

The Competitive Position of U.S. Manufacturing Firms *

Introduction

The decline in the U.S. shares of world exports and world manufactured goods exports since the 1950s has often been noted and commented on as a measure of the declining competitiveness of the United States. While that interpretation is questionable for a number of reasons (see Lipsey, 1984), we will use the term here for convenience. Our main purpose in this paper is to distinguish between the trade of the U.S. as a geographical location and the trade of U.S. companies, wherever their production takes place, and to analyze the trends in these two aspects of U.S. competitiveness and comparative advantage. While exports from the United States had declined by 1977 to less than 15 per cent of world exports of manufactures, exports from all locations by U.S. multinational firms accounted for more than 1/5 of the world total, and exports by all U.S. firms for more than 1/4.¹

Exports by American owned and managed firms thus fared well, while exports from the territory of the U.S. did not. The implication is that the deterioration of the U.S. position in world trade, at least for the decade ending in 1977, was not due primarily to deficiencies in management or declines in technological leadership, as is sometimes claimed.

The share of world exports originating in the territory of the U.S. reflects U.S. competitiveness, as determined by the characteristics of

* The research reported on is part of the NBER's program in International Studies. This paper was prepared as part of the NBER's studies of U.S. Trade Policy, Competitiveness, and Capital Mobility in the World Economy (NSF Grant No. PRA-8116459). Any opinions expressed are those of the authors and do not necessarily represent those of the National Bureau of Economic Research or the National Science Foundation.

¹ The data on multinational firms are mainly from the 1957, 1966 and 1977 official surveys of U.S. multinational enterprises (U.S. Department of Commerce, 1960, 1975 and 1981). To match the definitions used in these surveys, the scope of "manufactures" in this paper includes manufactured foods and edible oils but excludes manufactured fuels.

the U.S. domestic economy. These include U.S. monetary and fiscal policy, through effects on exchange rates and prices, and U.S. wage and productivity behavior.

The share of U.S. companies in world exports, on the other hand, is an indicator of U.S. companies' competitiveness reflecting the firms' own characteristics, such as their managerial and technological abilities and skills. These can be exploited by U.S. companies by producing in the U.S. or in foreign countries. A policy aimed at affecting U.S. domestic inflation or exchange rates may affect the U.S. share of exports, while one aimed at technological advantage, such as subsidization of R & D, might have more influence on the share of U.S. firms in world production, wherever it is located, and the share of U.S. firms in world exports, wherever they are produced. This outcome would fit with the now common belief that it is the existence of firm-specific assets, particularly knowledge, technology, and management techniques, that accounts for much of the phenomenon of direct investment.

We will refer in this paper to two characteristics of the U.S. and of U.S. firms. One is their competitiveness, a term we will use, as mentioned above, as shorthand for shares in world exports of manufactured goods. The other is their comparative advantage, which we will use as shorthand for the industry or commodity distribution of their exports, relative to those of other companies or of the U.S. and other countries.

Shares in World Exports

Several indicators of trends in the shares of the U.S. as a geographical entity, of U.S. firms, and of U.S. multinational firms in world exports of manufactures are given in Table 1.² The decline in U.S.

² The meaning of these terms is defined by the following:

	Exports of		
	U.S. Multinationals		Other U.S. Firms
	by Parents in U.S.	by Affiliates Abroad	
U.S. Exports	X		X
U.S. Firm Exports	X	X	X
U.S. Multinational Enterprise Exports	X	X	
Parent Exports	X		

shares of exports by all market economies and by developed countries, frequently cited as evidence of falling U.S. competitiveness, was more than 40 per cent over the twenty years from 1957 to 1977, and was large in both halves of that period (Lines 1 and 2). The share of U.S.-owned firms, including operations in the U.S. and overseas, also declined, but the change was much smaller, only about half as large (Lines 3 through 6). The source of the difference between the two sets of ratios is suggested by the figures for U.S. multinational enterprises (Lines 7 through 12), although most of them are available only for 1966 and 1977. While the share of U.S. firms in world exports declined, the share of U.S.-owned multinational enterprises remained constant or increased slightly. That difference between the share of multinationals and that of all U.S. firms could have reflected both the export performance of firms that were already multinational in 1966 and the entry of additional U.S. firms into status as multinationals. The sources of difference cannot be precisely distinguished, but we have some indication that the latter element was probably not the major one.³

For MEs we can distinguish between their exports from the U.S. (parent exports) and their exports from foreign production locations. The shares of parent company exports from the U.S. in world and developed-country exports of manufactures (Lines 13 and 14) declined between 1966 and 1977, but by much less than U.S. exports in general, as was clear from the increase in parent companies' share of U.S. exports. What produced the constancy or small gains mentioned above in U.S. multinationals' shares in world and developed-country exports were the substantial increases in the shares of U.S.-owned overseas affiliates in exports of countries other than the U.S., this in a period when the exports of these countries were growing much faster than U.S. exports. The shares of majority-owned affiliates in world exports rose from about 6 per cent in 1957 to 9½ per cent in 1977 (Line 16) and

³ The number of manufacturing company parents recorded in 1977 (1,841) was actually smaller than the number of reporters recorded in 1966 (1,872). The figures cannot be regarded as conclusive because the definition of a reporter in 1966 was not identical to that of a parent in 1977, and it is likely that some 1977 parents filed multiple reporter forms in 1966, exaggerating the apparent decline in numbers of parents. However, the number of such multiple reporters within firms was not large enough in 1966 to negate the implication that it was the greater success of multinational firms in increasing exports rather than a tendency for more U.S. firms to become multinational that accounted for the rise in the multinationals' share in exports. Furthermore, there is other evidence for the relatively greater export growth of multinationals. U.S. industries with high proportions of firms not investing abroad have tended to be those having severe problems with import competition. And within industries, multinational firms have tended to grow more rapidly than others. (LIPSEY, KRAVIS, and O'CONNOR, 1983).

TABLE 1

INDICATORS OF THE SHARES OF THE U.S., U.S. FIRMS,
AND U.S. MULTINATIONAL ENTERPRISES IN WORLD EXPORTS OF
MANUFACTURED GOODS 1957, 1966, AND 1977

	Comparable Data			Best Estimate
	1957	1966	1977A	1977B
<i>Exports from the U.S.</i>				
1. % of World Exports	21.3	16.4	12.3	14.4
2. % of Developed-Country Exports	25.7	18.7	14.5	16.7
<i>Exports by U.S. Firms incl. Majority-Owned Affiliates</i>				
3. % of World Exports	25.8	23.0	19.9	23.5
4. % of Developed-Country Exports	30.9	25.8	22.4	26.2
<i>Exports by U.S. Firms incl. All Affiliates</i>				
5. % of World Exports	NA	23.9	21.3	25.2
6. % of Developed-Country Exports	NA	26.8	23.8	27.8
<i>Exports by U.S. Multinational Enterprises incl. Majority-Owned Affiliates</i>				
7. % of World Exports	NA	16.9	17.0	20.2
8. % of Developed-Country Exports	NA	18.8	19.1	22.4
9. % of Developing-Country Exports	0.91	3.6	5.1	6.5
<i>Exports by U.S. Multinational Enterprises, incl. All Affiliates</i>				
10. % of World Exports	NA	17.8	18.5	21.9
11. % of Developed-Country Exports	NA	19.8	20.5	24.0
12. % of Developing-Country Exports	NA	4.2	7.0	8.9
<i>Exports by U.S. Multinationals (Parents) from the U.S.</i>				
13. % of World Exports	NA	10.3	8.9	10.4
14. % of Developed-Country Exports	NA	11.7	10.4	12.1
15. % of U.S. Exports	NA	62.7	71.6	72.5

TABLE 1

(concluded)

	Comparable Data			Best Estimate
	1957	1966	1977A	1977B
<i>Exports by U.S. Majority-Owned Affiliates</i>				
16. % of World Exports other than U.S.	5.8	7.9	9.4	11.4
17. % of Developed-Country Exports other than U.S.	7.1	8.7	10.3	12.3
18. % of U.S. Multinational Enterprise Exports	NA	39.3	48.3	48.3
19. % of U.S. Firms' Exports	17.6	28.9	41.5	41.5
<i>Exports by All U.S. Affiliates</i>				
20. % of World Exports other than U.S.	NA	9.0	11.1	13.4
21. % of Developed-Country Exports other than U.S.	NA	9.9	11.9	14.2
22. % of U.S. Multinational Enterprise Exports	NA	42.4	52.4	52.4
23. % of U.S. Firms' Exports	NA	31.5	45.5	45.5

All Data are from Table A-1

Line: 1: Line 3 ÷ Line 1
 2: Line 3 ÷ Line 2
 3: Line 18 ÷ Line 1
 4: Line 19 ÷ Line 2
 5: Line 20 ÷ Line 1
 6: Line 21 ÷ Line 2
 7: Line 14 ÷ Line 1
 8: Line 15 ÷ Line 2
 9: Line 10 ÷ Line 4
 10: Line 16 ÷ Line 1
 11: Line 17 ÷ Line 2
 12: (Line 10 plus Line 13) ÷ Line 4
 13: Line 7 ÷ Line 1
 14: Line 7 ÷ Line 2
 15: Line 7 ÷ Line 3
 16: Line 8 + (Line 1 minus Line 3)
 17: Line 9 + (Line 2 minus Line 3)
 18: Line 8 + Line 14
 19: Line 8 ÷ Line 18
 20: (Line 8 plus Line 11) ÷ (Line 1 minus Line 3)
 21: (Line 9 plus Line 12) ÷ (Line 2 minus Line 3)
 22: (Line 8 plus Line 11) ÷ (Line 16)
 23: (Line 8 plus Line 11) ÷ (Line 20)

increased in both developed- (Lines 17 and 21) and developing- (Lines 9 and 12) countries' exports. The latter gain was particularly large, from less than 1 per cent in 1957 to over 5 per cent in 1977. If we include our rough estimates for exports by minority-owned affiliates, which must also have reflected to some degree the firm-specific advantages of the U.S. multinationals, the increases were even larger between 1966 and 1977.

Another way of putting this development is that there was a large shift in the geographical origins of exports by U.S. firms. For U.S. companies in general, the share of exports supplied by the overseas affiliates of multinationals increased from 17½ per cent in 1957 to over 40 per cent (over 45 per cent including minority-owned affiliates) in 1977 (Lines 19 and 23). For the MEs, the share of their exports supplied from majority-owned affiliates outside the U.S. rose from less than 40 per cent in 1966 to almost half in 1977 and the share from all affiliates reached over half (Lines 18 and 22). Thus U.S. firms overcame some of the relative decline in the competitiveness of the U.S. as a production location by shifting to other countries the sites from which they exploited their firm-specific competitive advantages. Exports of U.S. firms other than multinationals dropped from 6.1 per cent of world exports in 1966 to 3.5 per cent in 1977 (Line 2 minus Line 1).

The Competitiveness and Comparative Advantages of U.S. Multinationals

The competitiveness of U.S.-owned multinational firms might be best represented by their shares in worldwide production and their comparative advantage by the distribution of their production among various industries, as compared with production by others. However, since production data are not readily available on a comprehensive basis, we have relied on information about shares in worldwide exports and exports of individual industry groups.

In assessing the role of U.S. multinationals, we examine separately their exports from the U.S. compared with those of non-multinational U.S. firms, their exports from other countries compared with those of non-U.S. firms, and their worldwide exports compared with those of other U.S. and foreign firms. The first comparison, between U.S. exports of multinational (parent) and non-multinational firms, reflects the effects of multinationality. Worldwide production and distribution

facilities may lead to an increase in the firm's share of foreign markets, part of which may come through exports from the United States of components or smaller-volume elements of a line of products. On the other hand, the multinational firm, even if it has a comparative advantage in an industry, may substitute exports by subsidiaries in other countries for exports by the parent from the U.S. These choices depend on location-specific rather than firm-specific advantages.

The second comparison, between exports of affiliates and those of non-U.S. firms from foreign countries, should reflect the advantages of the U.S. base for a company: the factors that make U.S. firms competitive with foreign firms producing in the same location. This comparison should reflect firm-specific competitiveness because location-specific influences have been eliminated except for interactions between firm-specific and location-specific factors.

The third comparison is between exports by U.S. multinational firms from all locations and all other exports including those of non-multinational firms from the U.S. and of non-U.S. firms from foreign countries. This should give the best measure of U.S. firms' comparative advantage, because it eliminates from the comparison the effects not only of location-specific advantages themselves but also of any interactions between firm-specific and location-specific advantages.

In making these three sets of comparisons we rely on data on the exports of U.S. multinationals by country of origin from official surveys and on U.S. export data for the U.S. and host countries which we have reclassified to make reasonably comparable with the multinational export data. The latter are available by country only for seven broad manufacturing groups. We can, therefore, identify the comparative advantage of U.S. multinationals from export data only at this level and not, as would be desirable, for a more detailed classification.

Exports from the U.S. by U.S. Multinationals and by Other U.S. Firms

The exports of non-multinational U.S. firms should reflect the competitiveness and the comparative advantages of the U.S. as a production location. Exports from the U.S. by U.S. multinationals (parent exports) reflect the combination of the influence of the U.S. production location and of the multinational nature of these firms. The

distributions of exports by the two types of firms are compared in Table 2 in two ways. One is based on exports classified by commodity group, the preferable way, since it is the basis for classifying aggregate U.S. exports and should, therefore, give better estimates for exports by non-multinational firms. The second is by industry group of parent firm; this is the only comparison that can be made for 1966 as well as 1977, and for this purpose we also calculate aggregate exports in such a way that figures for the two years are comparable.

TABLE 2
INDUSTRY DISTRIBUTION OF EXPORTS FROM THE U.S., BY U.S. MULTINATIONAL COMPANIES AND OTHER U.S. FIRMS 1966 AND 1977

Exports by	Total Mfg.	Foods	Chemicals	Metals	Machinery	Transport Equipment	Other Mfg.
1977, Based on Data Classified by Commodity Group							
Multinational Companies	100.0	5.3	11.2	6.0	34.4	28.7	14.5
Other Firms	100.0	8.4	16.6	5.8	27.2	13.6	28.4
Multinational Exports as % of All U.S. Exports	72.2	62.1	63.6	72.8	76.6	84.6	57.0
1977, Based on Data Classified by Industry Group of Parent							
Multinational Companies	100.0	3.8	13.6	6.0	29.8	32.1	14.7
Other Firms	100.0	15.5	9.3	5.5	37.5	5.5	26.9
Multinational Exports as % of All U.S. Exports	70.5	37.0	77.8	72.5	65.6	93.4	56.8
1966, Based on Data Classified by Industry Group of Parent							
Multinational Companies	100.0	4.7	14.5	9.1	29.6	27.1	15.0
Other Firms	100.0	15.8	11.8	7.3	32.5	8.7	23.9
Multinational Exports as % of All U.S. Exports	65.8	36.6	70.2	70.7	63.6	85.6	54.7

Source: Appendix Table A-3.

It is clear from the commodity-group classification that the largest differences between multinational and other U.S. firms in 1977 were in the shares in transport equipment and "other manufacturing" exports. Despite the fact that motor vehicle companies (but not aircraft com-

panies) were in one of the most multinational of U.S. industries, in the sense of having the highest share of its activity overseas, multinationals accounted for almost 85 per cent of exports of transport equipment from the U.S., about 2/3 of which was by motor vehicle and parts manufacturers. This is an industry in which multinationals appear to have had an advantage relative to other firms in exporting from the U.S. Almost all of the exports of motor vehicle companies were of parts and components to their own overseas affiliates, while aircraft exports were almost entirely to unaffiliated foreigners (Kulchycky and Lipsey, 1984, Table 2). The other case of a large advantage for multinationals is machinery, also an industry in which a large part of companies' activity tended to be overseas.

On the other side, in foods, chemicals, and other manufacturing, especially the last, either multinationals did not have any advantage over other U.S. firms in exporting from the U.S., or any such advantages were out-weighed by the advantages of other locations from which they could export.

To observe changes in comparative advantage between 1966 and 1977, we can use only the data by industry group.⁴ Between 1966 and 1977 there was a general increase in the competitiveness of U.S. multinationals relative to other U.S. firms, as shown by the increase in their share of U.S. exports. This increase took place in every industry group, but it was substantial only in chemicals and transport equipment. As can be seen from the industry distribution of exports, there was an apparent decline in U.S. comparative advantage in foods, chemicals, and particularly metals, shared by both multinationals and other firms. There was a gain in the comparative advantage of multinational firms relative to non-multinational firms, in transport equipment and a shift toward machinery on the part of non-multinational firms.

⁴ These suffer from a defect that makes them more suitable for observing changes over time than for comparing the relative advantages of the two groups of U.S. firms. The classification of parent exports by parent industry places a substantial amount of exports under the wrong category for comparison with aggregate U.S. export data. A notable example is that over 20 per cent of exports by the transportation equipment industry are machinery, and over a quarter of machinery exports are made by parent companies in other industries.

Exports by U.S. Firms' Foreign Affiliates and their Host Countries

Further evidence on the competitiveness and comparative advantages of U.S. multinationals is given by the comparison between exports by their affiliates and exports by other firms in the same areas. The distribution of exports from an area by both U.S. and other firms reflects the comparative advantages of that area. The differences in distribution between U.S. affiliates and other firms reflect the comparative advantages of the U.S. firms relative to others in that area. Finally, the shares of U.S. firms in exports can be thought of as reflecting both the comparative advantages of U.S. firms and their competitiveness relative to other firms. For example, U.S. firms might account for a large part of exports of food products from an area or country because of the superior marketing abilities of U.S. companies in general, but the share of food products in U.S. firms' exports from that area might be low relative to that of local firms because U.S. firms have no comparative advantage in that industry.

These calculations have been performed separately for several areas because U.S. affiliates' relative competitiveness and comparative advantage may differ among countries. The areas are Canada, developed countries other than Canada, developing countries, and two groups of developing countries that make up much of the set of countries often referred to as NICs, or newly industrializing countries. The data for majority-owned and minority-owned (where available) U.S. affiliates are summarized in Table 3.

Aside from Canada, where the ratios tend to be distorted by the Canadian-U.S. Auto Agreement,⁵ several results are common to most areas. U.S. multinationals tend to have a comparative advantage in the machinery industry. It is particularly large in developing areas, where it applies to both electrical and non-electrical machinery, but exists in developed countries also for the latter. U.S. firms also appear to have comparative advantages relative to local firms in chemicals and transport equipment in the developed countries and the developing countries as a group, but not for transport equipment in the Asian NIC's, where the other exporters probably include many affiliates of Japanese auto companies.

At the other side of the scale, U.S. ME's did not seem to have any comparative advantage over local and other foreign firms in the

⁵ The agreement encourages two-way trade between auto parents and their affiliates, to a far larger extent than in other industries or countries. A calculation using net exports for these companies, as an approximation to net exports for these products, might give a more accurate picture of U.S. firms' comparative advantage.

manufactured foods and metals industries. That is not to say that no U.S. firms had such advantages over local firms, since their presence in these countries implies the presence of some firm-specific advantages. However, comparative advantages in foods and metals industries do not seem to be characteristic of U.S. multinationals as a group.

The competitiveness of U.S. multinationals as a group is suggested by their shares in total manufactured exports. The shares grew in both developed and developing countries, but the most noteworthy increases were in the latter. The U.S. firms' shares almost doubled despite the fact that these countries' exports were increasing rapidly relative to those of other countries. The data thus suggest that the U.S. affiliates probably played an important role in these export expansions.

One of the major changes in comparative advantage that took place between 1966 and 1977 was the shift toward machinery industries in developing country exports. Both U.S. and non-U.S. firms moved strongly in this direction, but the change was larger for the U.S. firms, even in percentage terms, despite their much higher initial levels. In developed countries, on the other hand, the U.S. firms' comparative advantage in this industry declined while that of foreign firms rose, remaining, however, well below the U.S. firms' level. In transport equipment, U.S. multinationals retained some advantage over others in both groups of countries, but there was some catching up by foreign firms within developed countries. Outside of machinery and transport equipment we find mostly declines in the comparative advantage of U.S. affiliates in developing countries, and mixed results in developed countries.

There is no evidence of any tendency for U.S. affiliates to gravitate toward the distribution of domestic firm exports over time as far as we can judge, given the number of missing observations for 1966. The 1977 affiliate export pattern was more similar to that of 1966 than to the domestic firm product distribution in either 1966 or 1977. The product composition of affiliate exports also was less like that of the domestic firms in 1977 than in 1966.⁶

⁶ The coefficients of correlation between sets of export shares were $r_{77M/66M} = .58$, $r_{77M/CCD} = .43$, $r_{77M/77D} = .25$, and $r_{66M/66D} = .66$, where M = an industry's share in exports by majority-owned U.S. affiliates and D the same share for non-U.S. and U.S. minority-owned firms, and 77 and 66 refer to 1977 and 1966. The full data set would have consisted of 5 product shares in exports (the "other" category was excluded) for each of 29 countries of which 16 were developed and 13 developing. The number of available pairs of comparable shares was around 75 due mainly to the suppression of data by the original source owing to disclosure rules. The most serious omissions are some 1966 data for the metals, machinery, and transportation equipment industries for the developing areas and U.S. affiliate exports from Japan in the all-area totals. A very large part of U.S. affiliate activity in Japan was in minority-owned affiliates, for which trade data were not collected in the Commerce Department surveys.

TABLE 3

INDUSTRY DISTRIBUTION OF EXPORTS FROM COUNTRIES OUTSIDE THE U.S.: U.S. MAJORITY-OWNED AND MINORITY-OWNED AFFILIATES AND NON-U.S. FIRMS, 1966 AND 1977

	Total Manufacturing	Machinery							Other Mfg.
		Foods	Chemicals	Metals	Total	Non-Elect.	Elect.	Transport Equipment	
<i>Developed Countries except Canada</i>									
1977	100.0	5.5	18.8	4.3	32.1	23.3	8.8	24.2	15.1
Majority-Owned U.S. Affil.	100.0	4.6	18.0	20.3	21.9	15.5	6.4	16.2	19.0
Minority-Owned U.S. Affil.	100.0	10.8	10.1	13.9	23.2	13.8	9.4	16.7	25.3
Non-U.S. Firms	100.0	7.8	12.0	14.5	23.1	14.3	9.2	17.6	25.0
Non-U.S. Firms ^a	100.0	6.7	14.2	4.8	12.2	14.0	8.9	12.1	6.3
U.S. Firms as % of Total	9.6								
1966	100.0	4.8	12.4	4.5	37.3	NA	NA	28.8	12.2
Majority-Owned U.S. Affil.	100.0	1.2	8.3	9.2	31.7	NA	NA	38.6	11.0
Minority-Owned U.S. Affil.	100.0	13.7	9.9	15.8	20.0	NA	NA	12.1	28.5
Non-U.S. Firms	100.0	2.5	9.0	2.6	13.1	NA	NA	17.0	3.4
U.S. Firms as % of Total	7.6								
<i>Canada</i>									
1977	100.0	2.4	3.0	6.3	7.5	4.7	2.8	62.2	18.6
Majority-Owned U.S. Affil.	100.0	3	6.2	20.4	8.1	3.4	4.7	1.6	63.4
Minority-Owned U.S. Affil.	100.0	6.8	10.0	18.4	13.4	10.6	2.8	12.5	38.9
Non-U.S. Firms	100.0	26.1	25.0	28.4	37.1	31.6	51.8	83.2	35.7
U.S. Firms as % of Total	51.1								
1966	100.0	5.5	8.5	2.2	10.8	NA	NA	42.1	30.9
Majority-Owned U.S. Affil.	100.0	3.9	2.4	1.4	1.4	NA	NA	2.9	89.4
Minority-Owned U.S. Affil.	100.0	12.3	7.6	44.5	17.0	NA	NA	7.4	11.2
Non-U.S. Firms	100.0	29.7	50.7	4.4	36.6	NA	NA	91.3	68.2
U.S. Firms as % of Total	49.4								
<i>Developing Countries</i>									
1977	100.0	12.7	8.5	8.3	51.0	7.7	43.2	7.4	12.1
Majority-Owned U.S. Affil.	100.0	6.7	11.9	25.6	36.5	6.2	30.3	5.6	13.7
Minority-Owned U.S. Affil.	100.0	43.4	3.9	9.0	7.2	1.9	5.3	2.7	33.9
Non-U.S. Firms	100.0	25.0	6.3	12.4	8.8	3.0	5.8	4.1	45.5
Non-U.S. Firms ^a	100.0	7.2	15.6	10.1	33.3	22.4	36.6	16.5	2.7
U.S. Firms as % of Total	9.0	4.2	12.9	9.5	34.6	19.5	40.3	14.4	1.9
U.S. Firms as % of Total ^a	9.0								
1966	100.0	44.5	16.6	12.8	8.5	NA	NA	1.5	16.3
Majority-Owned U.S. Affil.	100.0	23.6	17.3	30.0	6.4	NA	NA	4.5	18.2
Minority-Owned U.S. Affil.	100.0	58.9	2.4	16.8	< 1.5	NA	NA	NA	20.4
Non-U.S. Firms	100.0								21.9
U.S. Firms as % of Total	100.0								
<i>Asia Other than Japan and Middle East</i>									
1977	100.0	6.1	4.8	2.4	73.6-75.2	5.9	67.7-69.3	0.9	10.6-12.2
Majority-Owned U.S. Affil.	100.0	22.2	3.6	7.5	11.1-11.2	2.5	8.6- 8.7	3.8	51.8-51.9
Other Firms	100.0	13.0	4.2	9.1	12.3	2.8	9.4- 9.5	4.1	57.1-57.2
Other Firms ^a	100.0								
Majority-Owned U.S. Affil.	5.0	1.4	6.6	1.6	25.7-26.2	11.0	29.1-29.8	1.2	1.1- 1.3
as % of Total									
Majority-Owned U.S. Affil.	5.5	2.7	6.1	1.5	25.7-26.3	10.7	29.2-29.9	1.2	0.9- 1.2
as % of Total ^a									
1966	100.0	27.1	3.9- 7.2	31.9	15.0	NA	NA	NA	18.8-22.2
Majority-Owned U.S. Affil.	100.0	38.9	2.4- 2.5	8.6	3.9	NA	NA	NA	46.2-46.3
Other Firms	100.0								
Majority-Owned U.S. Affil.	3.9	2.8	5.9-11.1	13.1	13.6	NA	NA	NA	1.6- 1.9
as % of Total									
<i>Brazil & Mexico</i>									
1977	100.0	21.8	7.6	4.4	30.2	11.9	18.2	22.7	13.3
Majority-Owned U.S. Affil.	100.0	54.9	5.9	12.2	7.2	5.5	1.7	6.7	13.1
Other Firms	100.0								
Majority-Owned U.S. Affil.	19.4	8.7	23.6	7.9	50.3	34.4	72.0	44.9	19.7
as % of Total									
1966	100.0	38.6	18.2	NA	12.5	NA	NA	NA	NA
Majority-Owned U.S. Affil.	100.0	37.4	9.3	NA	5.0	NA	NA	NA	NA
Other Firms	100.0								
Majority-Owned U.S. Affil.	10.0	10.3	17.7	NA	21.7	NA	NA	NA	NA
as % of Total									

^a Not comparable to 1966 but based on aggregate export data more closely matched with affiliate export data.

Sources: Appendix, Table A-5.

Exports from all Locations by U.S. Multinationals

Another way to view the comparative advantage of U.S. multinational firms, escaping the effects of their choices of location, is to look at their exports from all locations, including those from the parents in the U.S. and those from their affiliates overseas. The distribution of these exports, by industry, in 1966 and 1977 was as follows:

	U.S. Multinational Firm Exports:		
	Classified on Basis of Industry of Parent		Classified on Basis of Product Exported
	1966	1977	1977
All Mfg. Industries	100.0	100.0	100.0
Foods	5.7	4.6	5.3
Chemicals	13.1	14.0	12.9
Metals	7.4	6.8	6.8
Machinery	28.8	28.5	30.7
Non-Elect.	NA	17.5	NA
Elect.	NA	11.0	NA
Transport Equip.	28.9	30.4	28.8
All other	16.1	15.7	15.5

Source: Appendix Tables A-3 and A-6.

Over this eleven-year period there was remarkably little change in the industry distribution of exports: slight declines in foods and metals and small increases in chemicals and transport equipment. These changes were much smaller than those for parents alone (Table 2) or for affiliates alone (Table 3). The implication is that the comparative advantages of U.S. multinationals remained virtually constant; the shifts we observed for parents in the U.S. and for their affiliates abroad must

have represented changes in the comparative advantages of production locations.

We can also compare the comparative advantage of U.S. multinational companies, as represented by their worldwide operations, with those of other U.S. companies and those of foreign companies, described in the earlier tables.

Relative to non-multinational U.S. firms and to foreign firms, U.S.-based multinationals appear to have had a comparative advantage in transport equipment and in machinery in 1977 ("best estimates" in Table 4). Non-multinational U.S. firms had a relative advantage in chemicals, non-U.S. firms in developed countries in metals, and non-U.S. firms in developing countries in foods and in other manufacturing.

Between 1966 and 1977, the comparative advantage of U.S. multinationals remained very stable, as mentioned earlier, while that of other U.S. firms shifted toward machinery and other manufacturing and away from chemicals and transport equipment. Foreign firms shifted toward the comparative advantage of U.S. multinationals, particularly foreign firms in developing countries. In all the cases but one in which the share of their exports in an industry was substantially above that of the U.S. multinationals in 1977, they had decreased that share in the previous eleven years and in the cases in which their share was below that of U.S. multinationals, they had increased it. The exception was "other manufacturing" which is a mixture containing a wide range of industry types.

Shifts in the Geographical Origin of Exports by U.S. Multinationals

Since the comparative advantage of U.S. multinationals remained virtually constant between 1966 and 1977 while those of the parent firms in the U.S. and of their overseas affiliates each changed, there must have been shifts in the advantages of production in different geographical locations. Such changes are reflected in the following data on changes in the sources of exports by U.S. multinational firms:

	Exports from the U.S. by U.S. Multinational Firms as % of their Exports from all Locations, by Industry			
	Exports Classified by Industry of Parent			Exports Classified by Product
	1966	1977	1977 1966	
All Mfg. Industries	58.7	47.6	.81	47.9
Foods	48.8	39.5	.81	47.8
Chemicals	64.8	46.1	.71	41.7
Metals	72.0	41.8	.58	41.9
Machinery	60.2	49.7	.83	53.6
Non-Elect.	NA	49.7	NA	NA
Elect.	NA	49.6	NA	NA
Transport Equip.	55.1	50.4	.91	47.9
All other	54.8	44.8	.82	44.7

There was a substantial shift away from the United States in the sources of U.S. ME's exports. The shift was largest for metals and next for chemicals, and least for transport equipment. From these data we might infer that the sharpest decline in comparative advantage for the U.S. as a geographical entity was in metals, not too surprising given the problems of both the iron and steel and nonferrous metals industries. The lack of change in transportation equipment is more surprising, but it probably reflects the retention of U.S. comparative advantage in the aircraft industry and the very large trade in motor vehicles and components with Canada. Also, some of the changes that have attracted public attention may have accelerated after 1977.

The changes in the sources of exports are all measured in percentage terms. They do not involve actual decreases in the value of exports from the U.S., but rather slower increases in the U.S. than in foreign countries. The slower growth in exports from the U.S. may or may not have been the result of the more rapid increases abroad. In assessing this possibility it should be borne in mind that multinational firms increased exports from the U.S. more than did the non-multinationals.

TABLE 4

DISTRIBUTION OF EXPORTS OF U.S. MULTINATIONAL FIRMS' WORLDWIDE OPERATIONS COMPARED
WITH THOSE OF NON-MULTINATIONAL U.S. FIRMS AND WITH FOREIGN FIRMS

	Total Mfg.	Machinery						Transport Equip.	Other Mfg.
		Total	Metals	Chemicals	Foods	Non- Elect.	Elect.		
		1966							
U.S. Multinationals	100.0	28.8	7.4	13.1	5.7		28.9	16.1	
Other U.S. Firms	100.0	32.5	7.3	11.8	15.8		8.7	23.9	
Other Foreign Firms, Developed Countries, excl. Canada	100.0	20.0	15.8	9.9	13.7		12.1	28.5	
Other Foreign Firms, Developing Countries	100.0	≥ 1.5	16.8	2.4	58.9		20.4-21.9		
		1977 Comparable to 1966							
U.S. Multinationals	100.0	28.5	6.8	14.0	4.6		30.4	15.7	
Other U.S. Firms	100.0	37.5	5.5	9.3	15.5		5.5	26.9	
Other Foreign Firms, Developed Countries, excl. Canada	100.0	23.2	13.9	10.1	10.8		16.7	25.3	
Other Foreign Firms, Developing Countries	100.0	7.2	9.0	3.9	43.4		2.7	33.9	
		1977 (Best Estimate) ^a							
U.S. Multinationals	100.0	30.7	6.8	12.9	5.3		28.8	15.5	
Other U.S. Firms	100.0	27.2	5.8	16.6	8.4		13.6	28.4	
Other Foreign Firms, Developed Countries, excl. Canada	100.0	23.1	14.5	12.0	7.8		17.6	25.0	
Other Foreign Firms, Developing Countries	100.0	8.8	12.4	6.3	25.0		4.1	45.5	

^a U.S. parent exports on product basis; foreign countries' exports at best approximation to industry categories.
Source: Tables 2 and 3 and Appendix Tables A-3 and A-5.

Conclusions

The main conclusions of this paper reflect the importance of distinguishing between the competitiveness and comparative advantages of U.S. firms and those of the U.S. and other countries as geographical locations for production. The competitiveness of U.S. firms, as measured by their share in world exports of manufactured goods, decreased much less than did that of the U.S. as a geographical entity. The share of U.S. multinationals in world exports, including exports by all their foreign affiliates, actually increased. The reasons for the difference are that U.S. multinationals increased their exports from the U.S. faster than did firms with no overseas operations and increased exports from their foreign affiliates still more.

Relative to non-multinational U.S. firms and to foreign firms, the comparative advantage of U.S. multinationals was in transport equipment and machinery. That of non-multinational U.S. firms was in chemicals, that of foreign firms in developed countries was in metals, and that of foreign firms in developing countries was in foods and other manufacturing. While there were some considerable shifts in the comparative advantages of foreign firms and of U.S. firms without overseas manufacturing operations, the comparative advantage of U.S. multinational firms hardly changed at all between 1966 and 1977. Thus, the changes in the comparative advantage of their U.S. operations, mainly decreases in foods and metals and increases in transport equipment, reflected the redistribution of the location of their production for export. The largest shift away from the U.S. as a location for export production was in the metals industry, followed by chemicals, and the smallest was in transport equipment.

The comparative advantage of foreign firms, as represented by the industry distribution of their world-wide exports, converged toward that of U.S. multinationals. That was particularly the case for foreign firms in developing countries, shifting away from exports of food and chemical products and towards machinery.

The implication is that the decline in U.S. shares in world manufactures exports in the late 1960s and 1970s was not, as sometimes alleged, to be found in deficiencies in American management or declines in American technological leadership. The share of exports produced under U.S. management — that is, by U.S. multinational

firms operating at home and abroad — actually increased. The decline in the U.S. share, it may be inferred, reflects a relative diminution in the advantage of the U.S. as a production location.

New York, N.Y. and Philadelphia, Pa.

ROBERT E. LIPSEY - IRVING B. KRAVIS

REFERENCES

- KRAVIS, IRVING B. and ROBERT E. LIPSEY (1984), "The Diffusion of Economic Growth in the World Economy, 1950-1980", in *International Comparisons of Productivity and Causes of the Slowdown*, ed. John W. Kendrick, Ballinger Publishing Co., 1984.
- KULCHYCKY, KSENIA and ROBERT E. LIPSEY (1984), "Host-Country Regulation and Other Determinants of Overseas Operations of U.S. Motor Vehicle and Parts Companies" NBER Working Paper 1463, September.
- LIPSEY, ROBERT E. (1984), "Recent Trends in U.S. Trade and Investment", in *New Problems of Advanced Societies*. Third International Symposium. Springer-Verlag, Heidelberg and New York, 1984.
- LIPSEY, ROBERT E., IRVING B. KRAVIS, and LINDA O'CONNOR (1983), "Characteristics of U.S. Manufacturing Companies Investing Abroad and their Choice of Production Locations", NBER Working Paper No. 1104, April.
- LIPSEY, ROBERT E., and IRVING B. KRAVIS (1982), "U.S.-Owned Affiliates and Host-Country Exports", NBER Working Paper No. 1037, December.
- ORGANIZATION FOR EUROPEAN ECONOMIC COOPERATION (OEEC) (1958), Foreign Trade, *OEEC Statistical Bulletins*, Series IV, Member Countries Combined, Foreign Trade by Commodity and Area of Origin and Destination, 1957.
- ORGANIZATION FOR EUROPEAN ECONOMIC COOPERATION (OEEC) (1959), Foreign Trade, *OEEC Statistical Bulletins*, Series IV, United States of America, Foreign Trade by Commodity and Area of Origin and Destination, Jan./Sept. and Jan./Dec. 1958.
- UNITED NATIONS (1958), *Commodity Trade Statistics*, Jan./Dec. 1957, Statistical Papers, Series D. Vol. VII, No. 4.
- UNITED NATIONS (1963), *Monthly Bulletin of Statistics*, March.
- UNITED NATIONS (1965), *Statistical Yearbook*, 1963.
- UNITED NATIONS (1972a), *Monthly Bulletin of Statistics*, April.
- UNITED NATIONS (1972b), *Monthly Bulletin of Statistics*, July.
- U.S. DEPARTMENT OF COMMERCE (1960), *U.S. Business Investments in Foreign Countries*, by SAMUEL PIZER and FREDERICK CUTLER, Office of Business Economics.
- U.S. DEPARTMENT OF COMMERCE (1975), *U.S. Direct Investment Abroad, 1966*, Bureau of Economic Analysis.
- U.S. DEPARTMENT OF COMMERCE (1976), *Foreign Direct Investment in the United States*, Report to the Congress, Vol. 2; Report of the Secretary of Commerce: Benchmark Survey, 1974.
- U.S. DEPARTMENT OF COMMERCE (1981), *U.S. Direct Investment Abroad, 1977*, Bureau of Economic Analysis.
- U.S. DEPARTMENT OF COMMERCE (1983), *Foreign Direct Investment in the United States, 1980*, October.

TABLE A-1

ESTIMATES OF WORLD (MARKET ECONOMY)
EXPORTS OF MANUFACTURES 1957, 1966, and 1977
(Unit: \$ billion)

	1957	1966	1977A	1977B
<i>Exports, by Geographical Area^a</i>				
1. World (Market Economies)	63.9	132.4	726.1	614.3
2. Developed countries	53.0	115.8	617.9	529.2
3. U.S.	13.6	21.7	89.4	88.3
4. Developing countries	10.9	16.6	108.2	85.1
<i>Exports, by Ownership</i>				
5. Foreign-owned companies in U.S.	0	0	5.0	
6. All U.S.-owned companies in U.S.	13.6	21.7	84.4	
U.S. Multinational enterprises				
7. Parents from U.S.	NA	13.6	64.0	
8. Majority-owned affil., from host countries	2.9	8.8	59.8	
9. of which developed	2.8	8.2	54.3	
10. of which developing	0.1	0.6	5.5	
11. Minority-owned affil., from host countries	NA	1.2	10.6	
12. of which developed	NA	1.1	8.5	
13. of which developing	NA	.1	2.1	
14. Parents and majority-owned affil., total	NA	22.4	123.8	
15. Parents and majority-owned affiliates in developed countries	NA	21.8	118.3	
16. Parents and all affiliates, total	NA	23.6	134.4	
17. Parents and all affiliates, developed countries	NA	22.9	126.8	
U.S.-owned Firms				
18. All U.S.-owned firms & majority-owned affiliates, total	16.5	30.5	144.2	
19. All U.S.-owned firms and majority-owned affiliates in developed countries	16.4	29.9	138.7	
20. All U.S.-owned firms and affiliates, total	NA	31.7	154.8	
21. All U.S.-owned firms and affiliates in developed countries	NA	31.0	147.2	

^a For 1957, 1966, and 1977A, SITC O, 1, 4-8, less 041-045. These totals include substantial amounts of non-manufactured products but were the best approximations that could be made for all three years. For 1977B, we used a better approximation to exports of manufactured goods from Lipsey and Kravis (1982), Table B-1. Both of the 1977 figures were then corrected by adding exports from Taiwan, from Table A-7.

- Line 1 : 1977B: Lipsey and Kravis (1982), Table B-1.
1966 and 1977A: United Nations (1980), (April 1972), and (July 1972).
1957: Line 2 plus Line 4.
- Line 2 : 1966 and 1977A and B: Same as Line 1.
1957: data for OEEC members, OEEC (1958), Tables 3 and 4.
Data for U.S., SITC 0, 1, and 4-8 from OEEC (1959), Table 2, p. 23, with correction of SITC 5 from United Nations (1958), and SITC 041-045 from OEEC (1958).
Data for Canada for SITC 0, 1, and 4-8 from United Nations (1958) and for SITC 041-045 from OEEC (1958).
Data for Japan from United Nations (1958). Data for Australia, New Zealand, and South Africa, SITC 0, 1, and 5-8, from United Nations (1965) and for SITC 4 for Australia and 041-045 for Australia and South Africa from United Nations (1958).
- Line 3 : 1966 and 1977A and B: Same as Line 1.
1957: See source for Line 2.
- Line 4 : 1966 and 1977A and B: Same as Line 1.
1957: Data for SITC 0, 1, and 5-8 from United Nations (1963), minus a rough estimate of developing-country exports of SITC 041-045, from import data in United Nations (1958), pp. 78-81.
- Line 5 : 1977: Simple average of figures for 1974 (\$ 1.7 billion), from U.S. Department of Commerce (1976), Table E-7, Columns 5 and 6, and for 1980 (\$ 8.3 billion), from U.S. Department of Commerce (1983), Table G-12, Col. 13.
1957 and 1966: Assumed to be 0 on the assumption that the rate of growth in the years before 1974 was not far short of the rate between 1974 and 1980.
- Line 6 : Line 3 minus Line 5.
- Line 7 : Table A-2, Line 10.
- Line 8-10: Lipsey and Kravis (1982), Table B-1.
- Line 11 : Line 12 plus Line 13.
- Line 12 : Estimated from sales of minority-owned affiliates by assuming that the ratio of exports to sales was the same in minority-owned affiliates as in majority-owned affiliates in the same industry and geographical area. Some combinations of areas and/or industries had to be made because of disclosure problems. Exports from countries for which elements of this calculation were missing were assumed to bear the same relation to sales as in the covered countries.
- Line 13 : Estimated from sales of minority-owned affiliates in developing countries as a group within each industry by assuming that the ratio of exports to sales was identical to that of majority-owned affiliates. This method applied to the developed countries produced a 1977 figure about 50 per cent above the one used for Line 12, which was based on a detailed country breakdown not available for developing countries. For 1966, however, this method produced a figure 6 per cent below the one from the detailed country breakdown.
- Line 14 : Line 7 plus Line 8.
- Line 15 : Line 7 plus Line 9.
- Line 16 : Line 11 plus Line 14.
- Line 17 : Line 12 plus Line 15.
- Line 18 : Line 6 plus Line 8.
- Line 19 : Line 6 plus Line 9.
- Line 20 : Line 11 plus Line 18.
- Line 21 : Line 12 plus Line 19.

TABLE A-2

ESTIMATE OF U.S. MANUFACTURING PARENT EXPORTS OF THEIR OWN PRODUCTS 1966 AND 1977
(Unit: \$ million)

	1966		1977	
		Reported by		
		Affiliates	Parents	
By U.S. parents to				
1. Majority-owned affiliates, all products	5,343	25,769	24,330	
2. Majority-owned affiliates, own products	4,958		23,089	
3. Other affiliates, all products		2,492	2,353	
4. Other affiliates, own products			2,233	
5. All affiliates, all products		28,260	26,683	
6. All affiliates, own products	5,672		25,822	
7. Unaffiliated foreigners, all products	8,356		39,194	
8. Unaffiliated foreigners, own products	7,960		38,172	
9. All affiliates and unaffiliated foreigners, all products			65,877	
10. All affiliates and unaffiliated foreigners, own products	13,632		63,994	

Sources:

- Line 1, 1977: Reported by parents: Line 5 multiplied by the ratio of Line 1 to Line 5 for data reported by affiliates. Reported by affiliates: U.S. Department of Commerce (1981), Table II, T1, p. 185. 1966: U.S. Department of Commerce (1975), Table E-1, p. 82.
- Line 2, 1977: Line 1 multiplied by the estimated ratio of exports of own products to exports of all products. Ratio is estimated as .974 (Line 8/Line 7) multiplied by .928/.953, the 1966 ratio of Line 2/Line 1. 1966: U.S. Department of Commerce (1975), Table E-1, p. 82.
- Line 3, 1977: Reported by parents: Line 5 minus Line 1.
- Line 4, 1977: Line 3 multiplied by the ratio used for Line 2.
- Line 5, 1977: Reported by parents: U.S. Department of Commerce (1981), Table II, T1, p. 185, Col. 13. Reported by affiliates: U.S. Department of Commerce (1981), Table II, T1, p. 185, Col. 3.
- Line 6, 1977: Line 2 plus Line 4. 1966: Line 1 multiplied by the ratio of total sales of all allied affiliates to total sales of majority-owned affiliates.
- Line 7, 1977: U.S. Department of Commerce (1981), Table II, T1, p. 185, Col. 11. 1966: U.S. Department of Commerce (1975), Table E-1, p. 82.
- Line 8, 1977: Line 7 multiplied by the ratio for exports to unaffiliated foreigners of own products to all products, from U.S. Department of Commerce (1981), Table II, T3, p. 187, Col. 12 & 13. 1966: U.S. Department of Commerce (1975), Table E-1, p. 82.
- Line 9: Line 5 plus Line 7.
- Line 10: Line 6 plus Line 8.

TABLE A-3

INDUSTRY DISTRIBUTION OF U.S. EXPORTS^a AND EXPORTS FROM THE U.S. BY U.S. MULTINATIONALS (PARENT FIRMS) 1966 and 1977
(Unit: \$ million)

Exports by	Total Mfg.	Machinery					Transport Equip.	Other Mfg.
		1966	1977	Metals	Non-Elect.	Elect.		
U.S. Parent Firms by Industry	21,702	1,850	2,941	1,838	4,740 ^b	1,899 ^c	4,521 ^d	3,913
Other Firms	14,274	677	2,064	1,299	4,222	2,417	3,872	2,139
	7,428	1,173	877	539		649		1,774
U.S. Parent Firms by Product	90,642	6,573	11,142	5,297	19,766	9,260	22,001	16,603
Other Firms	63,941	2,434	8,666	3,839	11,686	7,345	20,544	9,428
	26,701	4,139	2,476	1,458	8,080	1,915	1,457	7,175
U.S. Parent Firms by Industry	89,669	5,494	11,395	5,297	19,766	9,260	22,001	16,456
Other Firms	64,751	3,411	7,249	3,854	22,242	6,784	18,613	9,382
	24,918	2,083	4,146	1,443		3,388		7,074

^a These figures differ slightly from those in Table A-1 because they include more complete adjustments for the U.S. than we could carry out for the world.

^b SITC 71 (5,547.2) - 711.4 - 711.5.

^c SITC 72.

^d SITC 73 (5,714.6) + 711.4 (292.3) + 711.5 (514.5).

Sources: United Nations (1971), pp. 886-887, and (1981) and Appendix Tables A-2 and A-3.

TABLE A-4

ESTIMATE OF U.S. PARENT COMPANIES' EXPORTS,
BY INDUSTRY OF PARENT 1966 AND 1977 ON COMPARABLE BASIS
MANUFACTURING INDUSTRY PARENT COMPANIES
(Unit: \$ million)

	Exports to Majority-Owned Affiliates and Unaffiliated Foreigners				
	Totala	Products made by others		Own Products	
		(1)	Total	To Unaffil. Foreigners ^b	Total
		(2)	(3)	(4)	(5)
		1977			
All Manufacturing	64,963		1,022		63,941
Foods	2,659		225		2,434
Chemicals	8,829		163		8,666
Metals	4,027		188		3,839
Non-Elect. Mach.	11,831		145		11,686
Elect. Mach.	7,378		33		7,345
Transp. Equip.	20,649		105		20,544
Other Mfg.	9,590		162		9,428
		1966 ^d			
All Manufacturing	14,670	1,753	396	12,918	14,274
Foods	796	311	119	486	677
Chemicals	2,081	192	17	1,889	2,064
Metals	1,346	220	47	1,126	1,299
Non-Elect. Mach. }	4,319	296	97	4,023	4,222
Elect. Mach. }					
Transp. Equip.	3,920	470	48	3,451	3,872
Other Mfg.	2,207	264	68	1,943	2,139

a 1977, Table II T1.

b 1977, Table II T3.

c Col. (1) minus Col. (3).

d Table E-1.

Sources: U.S. Department of Commerce (1975) and (1981).

TABLE A-5

ESTIMATE OF U.S. PARENT COMPANIES' EXPORTS, BY PRODUCT, 1977
MANUFACTURING INDUSTRY PARENT COMPANIES
(Unit: \$ million)

Industry	Product	To Non-Affil. by Parents by Product ^a	To Minority-Owned Affil. by Parents by Product ^c	To Minority-Owned Affil. by Industry of Parent ^b	Total
All Manufacturing		36,484 ^e	24,963	3,304	64,751
Food & kindred products ^b	Foods, beverages, & tobacco	2,635	554	222	3,411
Chemicals & allied prod.	Chemicals	3,535	3,126	588	7,249
Primary & fabricated metals	Metal manufacturers	2,749	715	390	3,854
Machinery, excl. electrical	Machinery	13,004	8,196	640	22,242
Electric & electronic equip.				402	
Transportation equipment	Road Motor Veh. & Parts & Other Transportation Equipment	9,383	8,789	441	18,613
Other Mfg.	Other Mfrs.	5,178	3,583	621	9,382

a Table II T2, p. 187.

b Excludes tobacco mfg.

c Table III B5, p. 345.

d Table II T1, p. 185, Col. (3) minus Col. (6).

e Sum of products shown. Excludes \$ 2,680 million in exports of "Inedible crude material excl. fuels" and "Mineral fuels, lubricants, and related materials".

f Sum of products shown. Excludes \$ 775 million of items listed in footnote e.

Source: U.S. Department of Commerce (1981).

THE INDUSTRY COMPOSITION OF EXPORTS OF MANUFACTURES BY U.S. COMPANIES' FOREIGN AFFILIATES AND BY OTHER FOREIGN FIRMS 1966 AND 1977
(Unit: \$ million)

	Total Mfg.	Machinery							Transport Equipment	Other Mfg.
		Foods	Chemicals	Metals	Total	Non-Elect.	Elect.			
<i>Developed Countries</i>										
<i>except Canada</i>										
Total Exports	1966 88,784 1977 503,768 1977 ^a 500,077	11,557 51,927 37,835	8,920 54,847 63,008	13,270 66,568 68,901	18,858 120,241 119,236	NA 73,479 73,779	NA 46,762 45,457	11,961 87,257 90,558	24,218 122,928 120,539	
Exports by Majority-Owned U.S. Affiliates	1966 5,840 1977 40,237	278 2,193	725 7,556	263 1,750	2,181 12,898	NA 9,370	NA 3,528	1,681 9,726	712 6,114	
Exports by Minority-Owned U.S. Affiliates	1966 905 1977 7,742	11 354	75 1,395	83 1,568	287 1,697	NA 1,202	NA 495	349 1,252	100 1,476	
Exports by Other Firms	1966 82,039 1977 457,789 1977 ^a 452,098	11,268 49,380 35,288	8,120 45,896 54,057	12,924 63,250 65,583	16,390 105,646 104,641	NA 62,907 63,207	NA 42,739 41,434	9,931 76,279 79,580	23,406 115,338 112,949	
<i>Canada</i>										
Total Exports	1966 5,271 1977 28,884	468 1,309	410 1,886	1,240 3,640	716 3,007	442 2,182	273 825	1,212 10,515	1,225 8,527	
Exports by Majority-Owned U.S. Affil.	1966 2,399 1977 14,051	131 340	203 427	52 891	259 1,060	NA 666	NA 394	1,101 8,737	653 2,396	
Exports by Minority-Owned U.S. Affil.	1966 207 1977 706	8 2	5 44	3 144	3 57	NA 24	NA 33	6 11	182 448	
Exports by Other Firms	1966 2,665 1977 14,127	329 967	202 1,415	1,185 2,605	454 1,890	NA 1,492	NA 398	105 1,767	390 5,483	
<i>Developing Countries</i>										
Total Exports	1966 16,550 1977 106,813 1977 ^a 84,469	9,620 43,851 20,072	495 4,584 5,566	2,770 9,887 10,491	300 10,720 10,345	NA 2,487 2,865	NA 8,233 7,480	3,189 3,612	3,365 34,582 35,633	
Exports by Majority-Owned U.S. Affiliates	1966 578 1977 ^a 5,486	257 695	96 464	74 453	49 2,797	NA 425	NA 2,372	8 408	94 669	
Exports by Minority-Owned U.S. Affiliates	1966 110 1977 2,132	26 143	19 253	33 545	7 778	NA 133	NA 645	5 119	20 294	
Exports by Other Firms	1966 15,862 1977 99,195 1977 ^a 76,851	9,337 43,013 19,234	380 3,867 4,849	2,663 8,889 9,493	244 7,145 6,770	NA 1,929 2,307	NA 5,216 4,463	NA 2,662 3,135	NA 33,619 34,970	
<i>Asia other than Japan and Middle East</i>										
Total Exports	1966 5,295 1977 58,156 1977 ^a 53,320	2,035 12,420 6,740	135 2,018 2,278	502 4,198 4,668	228 8,353 8,374	NA 1,560 1,604	NA 6,793 6,770	2,395 2,117 2,109	28,960 28,960 29,151	
Export by Majority-Owned U.S. Affil.	1966 207 1977 2,921	56 179	8-15 139	66 69	31 2150-2197	NA 172	NA 1978-2025	0 26	39-46 311-358	
Exports by Other Firms	1966 5,088 1977 55,235 1977 ^a 50,399	1,979 12,241 6,561	120-127 1,969 2,139	436 4,129 4,599	197 6156-6203 6177-6224	NA 1,388 1,432	NA 4768-4815 4745-4792	2,349-2,356 2,091 2,083	28,602-28,649 28,793-28,840	
<i>Brazil and Mexico</i>										
Total Exports	1966 883 1977 6,774	331 3,713	90 474	144 820	51 889	36 514	14 375	14 749	253 1,012	
Exports by Majority-Owned U.S. Affil.	1966 88 1977 1,482	34 323	16 112	65 447	11 447	NA 177	NA 270	NA 336	NA 199	
Exports by Other Firms	1966 795 1977 6,175	297 3,390	74 362	NA 755	40 442	NA 337	NA 105	NA 413	NA 813	

Source: Lipsey and Kassis (1982), Tables B-1 through B-7, plus some corrections from later issues of the sources listed there, estimates for minority-owned affiliates as described in the notes to Table A-1 of this paper, and estimates for Taiwan exports in 1977 as described in Table A-7.

TABLE A-7

TAIWAN: ESTIMATE OF 1977 EXPORTS, BY INDUSTRY

	Millions \$ NT		Millions \$ U.S.
	1980	1977	1977
SITC O + 1	61,340	41,859	1,103.0
Less non-mfd. food and tobacco			
- Live animals	- 363		
- Coffe, tea, maté, spices	- 1,169		
- Cereals	- 2,164		
- Other crude veg. prod.	- 9,784		
- Tobacco	- 274	(- 187)	(- 4.9)
= Mfd. foods	47,586	(32,473)	(855.7)
SITC 5	17,987	8,214	216.4
+ Man-made fibers	+36,496	(+16,666)	(439.2)
= Chemicals	54,483	24,880	655.6
SITC 6	163,484	79,225	
Base metals and articles	46,102	(22,341)	(588.7)
SITC 7	176,017	79,991	(2,107.8)
Machinery	145,271	(66,018)	(1,739.6)
Non-elect.	33,405	(15,181)	(400.0)
Elect.	111,867	(50,838)	(1,339.6)
Vehicles	22,735	(10,332)	(272.3)
SITC 5-8	628,099	301,756	7,951.4
Total Mfd. Prod. ^a	712,455	351,082	9,251.2

a SITC 5-8 plus manufactured foods and manmade fibres.

Figures for 1-digit SITC classes, 1977 and 1980 are from *Statistical Yearbook of the Republic of China, 1983*, Directorate General of Budget, Accounting & Statistics, Executive Yuan, The Republic of China.

Figures for other items, 1980, are from *The Trade of China (Taiwan District)*, 1980, Chinese Maritime Customs, I. — Statistical Series, No. 1, Statistical Department, Inspectorate General of Customs, Taipei, Taiwan, May 1981, Table 4.

Figures in parentheses for 1977 are estimated from the 1-digit SITC totals by assuming the same ratios as in 1980.