includes all of Schedule 3 of TSUSA

b. "Related Party" trade refers to trade between firms where one owns at least 5 percent of the other (see chapter II).

Source: Printouts of special magnetic tapes prepared by U.S.I.T.C.

Table V-4. All Textiles:[a] U.S. 807.00 Imports and Percent Dutiable Value from Selected Countries and Selected Years 1970-1978

Country	Total 807.00 Textile Imports (Millions of Dollars)						Dutiable Value as Percent of Total 807.00 Textile Imports					
	1970	1974	1975	1976	1977	1978	1970	1974	1975	1976	1977	1978
Mexico	21.0	117.3	124.5	131.4	131.2	157.2	26.8	30.0	31.7	30.9	28.5	29.5
El Salvador	.3	9.0	12.6	17.9	18.9	25.9	26.8	21.0	26.0	29.2	32.4	34.1
Haiti	1.5	19.7	19.4	27.1	30.7	39.7	38.3	25.3	25.2	23.8	24.7	27.6
Dominican Republic	.1	5.5	10.9	20.1	31.1	46.4	20.8	27.2	26.2	28.2	30.7	31.9
Colombia	.3	18.5	20.4	14.1	14.0	20.6	71.0	29.3	29.6	35.6	38.2	38.6
Philippines	.8	13.1	13.8	13.2	16.0	18.6	55.7	90.0	89.8	90.0	88.8	88.9
Costa Rica	2.1	10.1	10.8	19.0	22.7	27.9	31.7	26.0	29.1	30.2	32.7	36.2
TOTAL WORLD IMPORTS	43.0	220.8	237.8	277.4	311.6	409.6	35.3	34.0	34.7	34.8	35.4	38.3

a. Includes all of Schedule 3 of TSUSA.

Source: Printouts of special magnetic tapes prepared by U.S.I.T.C.

Table V-5. Colombia: Major Assembly and Total Exports to the United States and Importance of Value Added, by Product Group, Based on U.S. Import Data, 1978.

Product Groups (U.S.I.T.C. classifications)[a]	Total Exports (Total U.S. Imports)	Assembly Exports (U.S. 807 Imports)	Assembly as Percent of Total	Value Added as Percent of Assembly (Dutiable Value as Percent of 807 Imports)
	(Millions of Dollars)		(Percent)	
Women's, Girls' & Infants' Blouses	7.1	6.9	97.9	40.0
Men's & Boys' Misc. Wearing Apparel	7.1	6.0	84.7	36.8
Women's, Girls' & Infants' Suits, Coats, Jackets & Skirts	5.1	4.5	87.3	41.1
Women's, Girls' & Infants' Misc. Wearing Apparel	1.9	1.6	84.0	31.2
Men's & Boys' Shirts	0.9	0.9	97.3	38.1
TOTAL Apparel	31.8	20.6	64.7	38.1
Toys & Dolls	1.3	0.9	69.7	28.8
TOTAL MANUFACTURED EXPORTS	120.5	21.5	17.9	38.1

a. See U.S. International Trade Commission publications on Tariff Items 807.00 and 806.30 for their classification system.

Source: Printouts of special magnetic tapes prepared by U.S.I.T.C. and Table V-3.

Mexico, Haiti, and other countries in Latin America, Colombia assembles almost no brassieres and other body-supporting garments, usually the principal textile items elsewhere. The clothes are nearly always designed and the fabric manufactured and cut in the United States, and shipped to Colombia together with buttons and zippers to be sewn and assembled for reshipment to the United States.

In the mid-1970s another product group appeared in the country's assembly operations for U.S. firms. Toys and dolls have gained in importance but were still under 8 percent of the total U.S. 807.00 imports during the first five months of 1981. The Colombian value added in this category is less relative to the value of U.S. components than in textiles (Table V-5). Textiles generate more than 95 percent of assembly wages in Colombia. 355/

It should be reiterated that not all assembly activities can be detected through U.S. 807.00 statistics. A notable exception in Colombia are "pop-up" toy books for children. These are assembled from paper and cardboard from the United States. With the printing, dye cutting and hand-assembly done in Colombia, the United States imported one million dollars' worth in 1979. This appears to be a clear offshore assembly operation, yet it does not seem to qualify under tariff item 807.00 because the U.S. components are cut and processed before the manual assembly. 356/ In 1979, the qualifying U.S. 807.00 imports of toys and dolls were not much more, $1.2 million, than the "pop-up" books which are in the same general category. 357/ The pop-up books are expected to generate $7 million dollars in overseas sales for Colombia in

1981 358/ which would be considerably more than the U.S. 807.00 imports in the general toys category.

The Incentive Systems

Colombia has tried to promote exports for many years. An incentive system, called Plan Vallejo, was started in 1959 and strengthened in 1967 when also a subsidy system was introduced. The Vallejo plan essentially provides for duty free imports of inputs for production to be exported. One aspect of the plan is geared to assembly operations and thus constitutes the counterpart to the U.S. 807.00 tariff item. 359/ It means that assembly is done "in-bond" so that the product must be exported and cannot be sold on the domestic market.

There appear to be serious problems in the application of the Vallejo system. They range from bureaucratic delays to the requirement that before a fabric that is produced in Colombia can be imported duty free, a letter of approval has to be obtained from the relevant textile firm. These administrative difficulties have greatly reduced the value of the export incentive system for both regular and assembly exports of textiles. Given the short season in clothing, a delay of only a few weeks in obtaining the Plan Vallejo approval can be disastrous. Morawetz (1980) shows how Colombia's advantage in distance over the Far East can thereby be nullified. 360/

Another part of the export incentive system is the establishment of free trade zones in the country. 361/ In an effort to help decentralize industry, Colombia's six free trade zones were

established outside of Bogota and Medellin, where much of the country's industries have concentrated. With the possible exception of the one in Cali, a city which already had a relatively high concentration of industry, the free trade zones did not stimulate much industrial activity. A large part of their operations have focused on warehousing rather than manufacturing. Thus neither the free trade zones nor the Vallejo Plan provided significant incentives for offshore assembly production.

The Firms

U.S. subsidiaries engaged in offshore assembly are relatively rare in Colombia. In the two samples of clothing exporters, one taken by Morawetz (1980) containing 30 enterprises, the other by Echavarria (1980) containing 18 companies, only one firm was owned by the foreign buyer (in the Morawetz sample). On the basis of government records, Echavarria uncovered a total of 58 firms in the clothing sector directly involved in offshore assembly activities for U.S. companies. Another two, producing toys and dolls, were also engaged in 807.00 type operations. An additional 27 firms in electronics, sewing machines, office machines, motors, appliances and other lines did assembly work for the domestic market, mostly using CKDs (complete knockdown products). Few of the assembled CKDs are exported and none come back to the United States under 807.00 (or 806.30).

While a large share of the assembly firms producing for the local market are foreign majority owned subsidiaries, it appears that over 90 percent of the firms doing offshore assembly for U.S.

companies are locally owned. Theirs is an arms-length relationship with U.S. companies with whom they are subcontracting.

Most of the clothing assemblers, as well as the two toy assembly firms, are relatively large companies. With a few exceptions, each employs more than 200 workers and produces over one million dollars worth of output annually. 362/ They are located in seven towns across the country. The largest concentration of firms is in Baranquilla on the Caribbean coast in the North (16 companies), followed by Pereira in the middle of the country (12 firms), Cali (11), Medellin (9) and Bogota, the capital (8). Pereira has more large firms than the others.

All but two of the eighteen firms interviewed by Echavarria in the five major towns dedicate a major share of their production to the domestic market. The two exceptions (one in Pereira and one in Baranquilla), assemble exclusively for the U.S. market. Other firms created solely for the purpose of doing subcontracting assembly for U.S. companies are now also producing for the local market. Rarely will a firm export more than half of its output.

Subcontracting

Almost all enterprises work to U.S. specifications when doing assembly and receive technical assistance from the U.S. principal. Only rarely do the U.S. firms supply machinery and equipment for the assembly operations which they often do in Haiti, Mexico and elsewhere. Also contrary to the Haitian case is the finding that almost invariably it is the U.S. firm that initiated the Colombian contract. Echavarria discovered only one case among the eighteen

in the sample where the Colombian firm took the initiative. 363/

Many Colombian firms are used to do subcontracting work. According to Morawetz, medium and large Colombian companies often farm out part of their production to smaller firms, particularly when they experiment with new product lines and are not yet ready to increase capacity. "Subcontracting was usually done on a 807 assembly type basis, with the parent firm cutting the fabric and supplying all inputs." 364/ A further step is for Colombian firms who have assembly contracts with U.S. principals to subcontract other Colombian firms to do part of their contract. Apparently this is not unusual and is how many firms entered into direct arrangements with U.S. enterprises. 365/

On both sides of the assembly relationship there is a spreading of risks. The U.S. company often will contract with more than one Colombian firm, usually one large long term contract with the principal partner and one or more smaller short term ones with other Colombian firms. This is in addition to the subcontracting of assembly work among Colombian companies mentioned above. On the other side, Colombian enterprises engaged in assembly operations average two foreign principals per firm according to the Echavarria sample. 366/

WHAT HAPPENED?

A glance at Table V-1 will recall the unusual behavior of Colombian assembly activities: a dramatic upsurge to 1974 and then great instability (monthly data would show even wider and more erratic fluctuations). Is subcontracting inherently unstable and

therefore the fluctuations are introduced from outside Colombia? Is this particularly true for assembly of clothing, a highly volatile sector because of the changes in fashions?

The U.S. business cycle does not seem to have any effect on offshore assembly in Colombia. The 1974-75 U.S. recession did not result in a drop in assembly demand; U.S. imports from Colombia under 807.00 increased by almost 10 percent between 1974 and 1975. However, when total clothing exports are considered an almost 45 percent drop occurred between these two years. 367/ Yet it would also not be correct to attribute this decrease in regular exports entirely to the U.S. recession. The United States accounted only for 30 percent of Colombia's apparel exports in 1974; in other years it is even a much smaller proportion. 368/ There were other reasons for this decline as will be pointed out below. The important fact to note here is that assembly fluctuations appear not to be negatively affected by the fluctuations in U.S. economic activity. They do tend to compensate, however, fluctuations in export as well as domestic demand, as will be explained later. 369/

In the Echavarria survey, two thirds of the Colombian firms had experienced cancellations of their assembly contracts. Almost half of the cancellations originated with the Colombian firm. The reasons given were (1) a preference to work exclusively for the domestic market; (2) the requirements of assembly production are too demanding; and (3) shifting to another principal who offered a better subcontracting relationship. In the cases where the principal cancelled, it was always because the Colombian firm could not meet the contract specifications (according to their own

testimony). Usually the U.S. company then transferred the contract to another Colombian enterprise. 372/

It is obvious that cancellations are not the whole story that could explain the decline and fluctuation in Colombian offshore assembly production since 1975. Part of the story can be based on the analysis by Morawetz who studied all clothing exports in Colombia in order to explain their dramatic fall after 1974. 371/ He found that between 1967, when the export subsidy system was instituted, and about 1971-1972, the profitability of exporting clothing abroad relative to selling at home rose steadily. With some delay this resulted in a sizeable growth of Colombian clothing sales abroad. Starting with 1973, however, the relative export profitability declined. Again it took the firms some time before they recognized a definite change in the situation and exports continued to rise reaching a peak in 1974 before they fell precipitously.

Morawetz attributes the relative profitability change to the following factors: (a) a rise in the protection of domestic production; in large measure this was due to increased bureaucratic problems which hampered the efficient functioning of the export incentive system; (also competition was reduced because of increased market segmentation and the well known political power of large textile firms); (b) the pace of devaluation of the exchange rate was slower than warranted by the relative rates of inflation of Colombia and the United States; and (c) the low productivity of labor.

The main consequences were that the prices of domestic fabrics increased to 75 percent above world prices and that despite low wages, labor costs in Colombia surpass those of Hong Kong, Korea, and Taiwan. 372/ Thus exporting garments has become difficult for Colombian producers even if they succeed in doing so with lower priced imported fabrics. If one adds to that the requirements that export products must meet high standards of quality, specifications, and delivery schedules, then it becomes clear that selling on the domestic market is much more profitable as well as comfortable.

Some of these conclusions apply also to assembly production for exports. However, assembly exports are sheltered from some of the problems mentioned. Almost by definition assembly production of garments is done with imported materials and will therefore be more profitable than regular exporting based on high priced domestic fabrics. Labor productivity can be improved through technical assistance provided by the principal. Nevertheless as long as domestic production is protected through import licenses, tariffs and administrative restraints on imports and competition, selling at home will generally be preferred over assembly activities for the U.S. market.

In the Echavarria survey none of the firms interviewed claimed that their assembly activities are more profitable than producing for the domestic market. To the contrary, a 20-30 percent profit differential was claimed in favor of the home market. 373/

Why, then, do Colombian firms engage in offshore production for the U.S. market? There appear to be two principal motivations. First, given the fact that the relevant firms do their primary business producing for the home market, they will use international assembly contracts as a marginal activity to fill gaps in production whenever other export business and/or domestic demand decline 374/ so that plant capacity will be utilized as fully as possible. Since a firm's domestic production will fluctuate because both domestic demand and its supply conditions are unstable, assembly production will tend to vary inversely. During a downturn of regular export and domestic demand, for example, the firm will want to avoid having to lay off workers because of the high cost of severance pay.

Assembly export production is a welcome manner through which to keep the work force, plant and equipment fully employed. In view of the fact that most Colombian clothing manufacturers operate at relatively high levels of capacity utilization, assembly output can be increased only at the expense of production for the home market (or regular exports). Echavarria shows that a firm's total production is considerably more stable than its components of domestic and export production. 375/

The other major motivation that Colombian firms have in doing subcontract assembly work for U.S. companies is based on non-pecuniary considerations. First, the firms believe that they receive technology from their U.S. principals. According to the Echavarria survey, the subcontracting relationship involves a continuous flow of transfer of technology. Technicians and

managers from the U.S. company regularly visit the subcontracting Colombian firm and often key persons from the Colombian assembly enterprise will spend some time at the U.S. plant in training. The technology obtained is not only relevant to the particular assembly operation but has implications for other production activities of the firm. Knowledge about production methods, including material handling and general cost reduction procedures has broader applicability than just for a specific, narrowly defined operation. Learning about quality control in both its technical and managerial aspects was also prominently mentioned in the responses to the questionnaires in the enterprise survey. 376/ Also important is the fact that the assembly relationship gives the Colombian clothing manufacturer early access to information about style changes and new trends in fashions.

Thus firms that have any ambition to improve their export capabilities might be willing to sacrifice a part of their profits by substituting assembly work for some domestic production in order to learn from their U.S. customers about cutting costs, improving quality, styling, and upgrading the skills of their labor force. Obviously, if the degree of competition at home were higher, not only those who have export potential or wish to expand their exports, but all companies would be interested in producing more efficiently and with higher quality, and could therefore benefit from engaging in export assembly work.

To sum up: export assembly operations started in Colombia during a period when conditions for exporting appeared favorable relative to producing for the home market. Assembly grew rapidly

until capacity became fully utilized. In the meantime export conditions deteriorated and selling at home became far more lucrative and convenient. Assembly production for foreign firms continued, however, primarily to utilize excess capacity, but also to take advantage of technical assistance, and thus learning of cost cutting possibilities, quality control and changes in the world of fashions. As fill-in work, assembly production became an unstable activity during the mid-1970s, fluctuating according to the requirements of Colombian firms.

The Reaction to U.S. Firms

The U.S. companies could not be expected to accept these unstable conditions which resulted in a lack of reliability of assembly output from Colombia. As can be seen from Table V-4, U.S. 807.00 imports of textiles shifted strongly in favor of other Latin American countries after 1975. Almost all textile exporters in the region benefitted. Textile assembly exports in the Dominican Republic and Costa Rica almost doubled and rose by about 40 percent in Haiti and El Salvador between 1975 and 1976. Growth of textile assembly production continued in these countries as well as in Mexico, which accounted for more than half of all U.S. 807.00 textile imports before 1976 and still about 40 percent in recent years. Between 1975 and 1978 Colombia's share of all U.S. 807.00 textile imports dropped from 9 to 5 percent, while the share of the Dominican Republic more than doubled and the importance of other countries increased as well. Thus all Latin American countries except Colombia have shared in the continued growth of U.S.

offshore assembly operations in textiles.

U.S. companies have not discontinued doing assembly business with Colombian firms despite the vagaries of long term commitments. Working with Colombian partners may still be attractive because they are usually larger companies that have long experience in apparel manufacture and have low wage scales. Nevertheless, once a U.S. manufacturer recognizes that for most Colombian companies assembly work is a marginal activity, it will probably shy away from entering into long term contracts except in the few cases where a relationship of long term trust has developed. With most others short term subcontracting will be the norm.

It is, therefore, probable that a relationship of mutual convenience has developed in offshore assembly activities between Colombia and the United States. Just as Colombian firms tend to use export assembly operations as a cushion in order to keep their labor force, plant and equipment fully utilized, so the U.S. manufacturer will be apt to use short term subcontracts with Colombian enterprises as a way to take care of the short term fluctuations in his assembly needs.

CONCLUSIONS AND POLICY IMPLICATIONS

After a dramatic expansion during the first half of the 1970s, offshore assembly in Colombia apparently has become an unstable activity. Although its foreign exchange earnings are significant, the average level is still too low to be of importance for the country's balance of payments. Given the current behavior of Colombia's assembly operators, that sector's ability to absorb

unemployment must also be questioned. For as long as assembly and domestic production are considered substitutes in a zero sum situation, employment in one can expand only at the expense of the other.

It is in this last sense that assembly activities can be viewed as making a valuable contribution: they provide the needed flexibility for Colombian clothing manufactureres to maintain their production on an even keel. When there is a downturn in domestic production, workers need not be fired - a very expensive eventuality in Colombia where high severance pay is mandatory - and machinery and equipment need not become idle. Ironically, therefore, offshore assembly, far from introducing instability, a charge frequently made in other countries, is a stabilizing element for Colombian apparel manufacturers.

On the other side, this situation has introduced instability for U.S. clothing manufacturers who have found it difficult to make long-term plans for their assembly needs in Colombia. Most of the expansion in the assembly business has therefore gone to other Latin American countries in the Caribbean basin.

The inclination, therefore, is to leave things where they are. From the Colombian viewpoint, assembly activities, although marginal within the context of the whole economy, have been of net benefit. From the U.S. manufacturers' point of view, they seem to have made a satisfactory adjustment. Yet policy changes are under way in the Colombian economy that have nothing to do with assembly operations but which surely will change the environment within which they have been carried on until now.

One expectation is that, because of past population growth, limitations in infrastructure and physical plant, urban unemployment will become a serious problem in Colombia during the 1980s. 377/ If this is so, a relative expansion of assembly production for foreign enterprises might be an inexpensive way to create employment. However, few Colombian economists would recommend policies to create extraordinary economic incentives for Colombian firms to engage in assembly operation on a greatly enlarged scale. Given the scarcity of capital, the tendency is to promote "regular" exports which contain a high proportion of national value added compared to assembly exports.

An argument in favor of assembly promotion will therefore be burdened to show that employment creation as well as other social returns per unit of investment are higher than elsewhere. For long run planning purposes, Colombian policy would probably emphasize assembly sectors which promise the highest technology transfer and developmental impact -- i.e. sophisticated electronics, rather than textiles.

Nevertheless, assembly production will benefit from the policies that have been under discussion recently to attack the broader problems that have afflicted the Colombian economy. Several recent studies have shown that the Colombian trade regime, administrative and infrastructure problems have biased production away from exports towards the domestic market. 378/ During most of the 1970s a relatively high degree of protectionism prevailed which together with the exchange rate regime and administrative obstacles made exporting relatively unrewarding. The slowing down of

investment during the latter part of the decade appeared to have contributed to the decline in international competitiveness of Colombian export industries.

While this is not the place to analyze the Colombian economy, a few of the factors should be mentioned that help explain the difficulties in instituting economically optimal policies which also could raise assembly exports and their benefits. Leaving aside the usual political obstacles in the way of liberalizing an economy, such as the powerful political influence of economically important interest groups, there are other elements that appear more specific to Colombia. One is the effort of the government to control what one study called "the other economy", the degree of smuggling or illegal exports. 379/

First, because of the reversal of the usual black market situtation, (see the appended Statistical Note), the government might find it difficult to devalue the peso faster in order to accord to the more rapid pace of the Colombian inflation relative to U.S. price rises. Second, the increase in bureaucratic obstacles may be due in part to government efforts to make smuggling more difficult. Streamlining bureaucracy might mean, therefore, relaxing restraints on corruption and illegal transactions. 380/

Some of the economic distortions caused by protection might have been aggravated by the low levels of investment in manufacturing. In part this may be due to the government's decision to give inflation fighting high priority. Monetary and credit restrictions combined with a rate of exchange policy which

facilitates certain imports and, incidentally, discourages exports, have had a restraining impact on investment during the late 1970s. Another dampening effect could be the deterioration of physical infrastructure such as roads and energy development, as the government has held back on public expenditures as another anti-inflation measure. 381/ Recently, the Colombian government has eased up on some of these restraints and a reversal of the situation may be in sight.

But suppose all the "right" policies are put into place, -- trade liberalization, faster exchange rate devaluation, administrative reforms, measures to improve the infrastructure, incentives to foster investment, etc. -- how would that help assembly activities? If everything worked well, it would mean that internal price distortions would be eliminated and exports would be encouraged. In the clothing industry, for example, it would result in domestic fabric prices being close to world prices. Under those circumstances, why not export clothing entirely made in Colombia?

As it stands now, with domestic fabric prices averaging 75 percent above world prices (according to Morawetz [1980]), it makes sense to export products made with imported fabrics. Given the low labor productivity found by Morawetz, it may even be better sense to do only assembly work with the imported cloth cut abroad and with foreign zippers, buttons and other components, and according to foreign specifications.

A look at Table V-3 makes it clear that countries that have low trade restrictions and where the domestic fabric costs are similar to world prices, export almost no assembled textile

products. Yet these are the countries that accounted for the largest U.S. imports of apparel in 1978; less than one percent of these imports from the Far East came in under 807.00. On the other hand, almost two thirds of U.S. imports from Colombia entered under 807.00. From Mexico, another high protection country, the 807 proportion was 87 percent.

While offshore assembly in clothing does not make much sense in the low trade barrier countries of Hong Kong, Taiwan, Korea and Singapore, does it mean that this is also true in other products? Not so, as can be seen from Tables IIA-2 and IIA-3. These countries excel in electronics and other assemblies of products in whose total production they cannot yet compete successfully on the international market.

The same could apply to Colombia. Reducing trade barriers does not automatically result in the possibility to compete world wide in every product. Although international competition in clothing might be possible for Colombia once protection is lowered and the other measures discussed above are taken, it will probably not be true in many other goods. These could be candidates for offshore assembly in Colombia provided that the country wanted to use assembly production to contribute to foreign exchange earnings and to employment creation. As noted on several occasions, the low capital-labor ratios make assembly generally a less expensive absorber of labor force than other manufacturing activities.

Because of past protection, production methods became inefficient and they probably cannot change quickly even after trade liberalization. Morawetz showed that not only were fabric

prices lower but labor productivity was 30-50 percent higher in East Asia compared to Colombia. He also found, however, that technical assistance from U.S. manufacturers could double labor productivity in Colombia. Therefore technical assistance and training must be an integral part of the expansion of export activities, including assembly operations. The usually close relationship between the U.S. company and the subcontracting Colombian firm make a transfer of technology particularly practical in offshore assembly production.

It must be remembered that it is not only the profit differentials between the domestic and export market that have kept Colombian firms from exporting but also the requirements of meeting strict specifications, quality standards and delivery schedules. It is in those areas where technical assistance is especially needed. If these problems can be overcome, cost reductions will naturally result, making Colombian prices more attractive for foreign firms and exporting more attractive for Colombian firms.

One way of accelerating offshore assembly production would be through foreign investment. U.S. companies would establish subsidiaries in Colombia to do the assembly operations for the parent firm. Compared to other countries, this has occurred only rarely in Colombia. Although official foreign investment controls do not appear to be more onerous in Colombia than elsewhere, 382/ foreign direct investment in general has been low in the country and historically has played an important role only in petroleum production. 383/

While the establishment of assembly subsidiaries might be a fast way to expand assembly activities in Colombia and create employment opportunities and foreign exchange earnings, it may not be an appropriate trend to promote either by Colombia or by the U.S. companies. Given Colombia's recent history, foreign companies would be under continuous pressure to raise the use of domestic materials and components in assembly production. The same pressure might also be applied to Colombian assembly firms, except that at present very few of them are exclusive assemblers. Most of these firms produce primarily for the domestic market and do some assembly work and also some general exporting. 384/ Such firms could easily meet domestic content requirements. The firms devoted to assembly for the domestic market of imported CDK (complete knockdown components), ranging from airplanes to sewing machines, are often foreign-owned subsidiaries which do run into problems created by government policy. At first they were encouraged by letting CKDs come into the country at a low duty, while the import of the finished product was either prohibited or carried high duties. Then the government kept raising the domestic content requirement and lowered the duties on the finished items without decreasing the tariffs on the CKDs commensurately. The result is a serious profit squeeze for the national market assemblers. 385/ This is less likely to happen for domestic firms which, in addition to producing for the home market, also assemble for exports.

Colombia is in a unique position regarding offshore assembly production. Its current manner of operation of combining domestic production, regular export production and assembly for exports

within one enterprise is an advantage. It permits the firm flexibility, makes it less vulnerable to demand fluctuations, and encourages the transfer of technology from one activity to the other. 386/ For the U.S. company that system is an assurance that the Colombian firm potentially could be a strong long term partner. The arms-length relationship with the Colombian subcontractor eliminates the need for heavy capital investment.

APPENDIX

A Statistical Note

Compared to many other developing countries, economic statistics are plentiful in Colombia. The problem, however, is that there are major discrepancies among some statistical series covering the same information. This is especially true in foreign trade data. Some discrepancies can be reconciled, others can be explained, still others do not appear to have an explanation. A recent, first rate study on Colombia devoted its first chapter to examining the statistical problem (David Morawetz, Why the Emperor's New Clothes are not Made in Colombia, World Bank Staff Working Paper No. 368, January 1980, Chapter 1). For example, as explained in the Morawetz study, foreign trade statistics include fictitious exports stimulated by the existing regime of foreign trade incentives. Another element is that illegal exports (smuggling) are substantial in the country. Because of the relative dynamism of the Colombian economy there is an incentive to bring the illegally earned foreign exchange back to the country. One way of doing this is to overinvoice real exports or to declare fictitious, but legal, exports. Another way of using the foreign exchange is through illegal imports. However, most unrecorded imports consist of products that compete with legal imports. The reason for smuggling them in -- apart from the motive to draw down funds in foreign accounts -- is that in an economy where large amounts of foreign exchange are obtained through underground exports, the "black market" rate of exchange will be below the

official rate. Thus black market imports can be paid for with less pesos than imports cleared by the central bank. (See also Roberto Junguito and Carlos Caballeros A. "La Otra Economia", FEDESARROLLO, Bogota 1978, also published in Coyuncura Economica, Vol. VIII, No. 4).

The concept of "textiles" used here includes clothing as well as fabric and yarn. It does not include unprocessed fibers such as cotton which is listed separately in statistical series. The textile classification in the trade data used in this study corresponds most closely to schedule 3 of the United States official import statistics (Tariff Schedules of the United States Annotated -- TSUSA numbers). Therefore the figures used here are larger than the Morawetz statistics, (which also differ among themselves because of different sources -- compare his Tables 1.1 and 1.5). For example, textile exports in Table V-2 here are three times the clothing exports given in Morvetz Table 1.1 in 1975 and 1976. (In 1973, the other year when the two series overlap, there is a twenty fold difference). (World Bank Table 8.7, citing Colombian INCOMEX data as a source, gives non-clothing textiles as $76 million and $101 million in 1975 and 1976 respectively. Added to the Morawetz clothing figures, the sum exceeds the export levels given in Table V-2 here). However, textiles imported under 307.30 are almost exclusively apparel items.

Footnotes

145. O. J. Martinez, Border Boom Town: Ciudad Juarez since 1848, University of Texas Press, 1978, pp. 131-132.

146. Free zones have existed at the border since the 1930s; the first decree regulating temporary imports and exports was published in the Mexican federal register, "Diario Oficial", September 3, 1968.

147. The exception is the textile industry whose exports are subject to the imposition of quotas by the United States. In that industry, assembly plants must have at least 51 percent Mexican ownership.

148. The only major concentration of maquiladoras which has been until recently almost entirely outside industrial parks is the one in Tijuana. Apparently commercial interests there have resisted industrial parks for fear of losing their free port status. By 1980 a few new plants were established in recently formed industrial parks in Tijuana. (Industrial parks existed in Mexico before the establishment of the maquila program).

149. The concept was first proposed by Richard Bolin in a report by Arthur D. Little de Mexico entitled, "Industrial Opportunities for Ciudad Juarez", August 1, 1964.

150. Over 1,000 maquiladoras were officially registered during that period. Some of these never started operations; many went out of business during the down turn of 1974-77. More about this later.

The maquiladora statistics are taken from published and unpublished tables of the Mexican Secretariat (Ministry) of Programming and Budget (Oficina de Maquiladoras, Departmento de Estadisticas Industriales, Secretaria de Programacion y Presupuesto). The Mexican acronym SPP will be used to designate that Ministry. Many of these tables were supplied by the U. S. Embassy in Mexico through the U. S. Department of State. Other statistics are from published and unpublished reports of the Secretariat (Ministry) of Industry and Commerce (SIC).

151. Victor Urquidi and Sofia Mendez Villarreal, "Economic Importance of Mexico's Northern Border Region" in Views Across the Border, Stanley R. Ross, ed., University of New Mexico Press, 1978, p. 153.

152. Michael Van Waas, The Multinationals' Strategy for Labor: Foreign Assembly Plants in Mexico's Border Industrialization Program, Ph.D. Dissertation, Stanford University, March 1981, note 253, pp. 195-96.

153. According to official Mexican census data, open unemployment was slightly higher in the border regions compared to the country average in 1970: 4.2 percent at the border as against 3.8 percent for the country. (J. Xirau and M. Diaz, Nuestra dependencia fronteriza, Table 11). Since these figures do not include those seeking work for the first time, they are underestimates. Urquidi and Mendez Villareal estimate the 1970 open unemployment at the border at about seven percent ("Economic Importance of Mexico's Northern Border Region," p. 154). The estimates made by two different Mexican commissions, however,

indicate for 1970 a significantly lower level of underemployment at the border than for the national average (low estimate shows 9.2 percent for the border and 16.6 percent for the nation; high estimate gives 16.1 percent for the border and 25.3 percent for all of Mexico; Urquidi and Mendez Villareal, Table 11, p. 155). Bustamante arrives at an underemployment rate of 34.3 percent at the border, by including those who work only part of the year and/or who receive less than the minimum wage scales ["Programa Fronteriza de Maquiladoras," Foro Internacional. Vol. 16, October-December 1975, No. 2 (El Colegio de Mexico), p. 187.]

154. The border region is made up of 35 municipalities located in the six states bordering the United States. Almost one-third of the border population is concentrated in Tijuana and Mexicali, two municipalities bordering California, and almost one-fifth in the largest border municipality, Juarez, the twin city of El Paso, Texas (These three municipalities accounted for half of the border population according to the 1970 census as reported by Victor Urquidi and Sofia Mendez Villareal, 1978, Table 2, p. 142).

155. Jorge A. Bustamante. "El Programa Fronterizo de Maquiladoras: Observaciones para una Evaluacion", Foro Internacional, El Colegio de Mexico, Oct.-Dic. 1975, Vol. XVI, N. 2, pp. 186-187, see also Van Waas, p. 195. Comercio Exterior de Mexico, Vol. 24, No. 5, May 1978, p. 208. Donald Baerresen, The Border Industrialization Program of Mexico, (Lexington Books, 1971) gives similar estimates for Mexican maquila wages spent on the Texas side of the border (p. 35).

156. Cited in Hearings, Committee on Ways and Means, U. S. House of Representatives, June 4, 1970, "Exhibit H", p. 3296.

157. Banco de Mexico, Indicadores Economicos, April 1979. The ratio of the surplus to total border income is referred to as the "retention coefficient." Bustamante indicated that, of each dollar that entered Mexico through frontier transactions, $.42 was retained in 1955 but only $.33 in 1970. That proportion, however, fluctuates with the relative rates of inflation, the rate of exchange and the U. S. business cycle. It went up to $. 43 in 1975 then dropped to $.27 in 1976 because of the U. S. recession and the overvaluation of the peso. After the 1976 devaluation of the peso it shot up to $.48 "retained" for each dollar sold abroad (the remaining $.52 were purchases in the border towns of the United States). It should be noted that the ratio dropped to low levels in 1980 as the Mexican inflation accelerated relative to U. S. inflation. With the peso again becoming overvalued, Mexicans found U. S. goods on the other side of the border relatively cheap, and Americans found prices on the Mexican side relatively dear. (U. N. Economic Commission for Latin America -- CEPAL, "Mexico: Notas Para el Estudio Economico de America Latina", June 5, 1981, Table 12, p. 57 and p. 58).

158. Actualidad, A Mexican Monthly Review. Vol. 2, N. 7, May 1, 1981, p. 14.

159. A large overvaluation of the peso could wipe out these surpluses.

160. The value added in December 1980 of 1,616 million pesos converted at the end-of-the-year rate of 23.3 pesos to the U. S. dollar and annualized.

161. Maquila exports are included in the "service" rather than the merchandise export category in Mexico's balance of payments statistics. They therefore do not correspond to U. S. import statistics under tariff items 807.00 and 806.30. The latter include U. S. and other non-Mexican components as well as the Mexican value added. The dutiable value of 807.00/806.30 imports should reflect Mexican value added plus non-Mexican and non-U. S. components. Therefore the value of U. S. dutiable imports from Mexico will be higher than Mexican value added figures. But there is no explanation for the larger U. S. figures compared to Mexican maquila export data as reported in Mexico's balance of payments statistics before 1976 and especially after 1977. Mexican maquila exports should be higher than the corresponding U. S. import data from Mexico because the former will include Mexican assembly exports to all destinations, not only to the United States.

The statistical discrepancies would not have been as serious, had not the 1978 Mexican balance of payments data been sharply revised. The 1976 and 1979 export figures of maquila services were revised downward by almost 40 percent so that instead of a 35 percent increase, there was a 14 percent decrease between 1977 and 1978. Even making generous allowances for the usual discrepancies between f.o.b. and c.i.f. values, and for the fact that some U.S. 807.00/806.30 imports come from Mexican assembly plants not

under the maquila regime (plants that are in a free zone and prefer to export under the free zone regime), it still would not come close to explaining the huge (60 percent) divergence between U.S. and Mexican data. Moreover the difference, as indicated above, has the wrong sign, particularly if it is considered that there must be substantial maquila exports which contain no U.S. components or otherwise do not qualify for 807.00 or 806.30 U.S. tariff exemptions.

162. More than twice as much if only those manufactures are considered that are similar to the maquila product lines.

Earnings from maquila operation and from manufactured exports are not quite comparable. Maquila services are net of U. S. components and components of other countries for whom offshore assembly activities are done (but, for example, Japanese materials for U. S. offshore assembly operations are included). They are thus net of most imports. Regular manufactured exports, however, include imported components and therefore tend to overstate net foreign exchange earnings when compared to maquila earnings.

163. See footnote 17 above.

164. In 1982 the distribution of the plants among the six towns was as follows: Tijuana 123, Mexicali 79, Nogales 59, Agua Prieta 22, Ciudad Juarez 121, and Matamoros 50. In addition to the 454 plants in these towns, there were 97 factories in other places along the border with less than twenty plants each.

165. Aerograms from the U. S. Embassy of Mexico, A-265 dated June 4, 1971, A-386 dated June 30, 1972, and A-61 of February 14, 1973.

166. Data from SPP (Secretaria de Programacion y Presupuesto).

167. Table submitted by Secretaria de Hacienda y Credito Publico to the Second Seminar on the North-South Complementary Intra-Industry Trade, UNCTAD, Mexico City, August 18-22, 1980. See also Actualidad, May 1981, p. 16.

168. Federico Balli with the collaboration of Javier Villasenor B. and Jose Meneses, "Evolucion y Perspectivas de la Industria Maquiladora en Mexico", El Colegio de Mexico, Centro de Estudios Economicos y Demograficos, paper submitted to the Second Seminar on North-South Complementary Intra-Industry Trade, UNCTAD, Mexico City, August 18-22, 1980, p. 33.

169. Unclassified section of cable 1071 dated January 21, 198[illegible] from American Embassy in Mexico City.

170. Ernesto Calderon, "Las maquiladoras de los paises centrales que operan en el Tercer Mundo," in Maquiladoras, Lecturas CEESTeM, (Mexico, probably 1981), p. 92.

171. Lecturas CEESTeM, p. 92.

172. The A. J. Bermudez Industrial Park in Ciudad Juarez was established in 1968 and has been greatly expanded since then.

173. Van Haas, The Multinationals..., p. 34.

174. See also Federico T. Barrio "El contexto historico de los programas federales para el desarrollo economico de la zona fronteriza," paper presented at Symposium on the Economic

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175. See, for example, Rhys Jenkins, "Foreign firms, manufactured exports and development strategy: The Case of Mexico," Boletin de Estudios Latinoamericanos y del Caribe, CEDLA, Amsterdam, No. 23, December 1977; Newfarmer, R. S. and Mueller, W. F. "Multinational Corporation in Brazil and Mexico," Report of the Subcommittee on Multinational Corporations of the Committee on Foreign Relations, U. S. Senate, August 1975, pp. 45-94.

176. For a discussion of the shelter plan system see M. Richard Campbell "Production Sharing, Implications for Industrial Parks in Latin America", Journal of Flagstaff Institute, Vol. III, No. 1, January 1978, p. 37. In 1980, the fees charged by a shelter plan concern varied between $2.00 - $2.50 per hour per direct labor employee. For 50 operators this could amount to about $250,000 for one year.

177. Leopoldo Solis, "Industrial Priorities in Mexico" in United Nations Industrial Development Organization, Industrial Priorities in Developing Countries, United Nations, New York, 1979, p. 1vo and Table 15, p. 139.

178. See also Mexico: Manufacturing Sector, The World Bank, Washington, 1979 and J. Xirau Icaza and M. Diaz, Nuestra dependencia fronteriza, Fondo de Cultura Economica Mexico, Archivo del Fondo 43, 1976, Table 34.

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As was mentioned above, many of the "arms-length" operations in the maquila industry were performed with machinery and equipment supplied by the U. S. contractor. Therefore this may not have been considered an investment by the Mexican maquiladora, thus lowering the capital-labor ratio. It is also not clear whether maquiladora buildings are included in fixed assets if they are leased in industrial parks.

179. The difference may be overstated because there is at least one sector in the maquila industry which cannot be classified as manufacturing: the sorting of discount coupons clipped from newspapers and mailings and used in retail stores. The value added per worker in this maquila sector may be as much as 20 percent below the average. (Data were converted to U. S. dollars at official exchange rates. Sources for maquila value added and employee data: Oficina de Maquiladoras, Departmento de Estadisticas Industriales, Secretaria de Programacion y Presupuesto (SPP), Mexico City; for all manufacturing: Mexico: Manufacturing Sector: Situation, Prospects and Policies, World Bank Study, March 1979, Table 3.4)

180. World Bank, Mexico. . . 1979, Table 3. 4, p. 98.

181. ISIC sectors 24 and 33-35 (Ibid.)

182. There are many hundreds of individual minimum wages, set by national and local commissions according to job types and geographic area. They are usually set at the beginning of each year, sometimes skipping a year, and occasionally during the year (Van Haas notes that there are close to 7,500 different minimum wages, Multinationals'. . . . p. 230).

183. The border average was calculated by Van Waas, Multinationals?..., Table 10, pp. 276-277.

184. See Van Waas, Multinationals?..., p. 251.

185. See Table III-12 for method of calculating hourly minimum wages and Table III-13 for calculation of hourly wages in assembly industries.

186. It should be noted that hourly minimum wages were calculated on the assumption that Mexican workers receive non-working Sunday pay. To the extent that the law is not followed, minimum wages would be about 15 percent lower than indicated in the tables, thus enlarging the gap with maquila wages.

In a sample of 224 maquiladoras workers in Tijuana, Monica Gambrill found in 1977-78 that 13 percent of all the workers received a wage less than the minimum. Among the unskilled it was 21 percent, (the percentages for women were higher, for men lower). About 36 percent of all workers and 20 percent of the unskilled received more than the minimum (Maquiladoras, Lecturas CeSTAM, Table 2, p. 15 and Table 3, p. 16).

Wolfgang Konig found, on the basis of a sample of 622 workers in several selected cities at the border and in the interior, that maquila wages at the border were 151 percent and in the interior of the country 124 percent of the respective minimum levels ("Efectos de la actividad maquiladora fronteriza en la sociedad mexicana," paper presented to the National Symposium on Frontier Studies, El Colegio de Mexico -- University of Nueva Leon, Monterey. January 24-27, 1979, p. 9). Actualidad, May 1981 asserts that the maquiladoras constitute 5 percent of "the national manufacturing

activity, but [receive] only 4.17 percent of employee remunerations which makes them relatively little remunerative for labor," p. 16 (author's translation). For a discussion of wage politics" see Van Haas, Multinationals..., Chapter VII.

187. The shift in the product mix toward a greater Mexican value added proportion can be considered a gain to the Mexican economy only insofar as the larger value added share is not due to an expansion of imports from third countries required by the increasing assembly of products such as T. V. receivers and parts.

188. The extreme view is attributed to the radical left "who see the maquiladora program as the most overt form of national economic servitude yet accepted by Mexico" (Maria Patricia Fernandez, "Chavalas de Maquiladora: A Study of the Female Labor Force in Ciudad Juarez' Offshore Production Plants," Rutgers University Dissertation, August 1980, p. 67).

189. There are provisions to ease this requirement as will be noted later.

190. In the interim, the maquiladora must post a bond in the amount of import duties plus potential penalties. For the latest decree see Reglamento del Tarrafo Tercero del Articulo 321 del Codigo Aduanero de los Estados Unidos Mexicanos para el Fomento de la Industria Maquiladora, October 26, 1977 (for the bond provision, see especially article 23).

191. In the cases of the city states of Hong Kong and Singapore, national integration cannot be considered a problem. But even in Singapore there has been a deliberate government policy to squeeze out the maximum from offshore assembly activities by

increasing wage levels, although it may mean losing those operations that require very low skilled labor (see the case study of the semiconductor industry below).

192. Interviews in Nogales and Ciudad Juarez, March 19-26, 1980; Balli, "Evolucion. . . , Appendix B, "Estudio de Campo;" Van Waas, p. 373; See also Federico Barrio T. , "El Contexto historico. . . ", and Secretaria de Industria y Comercio, Posibilidades Industriales del Programa de Maquiladoras, Mexico 1974.

193. See, for example, I. Little, T. Scitovsky and M. Scott, Industrialization and Trade in Some Developing Countries: A Comparative Study, Oxford University Press 1970 and B. Balassa and Associates, The Structure of Protection in Developing Countries, Johns Hopkins Press, 1971.

194. See Van Waas, Multinationals?. . . . , p. 373.

195. The 1977 decree (footnote 46, p.65) appears somewhat vague on this point. Article 3, paragraph II says that maquila status can be given to plants which are established to supply the internal market and which could undertake "temporary" imports for exports, provided that at least 20 percent of such exports are of national origin. Presumably this plant could also sell on the domestic market.

196. Quotes from unclassified telegram #3126 from American Embassy in Mexico. January 21, 1980. See also Van Waas, Multinationals?. . . . p. 372-373.

197. See among others M. P. Fernandez, "Chavalas de Maquiladora...," passim; Seligson & Williams, Maquiladoras and Migration; Wolfgang Konig, Towards an Evaluation of International Subcontracting Activities in Developing Countries, UN ECLA, 1975, p. 105 and "Efectos de la actividad maquiladora fronteriza en la sociedad mexicana," p. 13; Barresen, p. 35; M. C. Gambrill, Maquiladoras, pp. 23-26; Van Waas, Multinationals?..., Chapters 7, 8, and 9. Jorge A. Bustamante, "El Programa Fronterizo de Maquiladoras: Observaciones Para una Evaluacion," Foro Internacional, El Colegio de Mexico, Volume 16, No. 2, October-December 1975, pp. 201-204.

198. The basis for the analysis is sample surveys undertaken by the authors of the various studies. Probably the best survey with wide coverage, but only tangentially related to the present discussion, was done by Mitchell A. Seligson and Edward J. Williams; (Maquiladoras and Migration: Workers in the Mexican-United States Border Industrialization Program, University of Arizona, June 1980); it was taken in 1978 and encompassed 339 workers in six border cities and two interior cities (some questions were administered only to 279 workers). The Konig survey, made in 1974, had a wider coverage and included interviews of both, assembly and plant managers and assembly workers. A total of 31 plants in 5 border cities and 4 interior locations were in the sample as well as 622 workers in at least 11 locations. The Fernandez study covered only Cuidad Juarez and the Gambrill survey, only Tijuana. Both of these were based on samples of workers and together with the Van Waas study, which included interviews with

plant executives (but not workers) in three cities, underlie the argument which is summarized here.

199. Konig, for example, found that 45 percent of maquila workers were not previously in the labor force although they were over 1t years of age.

200. The average level of [illegible], of maquila workers in the Fernandez sample was about 7 ye[illegible], compared to 3.8 years for the Mexican worker in general (Table 2 and pp. 165-166).

201. The above-cited studies show that about two-thirds of the women workers are less than 25 years of age. In electronics the proportion is 85 percent with a median age of less than 2[illegible] years. The average age is considerably higher in the apparel industry, about 25 years (See M. F. Fernandez, Table 1, p. 163).

202. The evidence cited repeatedly in several studies was census data for 1970 and 1977, during which the official unemployment rate in the border region increased from 2.4 to 4.2 percent. The latter is still an extremely low figure, given the magnitude of underemployment in Mexico. Open unemployment seems to have increased since 1970. According to U.N. data, unemployment in the three major Mexican cities, Mexico City, Guadalajara and Monterrey averaged 6-8 percent in 1978 (7-10 percent in 1977). U.N. Economic Commission for Latin America, CEPAL, Economic Survey of Latin America 1979, United Nations, New York 1981, Table 16, p. 576.

203. Questioned by the authors, March 1980; see also the above cited surveys (footnote 54).

204. Fernandez, pp. 109-110 and Van Waas, pp. 200-201; and interviews at Mexican border, March 19-26, 1980.

205. U. S. Department of Labor, Bureau of Labor Statistics, Special Labor Force Report (SLFR) 234. Table 30, p. A-29.

206. Industry Wage Survey: Semi Conductors, Sept. 1977, U. S. Department of Labor, Bureau of Labor Statistics, Bulletin 2021, 1979.

207. For a discussion of these factors see the cited worked of M. P. Fernandez, M. C. Gambrill and M. Van Waas as well as the references given therein.

208. Monica-Claire Gambrill, for example, found in her sample of maquiladora workers in Tijuana that among those who had previous jobs, about 15 percent of the previously skilled and semi-skilled descended into the unskilled category in assembly work (Maquiladoras, Table 13). There is also an interesting intergenerational comparison which shows that about three times more fathers of assembly workers than their offspring were classified as skilled or semi-skilled. (Because the concepts were not adequately defined and the sample was not representative of all maquila workers, these data must be used with caution).

209. See, for example, Harry Braverman, Labor and Monopoly Capital, Monthly Review Press, 1974. It was applied to offshore assembly production by Van Waas, Multinationals..., pp. 70-77 and passim.

210. M. C. Gambrill, Tables 14-17. The sample data show that a significant portion of workers changed jobs within the plant and that, among those, more than twice as many went to higher

skilled positions than to lower skilled ones.

211. See Van Waas, pp. 77-78 for a brief report of upgrading of skills in a Mexican electronics assembly plant at the border, while the less skilled jobs were being transferred to a new plant in the interior where wages are lower. The same point is made in a U.S. Embassy-Mexico cable dated January 21, 1989, which refers to maquiladoras of two large U.S. companies at the border spinning off plants to the low wage interior to which the most labor intensive operations are channeled, keeping the more skilled ones in the border plants.

212. Nearly all assembly plants along the eastern part of the border with the United States are unionized (particularly in the state of Tamaulipas, including the maquiladora centers of Matamoros and Nuevo Laredo). Going west, the rate of unionization diminishes and in Ciudad Juarez, the largest assembly concentration, it is only about 50 percent. Further west, as in Tijuana, there is relatively little union activity.

213. For a detailed discussion of the role of unions in Mexico and in assembly plants in particular, see Van Waas, pp. 117-135 and passim, as well as the sources cited therein.

A majority of managers interviewed in plants without unions, indicated that they would welcome unionization in order to regularize labor relations. See also Balli, Appendix B, p. A-39 and Van Waas sources cited.

214. Balli, p. 39 and Appendix B.

215. Business Review, July 1975, "Border Industries," p. 1. See also L. Solis who gave the same job loss figure in "Industrial Priorities in Mexico," in UNIDO, 1979, p. 108.

216. In dollar terms there was a sharp decline between 1976 and 1977 due to the massive devaluation of the Mexican peso toward the end of 1976.

217. For an interesting description and analysis, see Van Haas, Multinationals, especially pp. 296-314. The turnaround of the catastrophic decline in Nuevo Laredo's assembly activities came rather gingerly in 1976, but the upturn has been slow. By 1980 the town's employment and value added in real terms were still well below half of 1973/74 levels (Mexican SPP data).

218. A whole plant is reported to have disappeared over one three-day weekend (see, for example, Business Review, Federal Reserve Bank of Dallas, July 1975, p. 5).

219. In the case of imports from U.S. subsidiaries and some other "related party" trade, the U.S. Customs Service requires a dollar estimate of Mexican cost of production, to which Customs adds an imputed profit figure in order to arrive at value added in Mexico which is dutiable under tariff items 807.00/806.30 (See Appendix to Chapter 11).

220. Interviews with the director of the Nogales Industrial Park, July 13, 1978 and March 22, 1980, with the manager of the Bermundez Industrial Park, Juarez, March 24, 1980 and several consultants specializing in setting up industrial parks.

221. The size of plants also increased, as mentioned earlier. In July 1971, the average number of workers per plant was 116, and in December 1980 it was 200 (Solis, Table 15, p. 109 and Table III-6).

222. The term used by the U. S. Department of Commerce is "Majority Owned Foreign Affiliate" (MOFA) of U. S. companies.

223. The MOFAs are taken as representative of U. S. subsidiaries operating in Mexico's assembly activities, because, as is noted in Table III-7, the maquiladoras are exempt from the Mexicanization requirement (majority Mexican ownership). Yet not all MOFAs in Mexico are in assembly production, judging by the fact that their total employment in 1977 was recorded by the U. S. Census to have been 171,000 workers, which is substantially above the official Mexican government figure of 78,433 maquila workers for that year (Table III-1).

224. World Bank, Special Study of the Mexican Economy, Volume II, May 30, 1979, Statistical Appendix, Table 2.13, p. 26; U.N. Economic Commission for Latin America, CEPAL, Economic Survey of Latin America 1980. Preliminary Summary, E/CEPAL/G.1153, April 30, 1981; Table 18, p. 26.

225. World Bank, Mexico: Manufacturing Sector, March 1979, Table 1.2.

226. In some places, tourism provokes a similar reaction, because it conjures up an image of a "nation of waiters".

227. "Mexico's Sunny Economic Climate," Special Advertising Section, Newsweek, June 1, 1981.

228. Special incentives have been considered for the establishment by the maquiladoras of complementary factories that would produce the materials and components required by them. Although not expressly stated, these incentives would be directed primarily to U.S. maquiladoras and therefore the complementary new enterprises producing the maquiladora supplies would be U.S. subsidiaries. They would not need technical assistance. From a short run economic perspective, providing incentives to induce foreign companies to make the complementary investments may therefore be less expensive than to make protected Mexican companies succeed in supplying maquiladoras. The latter, however, may pay large dividends in the future. (See the reference to the press release of April 11, 1978 by the Ministry of Patrimony and Industrial Development (SEPAFIN) reported in Comercio Exterior de México, May 1978, p. 239).

229. A survey of the possibilities for assembly component production made in Ciudad Juarez in 1975, showed a good potential for Mexican firms in lines where economies of scale existed. The result would be much more favorable for Mexican integration, if the survey were taken today and all maquila production (not only Juarez) were considered (the 1975 survey was sponsored by CONACINTRA, a Mexican equivalent of the National Association of Manufacturers).

230. The transitory decline in interior plants in 1978 was due primarily to a sharp drop in the number of plants in apparel assembly. Since both the number of workers and value added in the remaining apparel plants continued to increase substantially, it

can be assumed that the decline was due to the disappearance of small plants. The number of apparel plants in the interior doubled in 1979, exceeding the 1977 level (Unpublished SPP data; see also U.S. aerogram dated August 8, 1980).

231. Given the differences in inflation rates between Mexico and the United States, it is difficult to interpret a change in proportion over time. If prices of Mexican materials rise more than the prices of materials imported from the United States and the rate of exchange remains fixed, then the proportion of local material use may go up in value terms without doing so in physical volume terms. Thus the change in the 1976-77 period was probably a rate of exchange phenomenon. In 1976 the domestic content proportion was relatively very high due, at least in part, to the substantial over-valuation of the Mexican peso vis-a-vis the U. S. dollar. After the devaluation in October of 1976, the proportion collapsed and in 1977 was only 40 percent of the previous year for the interior plants. It has steadily increased since then. Although a part of the growth may have been due to the rising overvaluation of the Mexican peso, it can be confidently said that there has been an increase in the national content of materials used in the interior plants between 1977 and 1980. [It is noteworthy, but puzzling that despite the creeping overvalution of the peso, at the border the domestic content proportion was decreasing slightly during that period (Table III-16).]

232. The interior plants employ a slightly higher percentage of female workers than the border plants (The 1979-80 average was 82 percent compared to 77 percent at the border). This may be due

to the relatively higher apparel assembly in the interior. The apparel industry everywhere employs a greater than average percentage of women.

Seligson and Williams find that "feminine workers in the interior plants are significantly younger, better educated, and less likely to be married than their sisters who work on the border" (Maquiladoras and Migration, p. 8).

233. According to a U. S. Embassy cable from Mexico dated January 21, 1980, maquiladora problems with Mexican or U. S. customs procedures appear to have disappeared.

234. Presumably, there are no restrictions for maquiladoras to sell to third countries. Thus, Japanese assembly plants in Mexico have been exporting their output to the United States. Mexican owned maquiladoras could also sell their products assembled, say, from U.S. components to other countries (for example in Latin America).

235. Joint companies, as long as there is a Mexican majority ownership, should also be eligible for technical assistance support. In that case, technical assistance would flow from the U.S. minority to the Mexican majority partners within the company. Despite the lifting of the Mexicanization requirement of 51 percent ownership for maquiladoras, U.S. companies might nevertheless find such joint ventures attractive, if technical assistance were to be paid for (at cost), so that the Mexican side could become equally efficient partners.

236. After touring assembly plants and industrial parks in the Far East, Mexico's Secretary for Industry and Commerce gave a speech which is credited as marking the beginning of the Border Industrialization Program (May 1965). He presumably addressed Mexican businessmen when he stated that Mexico would permit the "free importation of machinery and raw materials. . . to manufacture products for exportation to world markets" (El Paso Times, May 21, 1965 as quoted in Van Waas, The Multinationals..., p. 148).

237. See for example, the introductory statement by the "Comision Intersecretarial Para el Fomento Economico de la Franja Fronteriza Norte y de las Zonas y Perimetros Libres del Pais" to the SIC report Posibilidades Industriales del Programa de Maquiladoras dated June 15, 1974 (Mimeo.); for other references see Bustamante p. 135.

238. Compare for example, the following conclusions of an article on in-bond plants in Mexico's Comercio Exterior, Vol. 24, No. 5, May 1978, p. 210:

> "The in-bond industry rests upon low wages, which make for high profits; its contribution to the economic growth of the country. . . is highly questionable, to judge by the opinion of researchers. . . Its continued presence in the country will no doubt depend on an ever-increasing number of concessions being made to investors in order to make the exploitation of the country's

human resources sufficiently "attractive"."

239. *Ibid.*

240. Bustamante reported on various requests by maquiladora members of the American Chamber of Commerce of Mexico (pp. 186-189). See also the dissertations by Van Waas and by Fernandez, *passim*.

241. L. Solis in UNIDO 1979, p. 95.

242. *Ibid.*, p. 108

243. Mexico's share of value added in assembly production among developing countries seems to have moved in a perverse fashion between 1975 when it reached a peak of 39 percent and 1980: with the devaluation of the peso in 1976 which cheapened Mexican wages in dollar terms, Mexico's share declined to about 30 percent in 1977 but recovered afterwards, reaching 33 percent when the peso started to become overvalued again. (One would have expected a decline. A slight down turn to 35 percent did occur in 1980 and may continue as the overvaluation becomes severe. See Table II-A.4)

244. Malaysia is the principal beneficiary of the relative decline of Mexico's assembly of semiconductors. Malaysia's share of world assembly production in that product group stabilized at about 30 percent during 1978-1980. Although Mexico's share dropped in the mid-1970s its physical volume of semiconductor assembly output continued to increase and was significantly higher in 1980 than a few years before (see also the smiconductor study). Among the more important items, only "office machines other than typewriters and cash registers" showed a decline in production volume for Mexico as assembly moved to Hong Kong. "Watches and clocks" may have been another

category but was never among the ten most important product groups for Mexico.

245. The Japanese share of U. S. 807.00 imports in this product group jumped from below 3 percent before 1975 to 57 percent in 1980 (Table II-A.2).

246. SIC, Boletin de Estadisticas Industriales, various issues.

247. It is, of course, possible (but not likely) that monthly data might show an employment drop of that magnitude.

248. See "Mexico Tries to Bolster Flagging Peso," Wall Street Journal, July 1, 1981.

249. Peso overvaluation may also have aggravated the effects of the 1974-75 recession on U. S. offshore assembly in Mexico.

250. "Decreto Para el Fomento de la Industria Automotriz," Diario Oficial, June 29, 1977.

251. An interesting discussion of Mexican public policy in the automotive sector is contained in "Transnational Corporations and the Political Economy of Export Promotion: The Case of the Mexican Automobile Industry" by Douglas Bennett and Kenneth Sharp, International Organization, Vol. 33, No. 2, Spring 1979.

252. While these companies come under the Mexican maquiladora regulations, it is not clear what proportion -- if any at all -- of their exports to the United States will come in under U. S. tariff items 807.00 and 806.30. It is also not clear whether Mexican balance of payments statistics will treat their sales abroad as maquiladora services and thus include only the Mexican value added or as regular exports. Since those exports are expected to be large, there is thus a good chance that Mexican and U. S. trade statistics will diverge even

further.

253. As the share of local materials in the value added in Mexico becomes larger it is likely that it will be recorded as "merchandise exports" rather than "services" in Mexico's balance of payments. In U. S. 807.00/806.30 import statistics the change will show up -- *ceteris paribus* -- as a higher dutiable value proportion.

254. See, Jorge A. Bustamante, 1975, p. 191.

255. Urquidi and Mendez, p. 142, and Bustamante, p. 191.

256. Monica-Claire Gambrill "La Fuerza de Trabajo. . . " in *Maquiladoras*, Lecturas de CEESTEM (n. d. , ca 1981), p. 29 and Table 16, p. 29.

257. Maria Patricia Fernandez, "Chavalas. . . ", Tables 7 and 8, p. 160.

258. Mitchell A. Seligson and Edward J. Williams, *Maquiladoras and Migration*, University of Arizona, 1980, p. 5.

259. Fernandez, p. 344. See also Seligson and Williams, Chapter 5.

260. Van Waas, *The Multinationals. . . .*, p. 227.

261. Seligson and Williams, Table III.2, p. 67. The migrant maquiladora workers had lived an average of 13.3 years at the border in mid-1978.

262. *Ibid.*, Summary, p. 7.

263. *Ibid.*, Summary, p. 7. The Jalisco study was done by Wayne A. Cornelius (*Mexican Migration to the United States*, Cambridge, Mass., MIT, 1978) and is discussed in Seligson and Williams.

264. Ibid., Table IV.8, p. 107.

265. Ramiro Zuniga of the Maquiladora Trade Association, speaking on National Public Television in The MacNeil/Lehrer Report, "Border Business" of March 12, 1979.

266. Seligson and Williams, Summary, p. 9.

267. The implicit criticism is probably based more on economics and politics than on geography. Many border regions between peaceful, open societies around the world have relatively strong ties with the neighbor across the border and relatively weak ties with their own national capital. It would be foolish and destructive for such societies to build barriers between them in order to eliminate what is a natural condition.

268. One could add the expansion of sales of assembly products to third countries as well, in order to diversify Mexico's markets.

269. Cf. also Bela Balassa "A 'Stages Approach' to Comparative Advantage" in Economic Growth and Resources, Proceedings of the Fifth Congress of the International Association held in Tokyo, September 1977, London, Macmillan, 1979.

270. See, for example, Folker Froebel, Jurgen Heinrichs and Otto Kreye, The New International Division of Labor, Cambridge University Press, 1980, especially pp. 24-48. and M. Van Maas, The Multinationals..., especially pp. 52-95.

271. Automation will be discussed at some length in the study of the semiconductor industry in this volume.

272. On the Mexican border there is at least one twin plant arrangement, owned by a U. S. company, in which both plants assemble the same products, but on the U. S. side, the plant is automated and on

the Mexican side, the plant operation is highly labor intensive. The U. S. manager of the Mexican plant claimed that the plant on the U. S. side produces at lower cost; nevertheless, the Mexican plant is here to stay, he said, in order to diversify the company's risks (Visit to Mexican border, March 1980).

There are other "twin" plant arrangements between Mexico and the United States, in which the U. S. plant is automated and the Mexican one is labor intensive. In most of those cases, however, the automated U. S. plant produces the component parts to be assembled in the Mexican plant by low cost Mexican labor. This can be regarded as the classical relationship in the world offshore assembly system.

273. "It still shocks Toyota officials to be told that American automakers buy parts from suppliers all over the U. S. and even from suppliers in Europe and Japan. Toyota's most distant supplier is a five-hour drive away." "An assembly line that is building subcomponents makes just the number of subcomponents needed at the next stage of production." "They have to be close to make all those deliveries every day." Quotes from "The Nuts and Bolts of Japan's Factories," by Urban C. Lehner, The Wall Street Journal, March 31, 1981.

274. The skill level of ordinary labor in an automated assembly plant may be lower than in manual assembly. Pushing a button in response to a signal requires less skill than the precision sewing of a seam at high speed (see the poignant description of a firsthand experience on a Mexican sewing machine line in Fernandez, Guadalajara..., pp. 211-214).

275. Data from 1980 World Bank Atlas.

276. 1980. Haiti: Economic Memorandum, Recent Economic, Industrial and Sector Developments, World Bank Report No. 3379-HA February 17, 1981, Table 1, p. 1. The United Nations preliminary estimates are 12.3 percent for 1979 and 12.4 percent for 1980. (CEPAL, Haiti: Notas Para el Estudio Economico de America Latina, 1980, CEPAL/Mex/1047 April 24,1981, Table 3).

On the other hand, there are strong indications that manufacturing may be seriously underestimated because of the obsolescence of the underlying samples used. See International..., Chapter II. The Inter-American Development Bank estimates manufacturing share in GDP to be between 15-17 percent (IDB, Opportunities for Industrial Development in Haiti, May 1979, p. 2). Figures of 16-17 percent for the manufacturing contribution to GDP are mentioned in Association des Industries D'Haiti (ADIH). The Industrial Sector in Haiti: Situation, Prospects and Policies, Jan. 9, 1981, p. 3.

277. For details about the role of the public sector in Haiti's assembly activities see International..., Chapter II, particularly pp. 11-17.

278. There have been occasional U.S. imports from Haiti under U.S. tariff item 807.30, which permits the duty free entry of U.S. components processed abroad. The amounts, however, were very small, usually below $50,000, and therfore constituted a trivial proportion of U.S. imports from Haiti.

279. Although the overall quota on Haitian textile exports to the United States was lifted in 1979, the new agreement still subjects several items to formal quotas.

283. Somewhat different magnitudes of exports are indicated in Table III-6 in International... The data there are from a different source than Table IV-2 here and include U.S. imports other than 807.00. While the two tables are therefore not comparable, the overall trends shown are consistent.

284. Calculated from Table 2.1 in IBRD, February 1981 and Table 1., on the basis of import price deflators given in 1981 Economic Report of the President, Council of Economic Advisors, Table B-3.

285. According to the World Bank, the industrial sector was still a net foreign exchange user as late as 1977 (Current Economic Position and Prospects of Haiti, Report No. 2165-HA, Dec. 22, 1975, paragraph 54).

286. The comparison was made with value added in assembly exports (dutiable 807.00 value - Table IV-1) so as not to count the value of U.S. components (total assembly exports were $195 million). See also International..., Tables III.5 and III.6.

287. "Sporting Goods" and "Baseballs" will be used interchangeably to designate one category.

288. Half of the "Miscellaneous" category are firms assembling stuffed toys; the others are a firm sorting coupons for U.S. manufacturers who have issed them to the public for supermarket and retail store discounts, a shoe assembly and a wig assembly firm.

289. International..., Table IV.2. In one-third of the joint ventures, the majority ownership is Haitian.

Not all the foreign owned firms are U.S. subsidiaries. There are several firms owned by foreign citizens who resile in Haiti. They could have been classified as local firms. In the classification used

here, local firms are 100 percent owned by Haitian citizens.

287. International..., pp. 114-5.

288. This does not mean that all of the output is shipped to the United States. Some of it may go to U.S. customers in Europe or Canada, at the direction of the U.S. parent company. However the amounts involved are usually a small proportion of the production that is shipped to the United States.

289. International..., p. IV.6.

290. International..., Table IV.19.

291. International..., Table IV.16.

292. International..., p. IV.4 and Table IV.5. The size differences between foreign and domestic firms and among assembly sectors is confirmed by the ranking according to square footage of factory space (International..., Tables IV.4 and IV.5).

293. International..., Table IV.6.

294. International..., Table II.7.

295. International..., Tables II.7 and IV.5.

296. Simon Fass, Families in Port-au-Prince: A Study of the Economics of Survival, Office of Urban Development, U.S. AID, Washington, D.C., September 30, 1977, pp. 109-110, as cited in International..., p. II.26. The most significant aspect of this problem is that, according to Fass, even the public sector does practice this kind of dual system, not by subcontracting out but simply by hiring people on a temporary basis and paying them lower daily wages than "regular", permanent employees even if they do the same job.

297. The labor cost to the employer is 32 percent above the wage in order to cover legal fringe benefits and social security (for details see ADIH, The Industrial Sector in Haiti, Appendix II, p. 94. The figures given were adjusted by the authors).

If workers work more than 48 hours or at night, they are legally entitled to time and one half pay. They are also entitled to a paid rest day (ADIH, The Industrial..., Table 16). Often, however, the wage laws are not enforced in Haiti and workers receive the regular rate of pay for overtime and do not receive Sunday pay. It should be recalled that most production workers in Haiti (all of them in the underlying sample) are paid on a piece rate basis. The piece rate is determined by dividing the minimum wage by a productivity norm set on the basis of time and motion studies.

298. Calculated with data in Table 2.1 of Haiti: Urban Sector Survey, World Bank Report No. 2151-HA, April 13, 1979. The table reports total salaries (in Gourdes) and number of employees according to registration in the national insurance system (OFAIHA).

299. International..., Table V.A.3.

300. Simon M. Fass "Port-au-Prince: Awakening to the Urban Crisis", Latin American Urban Research, Wayne A. Cornelius and Robert V. Kemper, editors, Volume 6, 1978, pp. 155-163.

301. International..., Table IV.10.

302. C.R. Droesch estimates Haitian productivity in subcontracting at 75-80 percent of U.S. levels (La Sous-traitance Internationale en Haiti, United Nations Industrial Development Organization, Project HAI-77-001, March 1979, p. 16).

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Richard Bolin, Director of the Flagstaff Institute, supplied the authors with hourly labor costs in Haiti and put productivity virtually at par with U.S. levels in textile and electronics for the better trained Haitian workers.

303. See Simon Fass, Families..., pp. 50-51; International Labour Office, and Haiti--Problemes de main d'Oeuvre et d'Emploi, Geneva 1976, p. 46 and World Bank, Haiti--Urban Sector Survey. Report No. 2152-HA, April 10, 1979, p. 15. The World Bank showed a 53 percent labor force participation rate in 1971. Fass found a 76 percent rate in St. Martin, a slum section of Port-au-Prince. Except for Lesotho, Haiti, with 55 percent of women in the labor force, has the highest labor force participation rate among 55 of the world's developing countries listed by Mats Lundahl (Peasants and Poverty: A Study of Haiti, St. Martins Press, New York 1979, Table 2.14)

304. Fass, Families..., pp. 50-51.

305. International..., Tables V.1 and V.2.

306. International..., Table V.4.

307. It is, of course, possible that the tasks performed by men and women in the sample were not identical.

308. See Chapter 3, p. .

309. Only six percent of the migrant workers listed assembly work as a reason for migration. About one-third came to look for work in general, another third for family reasons and more than one-fifth to go to school (International..., Table V.7).

310. International..., Table V.A.6.

311. The adult literacy rate was 23 percent in 1976, the last year for which such data are available (World Bank, "Haiti-Country Data, January 30, 1981).

312. International....., Tables IV.16 and IV.17.

313. International....., Table V.1.

314. International....., Tables V.8 and V.9.

315. International....., Table V.11; (a significant correlation is shown on p. V.15).

316. International....., Table V.10.

317. Jill Locker found 54 percent of the slum dwellers he interviewed had some schooling ("Rural-Urban Migration and the Alleged Demise of the Extended Family: The Haitian Case in Comparative Perspective," Working Paper 523, Center for Developing Area Studies, McGill University, Montreal, August 1977, p. 9).

318. International....., Table V.A.5.

319. International....., p. V.17.

320. This does not mean that all imports in these assembly activities have been replaced by domestic production. Most of the components are still foreign; in the assembly of baseball for professional games, the core materials and the glue are still being imported.

321. For example, in electronics the salaries of foremen and supervisors are 32 percent of production worker wages, while the average for the sample survey is 15 percent.

322. Both in textiles and baseballs, Haitian firms assembled more expensive U.S. components over time, which in the case of baseballs offset the effects of the increasing use of Haitian

materials. The fact that some Haitian baseball firms were sold to U.S. multinationals, may also have had something to do with the recent decline in the baseball assembly value added share. In textiles, changes in the composition of products may account for the erratic behavior of the value added share. However, brassieres remain the largest single component.

323. This is a higher level than the figure that could be derived from the 1980 dutiable value (value added) of $49 million reported by U.S.I.T.C. Assuming that about $2 million of value added of assembly output were exported to countries other than the U.S. and that wages constitute about two-thirds of value added, the assembly payroll in Haiti, was at the most, $34 million in 1980.

324. For comparison's sake, it can be noted that the total payroll of Haiti's 16,000 civil servants was about $25 million in 1977 (World Bank, December 22, 1979, Vol. II, Table 5.6).

325. International....., Table IV.20.

326. International....., Table IV.21 and IV.22.

327. International....., Table IV.23. The most optimistic in the survey were the firms assembling stuffed toys.

328. International....., Table III.3 and III.5 and Graph C.1; World Bank, Report No. 3279-HA, February 17, 1981, Table 1.13 and Report No. 3444-HA, May 13, 1981, Table A-4. All of the decline was due to the collapse of exports of "coated and impregnated textiles" which dropped by more than 60 percent between 1974 and 1975 and never recovered. It is not clear whether this was due to the imposition by the United States of import quotas.

329. The only "rise and falls" were in the following categories (entire products and/or parts) listed in descending order of magnitude: electric tubes, jewelry, recording media, valves, internal combustion engines, and watches. But even at their peak, output of the largest of these did not exceed $1.5 million with only about $300,000 of value added. In the last two product groups value added in the peak year was $16,000 or less. Information about disappearances at the plant level is not available. (Data from special magnetic tapes supplied by U.S.I.T.C.).

330. International..., Table IV.16.

331. U.S.I.T.C., 1981; World Bank; May 1981 and U.N. E.C.L.A., Economic Survey of Latin America 1980, Preliminar Summary, E/CEPAL/G.1153, April 30, 1981.

332. Based on data in World Bank, Haiti: Urban Sector Survey, Report No. 2152-HA, p. 22.

333. Bank Credit to the private sector increased from $13 million in 1970 to $13 million in 1979. According to one source, foreign banks came into Haiti mainly in response to the demand by the assembly industry (Association des Industries D'Haiti -- ADIH --, The Industrial Sector in Haiti: Situation, Prospects and Policies, Port-au-Prince, January 1981, p. 12).

334. Figure from World Bank Report No. 2165-HA, December 22, 1978, p. 23.

335. Aside from wholly owned subsidiaries, where the financial link is obvious, only where the foreign principal had an equity participation does he frequently provide financing: about half of the joint ventures reported borrowing from the U.S. contractor.

336. United Nations Industrial Development Organization, Enquete Industrielle, SI/HAI/77/801-HAITI, October 9, 1979, p. 17.

337. International..., Table II.7 based on the UNIDO report cited in the previous footnote.

338. According to our report, it may take from one day to two months for imports to clear customs, depending on who the importer is (Francisco Thoumi "Socio-political obstacles to Economic Development in Haiti", Mimeo, InterAmerican Development Bank, 1979.

339. Cf., Inter-American Development Bank, Opportunities for Industrial Investment in Haiti, May 1979.

340. AID, The Industrial Sector in Haiti, p. 54.

341. There have been allegations that firms have misused the law that permits a firm to (a) pay trainees at 60 percent of the minimum wage for a period of up to three months, and (b) fire them without severance pay within that period. By firing trainees before the three months are up and then rehiring them for another probationary period (or by shifting them around among several firms), the enterprise can cut labor costs substantially -- if trainees perform as well as regular workers (United Nations Industrial Development Organization "Export Processing Zones in Developing Countries", UNIDO Working Paper on Structural Changes No. 19, August 1980, p. 15).

Data indicate that while about 40 percent of the assembly labor force were trainees in 1974, in 1976 the proportion was down to a little over 10 percent (Leslie Delatour, "The Evolution of International Subcontracting Industries in Haiti", Paper presented at the UNCTAD Seminar on North-South Intra-Industry Trade, El Colegio de Mexico, July 16-20, 1979). In the 1980 survey, about half of the firms

interviewed said that they use trainees for a probationary period. This is particularly true in electronics. (International..., p. IV.26).

342. The current practice, however, is to pay trainees the regular minimum wage; the only savings would be part of the fringe benefits. International...Op. Cit.

- 343. There is now an Investment Promotion Office (IMAPI) and an Industrial Development Bank (IDAI). It might be useful to merge the two into one institution in order to improve coordination and avoid duplication of efforts.

- 344. The government of the Dominican Republic, a country that has recently become heavily involved in offshore activities, explicitly allows assembly plants to sell up to 20 percent of their output on the domestic market against payment of a proportion of the applicable customs duties.

- 345. But this might have been due to seasonal rather than cyclical factors.

- 346. See Un Economic Commission for Latin America, Notas para el Estudio Economico de America Latina, 1980. CEPAL/MEX/1047, April 24, 1981, p. 13.

347. This, despite the fact that some of them were operatingbelow capacity at the time of the survey, (probably due to seasonal factors).

348. Based on monthly U.S. Census Bureau computer printouts, Haitian value added in 807 exports to the United States during the first half of 1981 was running about 13 percent above the 1980 level.

349. U.N. Economic Commission for Latin America, Economic Survey of Latin America, 1979, Santiago, Chile 1981, p. 299.

350. Compare, however, the information presented in ADIH, The Industrial Sector in Haiti, which indicates that Haitian wages are coming close to those of its neighbor country the Dominican Republic. (Tables 10,11,13,15 and 16).

However, Haiti may be prejudiced if the bureaucratic difficulties do not ease. The case was reported of a clothing exporter moving from Haiti to Mexico despite the fact that Mexican wages were more than double the Haitian levels because the turn around time between the cut fabric import and the sewn export was at least two weeks in Mexico (D. Morawetz, Why the Emperor's Clothes are not Made in Colombia, World Bank, 1979, p. 230).

351. UNECLA, Economic Survey of Latin America 1979, p. 299, n. 9.

352. Estimated on basis of UN Economic Commission of Latin America, Economic Survey of Latin America 1979, Santiago 1981, and "Economic Survey of Latin America 1980", Preliminary Summary, 30 April 1981; and World Development Report 1981, World Bank 1981.

353. Banco de la Republica as reported in World Bank, Economic Position and Prospects of Colombia, 1981, Vol. III, Statistical Appendix, Table 3.7.

354. The reasons for this wide variation is that it is difficult to compare the 807.00 series in Table V-2 with total textile exports. The dutiable values are the net assembly exports to the United States, after deducting the value of U.S. materials. Total textile exports, however, contain imported fabrics used in the production of

non-assembly textile exports. (Because of price differences, it is quite usual to use foreign materials in clothing exports. See Morawetz [1980], pp. 114-126.) Therefore, it could be argued that comparisons with total 807.00 values (including the U.S. components) might be appropriate. Thus, in 1975, for example, the assembly share of textile export earnings is at least 7 percent (if only the dutiable value or value added in Colombia is considered) and 23 percent if the total assembly value (including U.S. materials) are taken. The true percentage is probably somewhere in between. (Table V-2)

355. The dutiable value proportion of U.S. 807.00 textile imports tends to be higher for Colombia compared to other Latin American countries, indicating primarily a product mix where wages are higher relative to U.S. materials than elsewhere in the region. In the Philippines, however, value added (dutiable value) has tended to run close to 90 percent since 1974, because most of the value now consists of making Philippine ornaments on the brassieres and girdles. (See Table V-4).

356. As explained in chapter I, the U.S. component must be identifiable and unprocessed in order to qualify for 807.00

357. The 1979 data are from U.S. Bureau of the Census, U.S. Imports for Consumption and General Imports 1979, FT 246, 1980.

358. Warren Hoge, "Publishing: How Colombia Popped Up From the Crowd", New York Times, August 30, 1981, p. F-23.

359. For details on the Plan Vallejo see Echavarria (1980) pp. 18-31. The export subsidy system (Certificado de Abono Tributario or CAT) which provides for direct tax credits, is also described therein.

360. For a detailed discussion of these problems see Morawetz (1980), particularly pp. 148-149.

361. Free Trade Zones and their problems are discussed in detail in Echavarria (1980) pp. 33-51.

362. Echavarria (1980). Table 22.

363. Echavarria (1980) p. 134. He also found (p. 119) a few Colombian companies which exported on the basis of their own specifications and one firm maintained its own warehousing and distribution system abroad. However, it is likely that this was done for regular clothing exports rather than for assembly subcontracts.

364. Morawetz (1980) p. 83.

365. Echavarria (1980), p.133.

366. Echavarria (1980), p. 126.

367. Morawetz (1980), Table 1.1; World Bank, Economic Position, Table 8.7.

368. Echavarria (1980), Table 8.

369. As discussed in the Mexico chapter, a case could be made that in a U.S. business downturn, demand for offshore production would increase in order to cut costs. The 1975 increase in U.S. assembly imports from Colombia is consistent with this argument.

370. Echavarria (1980), p. 147.

371. Morawetz (1980).

372. Morawetz (1980), pp. 104-126.

373. Echavarria (1980), p. 139.

374. . Domestic production may also decline because of supply difficulties, such as the temporary unavailability of certain domestic fabrics or other inputs.

375. Echavarria (1980), pp. 133-155.

Assembly production serves not only to compensate cyclical fluctuations in export and domestic demands, but also as a cushion against short run seasonal fluctuations.

376. In his survey, Morawetz also found technical assistance to be of great value to clothing manufacture in general. "In one case, the number of minutes needed to sew a jacket fell from 146 minutes to 90 minutes"; in another case, labor costs have been halved since technical help from the U.S. parent company has been received (Morawetz (1980), p. 73). Although the references are to firms engaged in traditional exporting, the conclusions apply to assembly exporting as well and support the findings of the Echavarria survey.

377. See World Bank (1981).

378. See Carlos Diaz Alejandro, Foreign Trade Regimes and Economic Development: Colombia, Columbia University Press for the National Bureau of Economic Research, New York 1976; recent World Bank reports (1981), and particularly Morawetz (1980) and sources cited therein.

For more general discussion of the anti-export bias in developing countries, see Bela Balassa, "Export Incentives and Export Performance in Developing Countries: A Comparative Analysis", Weltwirtschaftliches Archiv, Vol. 114, No. 1, 1978, pp. 24-61.

379. Junguito F. y Caballero C. (1978) "La Otra Economia". See also "A Statistical Note" appended to this chapter.

380. It can be argued that smuggling -- except of illegal products such as drugs -- can keep the economy somewhat open and thus avoid the excesses of protection. Importing with black market dollars

"legal" goods that compete with national production will tend to keep domestic prices down. (See also World Bank 1981, P. 20).

381. Compared to other countries in the region Colombia has borrowed only moderately from abroad. Therefore the country did not have as many external resources available to increase investment and develop infrastructure as other countries that have gone more heavily into debt.

382. In order to help decentralize industrial activities, foreign direct investment is off limits in Bogota, Medellin and Cali (World Bank [1981] p. XII).

383. Echavarria (1981) devotes a large section to the analysis of the low foreign investment phenomenon in Colombia (pp. 59-84).

384. Most of such exports go to Andean Pact countries, primarily Venezuela.

385. For a detailed discussion of assembly for the domestic market, see Echavarria (1980), pp. 159-175 and ff.

386. For the sake of Colombia's economic development it might be useful to break away from the zero sum division between domestic and assembly production. Assembly activities could then respond more easily to foreign demand.

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AD-A113 966 A NEW LOOK AT OFFSHORE ASSEMBLY: THE INTERNATIONALIZATION OF INDUSTRY(U) DEPARTMENT OF STATE WASHINGTON DC OFFICE OF EXTERNAL RESEARCH

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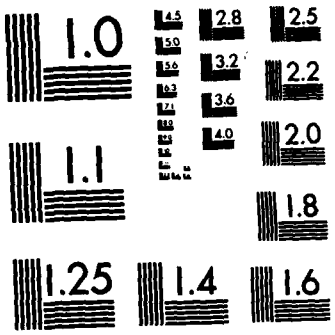

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

SUPPLEMENTARY

INFORMATION

Errata

AD-A113 966

Annex B is under seperate

cover as AD-A123 325.

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