

U.S. Multinational Companies: U.S. Merchandise Trade, Worldwide Sales, and Technology-Related Activities in 1977

U.S. DEPARTMENT OF COMMERCE

**Malcolm Baldrige, Secretary
Robert G. Dederick, Under Secretary
for Economic Affairs**

BUREAU OF ECONOMIC ANALYSIS

**George Jaszi, Director
Allan H. Young, Deputy Director**

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Introduction

The three articles in this publication analyze U.S. merchandise trade associated with, worldwide sales by, and technology-related activities of, U.S. multinational companies (MNC's) in 1977. The articles are based on data obtained in BEA's 1977 benchmark survey of U.S. direct investment abroad.^{1/} They complete a series of articles, published by BEA over the past 2 years, that present the major results of the benchmark survey. Together, the articles in the series provide a broad view of the operations, both domestic and foreign, of U.S. MNC's in 1977. They should promote a better understanding among Government, business, labor, academic researchers, and the general public of the role MNC's play in U.S. and foreign economies.

U.S. direct investment abroad exists when one U.S. person (U.S. parent) has a direct or indirect ownership interest of 10 percent or more in a foreign business enterprise (foreign affiliate). A U.S. MNC is a U.S. company that has direct investment abroad; each MNC consists of a U.S. parent and all of its foreign affiliates combined.

The 1977 benchmark survey was a census, and, in terms of value, its coverage of the direct investment universe was virtually complete.^{2/} It was the first benchmark survey of U.S. direct investment abroad conducted under authority of the International Investment Survey Act of 1976. The act requires that such surveys be conducted at least once every 5 years.

Each article in this publication is limited in coverage to nonbank MNC's, i.e., to nonbank U.S. parents of nonbank foreign affiliates, and their nonbank foreign affiliates. In the benchmark survey, little financial and operating data were collected for bank parents and affiliates, because they already had to report most of the information needed for policymaking purposes to other U.S. Government agencies.

1. Detailed data and the methodology of the benchmark survey were published in U.S. Department of Commerce, Bureau of Economic Analysis, U.S. Direct Investment Abroad, 1977 (Washington, D.C.: U.S. GPO, April 1981). A limited number of copies are available from the Office of the Chief, International Investment Division (BE-50), Bureau of Economic Analysis, U.S. Department of Commerce, Washington, D.C. 20230. The postpaid price is \$10.00 within the United States; postage extra outside the United States.

2. To ease the reporting burden on companies, very small affiliates--those whose total assets, sales, and net income were each less than \$500,000--were exempted from the survey. Reports covering 3,540 U.S. parents and their 24,666 foreign affiliates were received; 11,123 foreign affiliates were exempted. Although the exempt affiliates accounted for 31 percent of the number of all affiliates, they accounted for only 1 percent of the total assets, and less than 1 percent of the sales and net income, of all affiliates.

Nonbank parents of nonbank affiliates accounted for 97 percent of both the number and employment, but for only 73 percent of the total assets, of all U.S. parents. Their nonbank affiliates accounted for 96 percent of the number and 98 percent of the employment, but for only 59 percent of the total assets, of all foreign affiliates. The total assets of nonbanks, on average, tend to be lower than those of banks, because the assets of the latter usually reflect substantial financial claims arising from the banks' lending activities (their liabilities also tend to be high because of their sizable borrowing activities and customers' deposits).

For simplicity, in the articles and accompanying tables in this publication, the term "U.S. MNC's" refers only to nonbank MNC's, "U.S. parents" refers to nonbank parents of nonbank affiliates, and "foreign affiliates" refers to nonbank affiliates of nonbank parents.

Portions of each article are further limited in coverage to the larger majority-owned foreign affiliates (MOFA's) and their U.S. parents. This limitation is necessary because, in the benchmark survey, the most detailed financial and operating data were collected only for the larger MOFA's, i.e., for affiliates that were owned more than 50 percent, directly or indirectly, by all U.S. parents combined and that had assets, sales, or net income over \$3 million in 1977. MOFA's, so defined, accounted for 50 percent of the number, 72 percent of the total assets, and 75 percent of the employment of all nonbank affiliates of nonbank parents.

The other articles in the series on the 1977 benchmark survey data have appeared in various issues of the Survey of Current Business, BEA's monthly journal. The other articles are: International Investment Division, "1977 Benchmark Survey of U.S. Direct Investment Abroad," Survey 61 (April 1981): 29-37, which gave a brief description of the survey and highlights of the data; Betty L. Barker, "A Profile of U.S. Multinational Companies in 1977," Survey 61 (October 1981): 38-57, which discussed industry characteristics of MNC's, their size, the location of their operations, the U.S. parent's percentage of ownership in their foreign affiliates, and the form of organization of parents and affiliates; Obie G. Whichard, "Employment and Employee Compensation of U.S. Multinational Companies in 1977," Survey 62 (February 1982): 37-49, 60; and Ned G. Howenstine, "Growth of U.S. Multinational Companies, 1966-77," Survey 62 (April 1982): 34-46, and "Gross Product of U.S. Multinational Companies, 1977," Survey 63 (February 1983): 24-29.

The three articles in this publication examine several additional aspects of U.S. MNC's. The first article analyzes U.S. merchandise trade--exports and imports--associated with the MNC's. It covers trade between U.S. parents and their foreign affiliates, between these affiliates and other U.S. persons, and between U.S. parents and unaffiliated foreigners. To the extent data are available, the article disaggregates MNC trade by industry of U.S. parent or affiliate, by product, by country of destination or origin, and by intended use. The second article analyzes worldwide MNC sales--of both merchandise and services--disaggregated by area of origin (the location of the MNC seller), by area of destination (the location of the purchaser), by industry of U.S. parent, and by affiliation between seller and customer.

The third article discusses research and development (R&D) activities of U.S. MNC's, as measured by their R&D expenditures and the number of R&D scientists and engineers they employed. It also discusses royalty and license fee transactions between U.S. parents and their foreign affiliates and between these members of the MNC and other U.S. or foreign persons.

By BETTY L. BARKER

U.S. Merchandise Trade Associated With U.S. Multinational Companies

U.S. multinational companies (MNC's) accounted for very large shares of total U.S. merchandise exports and imports--84 percent and 58 percent, respectively--in 1977. These and other data from the 1977 benchmark survey indicate the nature and magnitude of MNC-associated trade. They also should shed light on the question of the impact of U.S. direct investment abroad on U.S. trade.

As noted in the Introduction to this publication, the article covers only nonbank MNC's. However, trade of bank MNC's was probably insignificant.

MNC-associated U.S. trade consists of (1) trade between U.S. parents and their foreign affiliates, (2) trade between these same foreign affiliates and other (unaffiliated) U.S. persons, and (3) trade between U.S. parents and unaffiliated foreigners. Total U.S. trade of foreign affiliates is equal to (1) plus (2); total U.S. trade of parents is equal to (1) plus (3). Note that total U.S. trade of affiliates and total U.S. trade of parents are not mutually exclusive, because both contain (1), trade between parents and their affiliates.

Following an overview of MNC-associated U.S. trade, MNC-associated exports and imports are analyzed in two separate sections. In each, the amount of detail varies, depending upon the availability of data. In the benchmark survey, significantly more detail was obtained for exports than for imports. Also, more detail was obtained for U.S. trade with majority-owned foreign affiliates (MOFA's) than for U.S. trade with other foreign affiliates or for trade of U.S. parents with unaffiliated foreigners. ^{1/} Thus, the section on exports discusses (1) total MNC-associated U.S. exports, by country of destination and by industry of U.S. parent, (2) U.S. exports associated with MOFA's and their U.S. parents, by product, (3) U.S. exports to MOFA's only, by product and intended use crossclassified by country of destination and by industry of affiliate, and (4) growth, from 1966 to 1977, of U.S. exports associated with MOFA's and U.S. parents for which comparable data were available from the 1966 and 1977 benchmark surveys. The section on imports discusses (1) total MNC-associated U.S. imports, by industry of U.S. parent, and (2) U.S. imports from MOFA's only, by product crossclassified by country of origin and by industry of affiliate.

Where possible, the article compares MNC-associated U.S. trade with total U.S. trade. The MNC trade data were defined in the benchmark survey to be as comparable as possible with all-U.S. trade data compiled by the Census Bureau. In practice, however, the two data sets are not strictly comparable. The technical note discusses the differences between the MNC and all-U.S. data.

1. MOFA's are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million.

NOTE.--Arnold Gilbert and Richard Mauery were responsible for computer generation of tables for this article.

Overview

In 1977, MNC-associated U.S. exports were \$101.8 billion, 84 percent of total U.S. exports; MNC-associated U.S. imports were \$86.8 billion, 58 percent of total U.S. imports (table 1). U.S. MNC's accounted for significantly larger shares of U.S. trade than of domestic business activity. For example, their share of all-U.S. business employment was only 35 percent. ^{2/} Their trade shares may have been larger because, compared with other U.S. firms, MNC's were more heavily concentrated in goods-producing industries. Thus, on average, they tended to have larger exports and imports of goods than other U.S. firms. Even within given industries, however, MNC's probably accounted for larger shares of trade than of domestic business activity--one indication of their greater international orientation compared with other firms.

The very large share of U.S. exports accounted for by the MNC's probably reflected the fact that the MNC's were among the largest and most technologically advanced U.S. firms. They may have had a competitive edge over other U.S. firms in exporting because they could take greater advantage of economies of scale, produce technically superior or more sophisticated products, or more readily adapt their products to the needs and tastes of foreign customers.

The extent to which the existence of their foreign affiliates contributed to the export performance of U.S. MNC's is unclear. On the one hand, the affiliates may have offered advantages, such as firsthand knowledge of foreign markets, direct contacts with foreign customers, closer control over worldwide distribution via their use as sales outlets for the MNC's, and provision of local after-sales servicing for exported goods. Also, affiliates' purchases of goods from U.S. parents for use or for further manufacture abroad may have boosted the parents' exports relative to those of other U.S. firms. On the other hand, affiliate production may have displaced U.S. exports, particularly from U.S. parents, by supplying foreign markets from abroad rather than from the United States. Such displacement would have occurred only if affiliate production was at the expense of U.S. exports; it would not have occurred if U.S. exports had been constrained instead by, for example, foreign tariffs or quotas, erosion of U.S. firms' foreign market shares because of the emergence of rival firms, or prohibitively high transport costs.

The data in this article cannot by themselves provide estimates of the net effect of direct investment on the export performance of U.S. MNC's; they cannot answer the question of whether, in the absence of direct investment, these companies' exports would have been larger or smaller than they actually were. They indicate only the magnitude of MNC-associated exports, given present levels of such investment. ^{3/}

2. See Whichard, "Employment and Employee Compensation," p. 39.

3. For a review of the literature on, and further discussion of, the impact of U.S. direct investment abroad on U.S. trade, see C. Fred Bergsten, Thomas Horst, and Theodore H. Moran, American Multinationals and American Interests (Washington, D.C.: The Brookings Institution, 1978), chapter 3.

Table 1.--Total U.S. Trade and U.S. Trade Associated With U.S. MNC's, 1977

	U.S. exports	U.S. imports	Balance
Millions of dollars			
Total U.S. trade <u>1/</u> -----	121,293	150,390	-29,097
U.S. trade associated with U.S. MNC's-----	101,846	86,759	15,087
U.S. trade not associated with U.S. MNC's--	19,447	63,631	-44,184
Percent of total U.S. trade			
Total U.S. trade-----	100.0	100.0	100.0
U.S. trade associated with U.S. MNC's-----	84.0	57.7	n.m.
U.S. trade not associated with U.S. MNC's--	16.0	42.3	n.m.

MNC Multinational company.

n.m. Not meaningful.

1. Census basis, valued f.a.s. at the port of exportation, after adjustment to include shipments between the Virgin Islands and foreign countries. (In 1977, exports from the Virgin Islands to foreign countries were \$81 million; imports to the Virgin Islands from foreign countries were \$2,705 million.) Exports include reexports and military grant shipments. Imports include goods for immediate consumption as well as goods entering into Customs bonded warehouses.

NOTE.--In this table, data for U.S. MNC's are only for nonbank MNC's.

Although large, the MNC share of total U.S. imports was considerably smaller than their share of total U.S. exports. Their import share would have been even smaller were it not for the large share--probably over four-fifths--of total U.S. petroleum imports accounted for by the MNC's.

The smaller MNC import share may have partly reflected the significant portion of total U.S. imports that normally is imported by independent wholesalers and retailers rather than by U.S. MNC's. In fact, U.S. parents that require imported goods in their production processes often purchase the goods domestically from independent wholesalers instead of importing the goods directly from foreigners. Such domestic purchases of imported goods are excluded from U.S. parents' imports, which, by definition, consist only of goods imported directly by the parents. Thus, U.S. parents' imports probably understate their total purchases of imported goods. 4/

A sizable share of U.S. imports is also typically imported by the U.S. affiliates of foreign MNC's. In 1977, these affiliates accounted for \$41.4 billion (28 percent) of U.S. imports. In contrast, they accounted for only \$24.0 billion (20 percent) of U.S. exports. 5/ If trade of foreign MNC's with unaffiliated U.S. persons (for which data are not available) could have been included as well, the difference between the U.S. import and export shares associated with foreign MNC's might have been even larger. Many foreign MNC's, particularly those in wholesale trade, have actively and aggressively sought unaffiliated U.S. customers for their countries' goods.

4. Similarly, U.S. parents' exports tend to understate the total value of the parents' goods that are sold abroad, because goods produced by the parents may be purchased and exported by other U.S. firms; however, because U.S. parents usually sell their goods directly to foreign customers, the understatement for exports was probably much less than that for imports.

5. These data are from BEA's annual sample survey of foreign direct investment in the United States, and were published in Ned G. Howenstine, "Selected Data on the Operations of U.S. Affiliates of Foreign Companies, 1978 and 1979," Survey 61 (May 1981): 35-52.

It should be noted that, if U.S. exports and imports of the U.S. affiliates of foreign MNC's, as reported in the 1977 annual survey, are added, respectively, to U.S. exports and imports associated with U.S. MNC's, as reported in the 1977 benchmark survey, the resulting total for exports would exceed 100 percent of all U.S. exports and that for imports would be 85 percent of all U.S. imports. Both shares are overstated because of duplication in the data reported in the two surveys. To the extent U.S. affiliates of foreign MNC's, in turn, had affiliates abroad, they would have been considered U.S. parents of those foreign affiliates in the 1977 benchmark survey, and their U.S. exports and imports would have been reported in that survey as well as in the 1977 annual survey. A match between companies reported in both surveys indicated that the overlap for exports and imports was roughly \$10 billion each. In addition, trade between unrelated U.S. affiliates of foreign MNC's and foreign affiliates of U.S. MNC's would have been counted in both surveys; the amount of this type of duplication is unknown.

MNC-associated U.S. exports exceeded imports by \$15.1 billion. This large MNC trade surplus is in sharp contrast to the \$29.1 billion deficit for all-U.S. trade in 1977. As noted earlier, the question of whether the better-than-average trade performance of the MNC's was the result of these companies' direct investments abroad or of other factors is beyond the scope of this article.

MNC-Associated U.S. Exports

Of total MNC-associated U.S. exports of \$101.8 billion, \$32.4 billion (32 percent) were shipped to foreign affiliates by U.S. parents, \$8.4 billion (8 percent) were shipped to foreign affiliates by unaffiliated U.S. persons, and \$61.1 billion (60 percent) were shipped to unaffiliated foreigners by U.S. parents (table 2). Total exports to affiliates, the sum of the first two components, were \$40.8 billion, of which about four-fifths were by U.S. parents and one-fifth by unaffiliated U.S. persons. Total exports by U.S. parents, the sum of the first and third components, were \$93.5 billion, of which about two-thirds were to unaffiliated foreigners and one-third to foreign affiliates.

By country of destination

Of total MNC-associated U.S. exports, at least 65 percent were to developed countries and at least 31 percent to developing countries. ^{6/} Most of the remainder consisted of low-value shipments that did not have to be allocated by area in the benchmark survey. ^{7/} Exports to "international"--i.e., to affiliates that had operations spanning more than one country and that were engaged in petroleum shipping, other water transportation, petroleum trading, or the operation of oil and gas drilling equipment that was moved from country to country during the year--were negligible.

6. The country of destination of U.S. exports to an affiliate is defined to be the same as the affiliate's country of location. Although some of the goods shipped to an affiliate eventually may be resold and shipped to other countries, the amount is believed to be small.

For U.S. parents, the country of destination of exports to unaffiliated foreigners is defined as the country where the parent knew, at the time of exportation, the goods were to be consumed, further processed, or manufactured. If the parent did not know the ultimate destination, the shipment was credited to the last country to which the parent knew the merchandise would be shipped in the same form as when exported.

7. In disaggregating exports to unaffiliated foreigners, a U.S. parent was permitted to sum all exports to countries to which its exports were less than \$100,000 and report the sum as a single item; thus, in countries or areas shown separately in table 2, exports by U.S. parents to unaffiliated foreigners are understated by the amount of these unallocated exports.

Table 2.--U.S. Trade Associated With U.S. MNC's, 1977, by Country of Destination or Origin

	[Millions of dollars]											
	MNC-associated exports					MNC-associated imports					Addenda	
	Total	Shipped to affiliates			Shipped to unaffiliated foreigners by U.S. parents	Total 1/	Shipped by affiliates			Shipped by unaffiliated foreigners to U.S. parents 1/	Total exports shipped by U.S. parents (= col. 3 + col. 5)	Total imports shipped to U.S. parents (= col. 8 + col. 10) 1/
		Total	By U.S. parents	By unaffiliated U.S. persons			Total	To U.S. parents	To unaffiliated U.S. persons			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
ALL countries	101,846	40,787	32,397	8,390	61,059	86,759	41,525	32,639	8,887	45,234	93,456	77,872
Developed countries	66,392	32,522	26,350	6,472	33,871	---	22,089	15,912	6,176	---	59,920	---
Canada	23,138	17,303	12,887	4,415	5,835	---	15,641	11,212	4,429	---	18,723	---
Europe	31,145	12,335	10,547	1,788	18,811	---	5,097	3,649	1,448	---	29,358	---
European Communities (9)	22,570	10,313	8,974	1,338	12,277	---	4,328	3,294	1,034	---	21,252	---
Belgium	2,481	1,595	1,494	100	886	---	(D)	(D)	(D)	---	2,380	---
Denmark	431	89	87	2	342	---	32	30	2	---	428	---
France	3,072	1,556	1,407	149	1,516	---	(D)	(D)	39	---	2,923	---
Germany	4,685	1,932	1,762	170	2,753	---	899	831	68	---	4,515	---
Ireland	239	172	155	17	68	---	125	(D)	(D)	---	223	---
Italy	2,269	789	533	207	1,479	---	149	130	19	---	2,062	---
Luxembourg	71	68	66	2	3	---	68	68	1	---	69	---
Netherlands	4,434	1,426	1,362	364	2,978	---	195	161	34	---	4,039	---
United Kingdom	4,939	2,686	2,358	328	2,253	---	2,267	1,441	826	---	4,611	---
Other Europe	8,556	2,022	1,573	449	6,533	---	769	355	414	---	8,106	---
Austria	196	85	84	1	111	---	18	13	5	---	194	---
Greece	404	57	56	1	347	---	(D)	1	(D)	---	402	---
Norway	432	123	(D)	(D)	309	---	(D)	(D)	(D)	---	413	---
Portugal	438	(D)	(D)	(D)	(D)	---	11	(D)	(D)	---	413	---
Spain	1,836	601	356	265	1,235	---	(D)	93	(D)	---	1,571	---
Sweden	774	238	(D)	(D)	536	---	32	(D)	(D)	---	(D)	---
Switzerland	1,267	790	719	71	477	---	308	86	222	---	1,196	---
Turkey	402	(D)	(D)	(D)	(D)	---	3	3	0	---	398	---
Other	2,808	54	45	9	2,754	---	(D)	(D)	(D)	---	2,799	---
Japan	8,547	1,215	1,156	59	7,432	---	1,162	897	265	---	8,588	---
Australia, New Zealand, and South Africa	3,462	1,669	1,459	210	1,793	---	189	155	34	---	3,252	---
Australia	2,183	1,204	1,040	163	979	---	(D)	(D)	(D)	---	2,019	---
New Zealand	269	94	87	7	175	---	2	(D)	(D)	---	262	---
South Africa	1,010	371	332	39	639	---	(D)	(D)	(D)	---	971	---
Developing countries	31,964	8,142	6,257	1,685	23,822	---	19,400	(D)	(D)	---	30,079	---
Latin America	13,005	4,730	3,578	1,151	8,276	---	5,834	4,928	906	---	11,854	---
South America	7,858	2,732	2,084	648	5,125	---	1,011	831	180	---	7,209	---
Argentina	662	200	176	24	483	---	13	10	3	---	658	---
Brazil	2,233	797	671	126	1,436	---	415	315	101	---	2,106	---
Chile	351	58	37	21	303	---	1	1	0	---	340	---
Colombia	671	204	152	42	467	---	(D)	(D)	(D)	---	629	---
Ecuador	358	58	47	11	299	---	(D)	(D)	(*)	---	346	---
Peru	350	93	44	48	257	---	(D)	(D)	(D)	---	301	---
Venezuela	2,891	1,240	936	335	1,651	---	(D)	(D)	(D)	---	2,557	---
Other	312	82	41	41	230	---	(D)	(D)	(D)	---	271	---
Central America	4,116	1,628	1,310	318	2,488	---	1,211	939	272	---	3,798	---
Mexico	3,045	1,309	1,098	211	1,736	---	807	612	194	---	2,834	---
Panama	291	132	88	44	159	---	(D)	(D)	(D)	---	247	---
Other	780	188	124	64	593	---	(D)	(D)	(D)	---	717	---
Other Western Hemisphere	1,032	369	184	185	662	---	3,612	3,158	454	---	847	---
Bahamas	111	82	40	42	29	---	1,191	(D)	(D)	---	69	---
Bermuda	50	19	17	1	32	---	22	17	5	---	49	---
Netherlands Antilles	119	39	25	15	80	---	(D)	(D)	82	---	105	---
Trinidad and Tobago	257	53	30	23	204	---	(D)	(D)	(D)	---	234	---
Other	494	177	73	104	318	---	514	(D)	(D)	---	391	---
Other Africa	3,028	418	240	178	2,610	---	4,723	(D)	(D)	---	2,851	---
Saharan	1,670	124	68	56	1,552	---	1,862	(D)	(D)	---	1,620	---
Egypt	649	32	11	20	617	---	(D)	(D)	(*)	---	629	---
Liyva	228	47	(D)	(D)	182	---	1,749	(D)	(D)	---	(D)	---
Other	798	45	(D)	(D)	753	---	(D)	(D)	4	---	(D)	---
Sub-Saharan	1,353	294	173	122	1,058	---	2,861	(D)	(D)	---	1,231	---
Liberia	80	(D)	13	(D)	67	---	(D)	(D)	(D)	---	(D)	---
Nigeria	606	89	37	52	516	---	2,336	(D)	(D)	---	554	---
Other	668	(D)	123	(D)	(D)	---	(D)	(D)	(D)	---	(D)	---
Middle East	8,398	1,113	862	250	7,285	---	2,915	2,840	74	---	8,148	---
Israel	1,146	(D)	(D)	(D)	(D)	---	(D)	(D)	(D)	---	1,108	---
OPEC	6,775	990	789	201	5,785	---	2,848	(D)	(D)	---	6,574	---
Iran	2,659	141	90	51	2,518	---	2,369	(D)	(D)	---	2,608	---
Other	4,116	849	699	150	3,267	---	478	(D)	(D)	---	3,966	---
Other	478	(D)	(D)	(D)	(D)	---	(D)	(D)	(D)	---	466	---
Other Asia and Pacific	7,532	1,882	1,576	306	5,650	---	5,928	5,515	414	---	7,227	---
Hong Kong	619	360	338	21	259	---	1,917	1,710	207	---	598	---
India	561	23	21	2	538	---	(D)	(D)	1	---	559	---
Indonesia	719	137	40	97	582	---	1,865	(D)	(D)	---	622	---
Malaysia	465	242	217	25	223	---	(D)	(D)	1	---	440	---
Philippines	663	277	237	40	386	---	191	180	11	---	623	---
Singapore	771	386	355	32	385	---	735	733	2	---	739	---
South Korea	1,539	160	118	42	1,379	---	(D)	(D)	(D)	---	1,497	---
Taiwan	1,396	181	155	27	1,214	---	535	477	58	---	1,369	---
Thailand	367	82	72	10	285	---	(D)	(D)	(D)	---	357	---
Other	434	35	24	11	399	---	10	8	2	---	423	---
International	123	123	90	33	0	---	36	(D)	(D)	---	90	---
Unallocated	3,366	0	0	0	3,366	---	0	0	0	---	3,366	---
Addendum--OPEC	12,018	2,608	1,873	734	9,410	---	9,221	7,978	1,244	---	11,283	---

*MNC: Multinational company.

D Suppressed to avoid disclosure of data of individual companies.

* Less than \$500,000 (±).

1. U.S. imports shipped by unaffiliated foreigners to U.S. parents were not disaggregated by country in the 1977 benchmark survey; thus, data in column 10, and hence, in columns 6 and 12, are available only for all countries combined.

2. Consists of U.S. parents' exports to unaffiliated foreigners in all countries to which the parents' exports were less than \$100,000.

NOTE.--In this table, data for U.S. MNC's are only for nonbank MNC's; data for U.S. parents are only for nonbank parents of nonbank affiliates; and data for affiliates are only for nonbank affiliates of nonbank parents.

MNC-associated U.S. exports to Canada accounted for 23 percent of the MNC global total; at \$23.1 billion, they were larger than those to any other single country. Over two-fifths of these exports were shipped, largely by U.S. parents, to affiliates in the transportation equipment industry. Exports to these affiliates have been boosted since 1965 by the U.S.-Canadian automotive agreement, which, by reducing tariffs, stimulated automotive trade in both directions across the U.S.-Canadian border. Also boosting U.S. exports to Canada were Canada's physical proximity, which resulted in relatively low transportation costs, and similarity of consumer tastes, which lessened the need for U.S. companies to produce special products for the Canadian market.

Among the remaining developed countries, Europe accounted for 31 percent, Japan for 8 percent, and Australia, New Zealand, and South Africa for 3 percent, of total MNC-associated U.S. exports. Within Europe, exports to the United Kingdom, Germany, and the Netherlands were particularly large.

Among developing countries, Latin America accounted for 13 percent, the Middle East for 8 percent, "other Asia and Pacific" for 7 percent, and "other Africa" for 3 percent, of total MNC-associated U.S. exports. Within Latin America, exports to Mexico, Venezuela, and Brazil were largest.

MNC's accounted for a large share of total U.S. exports to most countries (table 3). Their share of U.S. exports to developed countries was 86 percent. Among developed countries, their share of exports to Canada was 90 percent; to Europe, 83 percent; to Japan, 82 percent; and to Australia, New Zealand, and South Africa, 91 percent.

The MNC share of U.S. exports to developing countries--74 percent--was somewhat smaller than that to developed countries. ^{8/} Among the developing countries, the MNC share of exports to Latin America was 72 percent; to the Middle East, 84 percent; and to "other Africa" and "other Asia and Pacific," 69 percent each.

The shares of total MNC-associated exports that were shipped to foreign affiliates and, thus, the shares that were shipped to unaffiliated foreigners varied considerably among destinations. Nearly one-half of the MNC-associated exports destined for developed countries were to affiliates, compared with only one-fourth of those destined for developing countries. Among developed countries, the share of exports going to affiliates was particularly large--75 percent--for Canada.

8. It probably would have been closer to the developed-country share if the unallocated exports by U.S. parents to unaffiliated foreigners could have been distributed by country. However, even under the unrealistic assumption that all unallocated exports were to developing countries, the MNC share of total U.S. exports to those countries would still have been below that for exports to developed countries--81 percent compared with 86 percent.

Table 3.--Total U.S. Exports and U.S. Exports Associated With U.S. MNC's,
1977, by Country of Destination

	Amount		MNC- associated exports as a percentage of total U.S. exports
	Total U.S. exports 1/ Millions of dollars	MNC- associated exports	
	(1)	(2)	
All countries	121,293	101,846	84.0
Developed countries	77,562	66,392	85.6
Canada	25,773	23,138	90.0
Europe	37,437	31,145	83.2
European Communities (9)	27,113	22,590	83.3
Belgium	3/ 3,137	3/ 2 552	3/ 81.4
Denmark	534	431	80.7
France	3,502	3,072	87.7
Germany	5,984	4,685	78.3
Ireland	378	239	63.2
Italy	2,801	2,269	81.0
Luxembourg	3/	3/	3/
Netherlands	4,828	4,404	91.2
United Kingdom	5,949	4,939	83.0
Other Europe	10,323	8,556	82.9
Austria	245	196	80.0
Creece	538	404	75.1
Norway	544	432	79.4
Portugal	558	438	78.5
Spain	1,960	1,836	93.7
Sweden	1,093	774	70.8
Switzerland	4/ 1,749	1,267	72.4
Turkey	421	402	95.5
Other	3 217	2,808	87.3
Japan	10,538	8,647	82.1
Australia, New Zealand, and South Africa ..	3,815	3,462	90.8
Australia	2,355	2,183	92.7
New Zealand	403	269	66.8
South Africa	1,057	1,010	95.6
Developing countries	43,405	31,964	73.6
Latin America	17,978	13,005	72.3
South America	9,284	7,858	84.6
Argentina	731	682	93.3
Brazil	2,491	2,233	89.6
Chile	520	361	69.4
Colombia	782	671	85.8
Ecuador	564	358	63.5
Peru	500	350	70.0
Venezuela	3,171	2,891	91.2
Other	525	312	59.4
Central America	6,687	4,116	61.6
Mexico	4,832	3,045	63.0
Panama	346	291	84.1
Other	1,509	780	51.7
Other Western Hemisphere	2,006	1,032	51.5
Bahamas	224	111	49.6
Bermuda	87	50	57.5
Netherlands Antilles	306	119	38.9
Trinidad and Tobago	306	257	84.0
Other	1,083	494	45.6
Other Africa	4,406	3,028	68.7
Saharan	2,305	1,676	72.7
Egypt	982	649	66.1
Libya	314	228	72.6
Other	1,009	798	79.1
Sub-Saharan	2,101	1,353	64.4
Liberia	91	80	87.9
Nigeria	958	606	63.3
Other	1,052	668	63.5
Middle East	10,039	8,398	83.7
Israel	1,447	1,146	79.2
OPEC	7,695	6,775	88.0
Iran	2,731	2,659	97.4
Other	4,964	4,116	82.9
Other	897	478	53.3
Other Asia and Pacific	10,982	7,532	68.6
Hong Kong	1,292	619	47.9
India	779	561	72.0
Indonesia	762	719	94.4
Malaysia	561	465	82.9
Philippines	876	663	75.7
Singapore	1,172	771	65.8
South Korea	2,370	1,539	64.9
Taiwan	1,798	1,396	77.6
Thailand	509	367	72.1
Other	863	434	50.3
International 2/	---	123	---
Unallocated 5/	3/ 329	6/ 3,366	7/
Addendum: OPEC	14,020	12,018	85.7

MNC Multinational company.

1. See footnote 1, table 1.

2. Includes U.S. exports to affiliates that had operations spanning more than one country and that were engaged in petroleum shipping, other water transportation, petroleum trading or oil and gas drilling. The precise destination of these exports was not obtained in the 1977 benchmark survey.

3. In the all-U.S. export data, Belgium and Luxembourg are shown together; thus, to be comparable, exports to Luxembourg are included with those to Belgium in the MNC data in this table as well.

4. Includes Lichtenstein, which is in "other" "other Europe" in the MNC data.

5. Includes exports of commodities to countries to which total shipments of the commodities averaged less than \$5,000 per month.

6. See footnote 2, table 2.

7. Not calculated because of differences in definition of "unallocated" between the MNC and all-U.S. data.

NOTE.--In this table, data for U.S. MNC's are only for nonbank MNC's.

One reason for the larger affiliate share in developed countries was the much greater use of affiliates in those countries as distribution channels for finished products exported by U.S. parents. In particular, manufacturing affiliates served to a greater extent in developed than in developing countries as sales outlets for their U.S. parents' exports, in addition to engaging in their own manufacturing activities. Also, fewer affiliates in developed than in developing countries were subject to performance requirements, imposed by host governments, that limited imports as a condition for the affiliates' operating in those countries. 9/

Exports by U.S. parents were very large shares, and exports by unaffiliated U.S. persons very small shares, of total MNC-associated exports to nearly every destination. For most countries, the parents' share exceeded 90 percent. A major exception was Canada, where the parents' share was 81 percent. A large portion of the exports to Canada by unaffiliated U.S. persons was automotive parts and supplies for further processing and assembly by Canadian affiliates in motor vehicle manufacturing.

By industry of U.S. parent

In this section, MNC-associated U.S. exports are disaggregated by industry of U.S. parent. The parent's industry, rather than the industry of the MNC as a whole, is used because an industry code based on the worldwide consolidated activities of the MNC was not available from the 1977 benchmark survey. In a majority of cases, however, the industries of the parent and MNC were probably the same. 10/

A U.S. parent's industry is not always indicative of the type of products being exported. Parents that are highly diversified may produce and export products outside the single, major industry in which they are classified. In addition, MNC-associated U.S. exports include goods produced by others, but purchased and exported by U.S. parents, as well as goods shipped by unaffiliated U.S. persons directly to affiliates. In either case, the goods may not be products of the U.S. parent's industry of classification. In examining the composition of the exports themselves, a breakdown by product is preferable to one by industry of U.S. parent; however, such a breakdown is not available for total MNC-associated U.S. exports. That portion of the total for which a product breakdown is available will be discussed in the next section.

By industry of U.S. parent, manufacturing accounted for a very large share--72 percent--of total MNC-associated exports (table 4). Most of the remainder was accounted for by trade (19 percent)--mainly wholesale--and petroleum (5 percent). Finance (except banking), insurance, and real estate

9. In the 1977 benchmark survey, 582 affiliates indicated that they were subject to such import limitations; of these, about two-thirds were in developing countries.

10. See Barker, "A Profile," p. 41.

Table 4.--U.S. Trade Associated With U.S. MNC's, 1977, by Industry of U.S. Parent

	[Millions of dollars]											
	MNC-associated exports					MNC-associated imports					Addenda	
	Total	Shipped to affiliates		Shipped to unaffiliated foreigners by U.S. parents	Total	Shipped by affiliates		Shipped by unaffiliated foreigners to U.S. parents	Total exports shipped by U.S. parents (+ col. 3 + col. 5)	Total imports shipped to U.S. parents (+ col. 8 + col. 10)		
		Total	By U.S. parents			By unaffiliated U.S. persons	Total				To U.S. parents	To unaffiliated U.S. persons
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
ALL INDUSTRIES	101,846	40,787	32,397	8,390	61,059	86,759	41,525	32,639	8,887	45,234	93,456	77,872
Mining	784	32	(D)	(D)	752	310	(D)	(D)	(D)	(D)	(D)	191
Metal mining	55	3	(D)	(D)	52	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Iron	(D)	(*)	(*)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Copper, lead, zinc, gold, and silver	(D)	3	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Bauxite, other ores, and services	(*)	(*)	(*)	(D)	0	0	0	0	0	0	(*)	0
Coal and other nonmetallic minerals	729	29	(D)	(D)	700	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Petroleum	5,227	2,151	1,753	399	3,076	38,372	17,602	13,672	3,930	20,770	4,829	34,442
Oil and gas extraction	(D)	(D)	(D)	(D)	(D)	38	(D)	2	(D)	(D)	466	(D)
Crude petroleum (no refining) and gas	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1	(D)	(D)	(D)	(D)
Oil and gas field services	(D)	26	20	6	(D)	(D)	1	0	0	(D)	(D)	(D)
Petroleum and coal products	4,042	(D)	(D)	322	(D)	(D)	(D)	2,315	2,315	(D)	(D)	(D)
Integrated refining and extraction	3,848	(D)	(D)	298	(D)	32,823	14,884	12,568	2,315	17,939	(D)	30,508
Refining without extraction	(D)	(D)	0	(D)	0	(D)	(D)	0	0	(D)	0	(D)
Petroleum and coal products, nec	(D)	(D)	2	(D)	(D)	1	1	0	0	(*)	(D)	1
Petroleum wholesale trade	(D)	86	(D)	(D)	(D)	4,442	(D)	(D)	(D)	(D)	(D)	2,837
Other	40	(D)	(D)	(D)	(D)	(D)	3	0	0	(D)	25	(D)
Manufacturing	73,228	34,034	28,260	5,773	39,194	34,428	20,988	17,148	3,841	13,440	67,454	30,587
Food and kindred products	3,261	1,106	603	503	2,155	2,254	599	(D)	(D)	1,656	2,758	(D)
Grain mill and bakery products	1,271	282	(D)	(D)	989	257	(D)	(D)	(D)	(D)	(D)	(D)
Beverages	168	48	(D)	(D)	120	257	145	125	20	112	(D)	237
Other	1,823	777	(D)	(D)	1,046	1,740	(D)	335	(D)	(D)	(D)	(D)
Chemicals and allied products	9,204	4,841	4,148	692	5,063	3,094	1,248	1,011	237	1,846	9,212	2,857
Industrial chemicals and synthetics	6,519	2,878	2,467	411	3,641	1,311	640	452	188	671	6,108	1,123
Drugs	1,462	1,104	1,063	41	358	377	160	154	6	217	1,421	370
Soap, cleaners, and toilet goods	751	498	309	189	253	(D)	(D)	(D)	(D)	(D)	562	(D)
Agricultural chemicals	562	135	(D)	(D)	427	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other	610	226	(D)	(D)	384	120	48	47	1	73	(D)	119
Primary and fabricated metals	4,634	1,433	1,014	418	3,201	3,744	1,769	1,238	531	1,975	4,215	3,213
Primary metal industries	3,056	913	569	344	2,144	2,688	1,137	874	263	1,551	2,712	2,425
Ferrous	1,313	226	116	109	1,087	1,321	406	260	147	914	1,205	1,174
Nonferrous	1,743	686	451	235	1,057	1,368	731	615	116	637	1,508	1,251
Fabricated metal products	1,577	520	445	75	1,058	1,056	631	363	268	424	1,503	787
Machinery, except electrical	12,809	5,631	5,226	405	7,178	2,428	1,509	1,299	210	918	12,404	2,218
Farm and garden machinery and equipment	919	(D)	(D)	7	(D)	592	(D)	(D)	(D)	(D)	912	(D)
Construction and related machinery	4,413	1,098	1,214	84	3,315	557	297	190	107	260	4,328	450
Office and computing machines	3,518	2,891	2,681	209	628	772	(D)	(D)	(D)	(D)	3,309	(D)
Other	3,959	(D)	(D)	104	(D)	507	355	280	85	141	3,855	422
Electric and electronic equipment	8,159	3,084	2,672	412	5,076	3,587	2,229	2,062	167	1,357	7,748	3,420
Household appliances	675	239	199	40	436	111	(D)	(D)	(D)	(D)	635	(D)
Radio, television, and communication equipment	1,847	787	738	49	1,060	1,130	(D)	569	(D)	(D)	1,798	(D)
Electronic components and accessories	1,464	940	921	19	523	950	892	867	25	58	1,444	925
Other	4,173	1,117	814	303	3,056	1,396	(D)	(D)	(D)	(D)	3,870	1,309
Transportation equipment	23,556	13,091	10,544	2,547	10,474	13,436	10,161	(D)	(D)	3,275	21,019	(D)
Motor vehicles and equipment	15,586	12,273	9,967	2,306	3,313	11,959	9,423	(D)	(D)	2,536	13,280	(D)
Other	7,979	818	577	241	7,161	1,477	738	399	339	739	7,739	1,138
Other manufacturing	10,394	4,848	4,054	794	6,046	5,885	3,473	1,752	1,721	2,412	10,100	4,165
Tobacco manufactures	1,148	260	(D)	(D)	888	347	53	(D)	(D)	294	(D)	(D)
Textile products and apparel	797	338	198	140	459	595	180	(D)	(D)	415	657	(D)
Lumber, wood, furniture, and fixtures	1,092	112	85	27	979	666	430	144	285	236	1,064	381
Paper and allied products	1,710	839	575	265	870	1,318	(D)	(D)	(D)	(D)	1,445	507
Printing and publishing	312	154	136	18	158	492	337	195	142	155	294	350
Rubber products	1,038	470	339	81	569	733	(D)	(D)	(D)	(D)	958	556
Miscellaneous plastics products	163	67	50	11	97	49	(D)	12	(D)	(D)	153	(D)
Glass products	369	119	98	21	250	52	(D)	12	(D)	(D)	348	(D)
Stone, clay, cement, and concrete	463	168	102	65	296	352	266	201	65	86	398	287
Instruments and related products	3,195	2,111	2,041	70	1,084	725	333	250	83	392	3,124	642
Other	607	211	(D)	(D)	397	558	143	122	21	415	(D)	537
Trade	18,932	2,534	1,622	912	16,398	11,691	1,675	1,249	426	10,016	18,020	11,265
Wholesale trade	18,535	2,221	1,458	762	16,315	9,402	1,091	678	413	8,311	17,773	8,989
Durable goods	3,166	275	160	115	2,891	6,711	514	372	141	6,197	3,050	6,570
Nondurable goods	15,370	1,946	1,298	647	13,424	2,691	578	306	272	2,114	14,722	2,420
Retail trade	377	313	164	150	84	2,288	584	571	13	1,704	248	2,276
Finance (except banking), insurance, and real estate	1,856	1,139	(D)	(D)	716	625	(D)	(D)	(D)	(D)	(D)	220
Finance, except banking	(D)	(D)	(D)	(*)	(D)	78	(D)	(D)	0	(D)	341	78
Insurance	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	125
Real estate	(D)	4	3	1	(D)	(D)	4	4	0	(D)	(D)	(D)
Holding companies	70	87	12	74	4	164	(D)	4	0	(D)	16	(D)
Individuals, estates, and trusts	706	706	7	699	0	94	94	2	92	0	7	2
Other industries	1,319	897	492	405	922	1,334	621	454	167	712	1,414	1,167
Agriculture, forestry, and fishing	56	7	6	1	49	(D)	(D)	(D)	1	0	56	(D)
Construction	950	516	242	274	434	(D)	37	(D)	(D)	(D)	676	143
Transportation, communication, and public utilities	613	279	165	114	334	775	(D)	(D)	(D)	(D)	499	688
Transportation	(D)	(D)	(D)	(D)	(D)	504	(D)	(D)	(D)	(D)	(D)	441
Communication and public utilities	(D)	(D)	(D)	(D)	(D)	271	(D)	(D)	(D)	(D)	(D)	246
Services	220	95	79	16	104	237	(D)	40	(D)	(D)	184	(D)

MNC: Multinational company.

D: Suppressed to avoid disclosure of data of individual companies.

*: Less than \$500,000 (+).

NOTE.--In this table, data for U.S. MNC's are only for nonbank MNC's; data for U.S. parents are only for nonbank parents of nonbank affiliates; and data for affiliates are only for nonbank affiliates of nonbank parents.

and "other industries" each accounted for only 2 percent of the MNC total, largely because MNC's in these industries were engaged primarily in performing services, rather than in producing goods. The share in mining was less than 1 percent. This small share mainly reflected the small size of U.S. mineral exports generally. With the major exception of coal, minerals in crude form are not usually exported because their high waste content makes transport uneconomical. 11/

Of total MNC-associated exports in manufacturing, nearly one-third were in transportation equipment--21 percent in motor vehicles and equipment and 11 percent in "other" transportation equipment; 17 percent were in nonelectrical machinery, 14 percent in chemicals, and 11 percent in electric and electronic equipment.

Among industries, as among areas, the shares of total MNC-associated exports that were shipped to affiliates, rather than to unaffiliated foreigners, varied considerably. In manufacturing and petroleum, exports to affiliates were 46 and 41 percent, respectively, of total MNC-associated exports. In trade, they were 13 percent; this relatively low share may have reflected the practice by wholesale trade parents of distributing goods--largely bulk shipments of agricultural products and raw materials--directly to unaffiliated foreign customers rather than through their foreign affiliates.

Within manufacturing, affiliates' shares were particularly large--roughly two-thirds or more--in drugs; soap, cleaners, and toilet goods; office and computing machines; electronic components and accessories; motor vehicles and equipment; and instruments and related products. In these industries, affiliates' operations may have been more highly integrated with those of their U.S. parents, so that above-average shares of their parents' exports were channeled to or through them, either for resale or for further manufacture abroad. Also, in several industries--such as electronic components and instruments--exports to affiliates may have been stimulated by U.S. tariff provisions that permitted import duties on items sent abroad for processing, and then returned to the United States, to be paid only on the value added abroad rather than on the full value of the imported goods. As noted earlier, exports to Canadian affiliates of MNC's manufacturing motor vehicles and parts were stimulated by the U.S.-Canadian automotive agreement.

In most industries, as in most areas, exports by U.S. parents were very large shares (and exports by unaffiliated U.S. persons very small shares) of total MNC-associated exports. The parents' shares generally exceeded 90 percent.

11. Also, in the 1977 benchmark survey, parents engaged in smelting or refining, in addition to mineral exploration and extraction, were classified in manufacturing, if--as was often the case--their sales of smelted or refined products exceeded their sales of crude minerals. In such cases, the parents' exports of crude, as well as smelted or refined, minerals would have been shown in manufacturing instead of in mining.

By product

A product breakdown is available for \$93.2 billion, or 92 percent, of total MNC-associated exports (table 5). These data cover U.S. exports associated with MOFA's and their parents only.^{12/} Such exports accounted for very large shares of total MNC-associated exports to nearly all major areas of destination and in most major industries of U.S. parent. By area, the lowest share was in Japan (86 percent), where majority-ownership by foreigners was often restricted. By industry of U.S. parent, the lowest shares were in finance (except banking), insurance, and real estate (roughly two-thirds) and in primary and fabricated metal manufacturing (over four-fifths).

Based on the Standard International Trade Classification (SITC) system, more than one-fourth of U.S. exports associated with MOFA's and their parents consisted of machinery, both electrical and nonelectrical (table 6).^{13/} Road motor vehicles and food, beverages, and tobacco each accounted for 14 percent and "other manufactures"--which includes leather, rubber, wood, and paper products; textiles; nonmetallic mineral manufactures; and miscellaneous manufactured articles--accounted for 12 percent. Chemicals and inedible crude materials, except fuels, accounted for 9 percent each, "other transportation equipment" for 7 percent, metal manufactures for 5 percent, and mineral fuels for 3 percent.

Exports of road motor vehicles and other transportation equipment are probably significantly overstated (and exports of other products, particularly machinery, understated) because survey reporters had difficulty classifying parts and accessories for such equipment. The SITC requires that parts--such as tires and tubes, engines, and electrical parts for engines--that are shipped separately, and certain accessories not attached to the vehicle chassis, be excluded from road motor vehicles and parts and "other transportation equipment," and included in other SITC categories (e.g., tires and tubes in "other manufactures," engines and engine parts in machinery, etc.). Reporters, however, often erroneously included all such parts and accessories in road motor vehicles and parts or "other transportation equipment."

In table 6, U.S. exports associated with MOFA's and their parents, by product, are crossclassified by industry of U.S. parent. In most goods-producing industries, the exports tended to be products either of the industries in which the U.S. parents were classified or of closely related

12. Total U.S. exports associated with MOFA's and their parents, as previously published in U.S. Direct Investment Abroad, 1977, were \$96.9 billion. However, one part of the total--exports by the parents of MOFA's to their minority-owned foreign affiliates--is not available by product. Such exports were relatively small--\$3.7 billion, or 4 percent of the total; therefore, their omission here probably has little effect on the analysis.

13. See United Nations, Statistical Office, Standard International Trade Classification, Revised (United Nations Statistical Papers, Series M, No. 34), 1961.

Table 5.--U.S. Exports Associated With MOFA's and Their U.S. Parents for Which a Product Breakdown Is Available Compared With Total MNC-Associated U.S. Exports, 1977, by Area of Destination and Industry of U.S. Parent

(Millions of dollars or percent)

	Total MNC-associated exports	Exports associated with MOFA's and their U.S. parents for which a product breakdown is available <u>1/</u>	Column (2) as a percentage of column (1)
	(1)	(2)	(3)
All areas, all industries-----	101,846	93,232	91.5
<u>By area of destination:</u>			
Developed countries-----	66,392	61,035	91.9
Canada-----	23,138	21,709	93.8
Europe-----	31,145	28,719	92.2
European Communities (9)-----	22,590	20,860	92.3
Other Europe-----	8,556	7,858	91.8
Japan-----	8,647	7,441	86.1
Australia, New Zealand, and South Africa-----	3,462	3,166	91.4
Developing countries-----	31,964	28,996	90.7
Latin America-----	13,005	11,665	89.7
Other Africa-----	3,028	2,854	94.2
Middle East-----	8,398	7,656	91.2
Other Asia and Pacific-----	7,532	6,822	90.6
International-----	123	115	93.5
Unallocated-----	3,366	3,086	91.7
<u>By industry of U.S. parent:</u>			
Mining-----	784	(D)	(D)
Petroleum-----	5,227	4,802	91.9
Manufacturing-----	73,228	67,807	92.6
Food and kindred products-----	3,261	2,908	89.2
Chemicals and allied products-----	9,904	9,237	93.3
Primary and fabricated metals-----	4,634	3,889	83.9
Machinery, except electrical-----	12,809	11,866	92.6
Electric and electronic equipment-----	8,159	7,458	91.4
Transportation equipment-----	23,566	22,593	95.9
Other manufacturing-----	10,894	9,856	90.5
Trade-----	18,932	17,083	90.2
Finance (except banking), insurance, and real estate-----	1,856	(D)	(D)
Other industries-----	1,819	1,619	89.0

MOFA Majority-owned foreign affiliate.

MNC Multinational company.

D Suppressed to avoid disclosure of data of individual companies.

1. Excludes \$3.7 billion of U.S. exports to minority-owned foreign affiliates of the U.S. parents of MOFA's. See footnote 12 in text for further discussion.

NOTE.--In this table, data for U.S. MNC's are only for nonbank MNC's; data for U.S. parents are only for nonbank parents of nonbank affiliates; and data for affiliates are only for nonbank affiliates of nonbank parents. MOFA's are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million in 1977.

Table 6.--U.S. Exports Associated With MOFA's and Their U.S. Parents for Which a Product Breakdown Is Available, Industry of U.S. Parent by Product

	[Millions of dollars]										
	Total 1/	Food, beverages, and tobacco	Inedible crude materials, except fuels	Mineral fuels, lubricants, and related materials	Chemicals	Machinery	Road motor vehicles and parts	Other transportation equipment	Metal manufactures	Other manufactures	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
All industries	93,232	13,114	8,233	3,230	8,745	26,086	13,433	6,693	4,337	11,010	352
Mining	(D)	(*)	78	(D)	(D)	6	(*)	(*)	(D)	2	(*)
Metal mining	(D)	0	(D)	(D)	(D)	2	(*)	0	5	0	(*)
Iron	(D)	0	(D)	(D)	0	0	0	0	0	0	0
Copper, lead, zinc, gold, and silver	41	0	(D)	(D)	(D)	2	(*)	0	5	0	(*)
Sauxite, other ores, and services	0	0	0	0	0	0	0	0	0	0	0
Coal and other nonmetallic minerals	699	(*)	(D)	(D)	(D)	4	(*)	(*)	(D)	2	0
Petroleum	4,802	3	68	1,925	1,360	(D)	19	(D)	(D)	360	9
Oil and gas extraction	(D)	0	0	1	1	(D)	1	(*)	(D)	(D)	5
Crude petroleum (no refining) and gas	322	0	0	1	1	(D)	0	(*)	(D)	1	2
Oil and gas field services	(D)	0	0	0	(*)	(D)	1	0	(D)	(D)	3
Petroleum and coal products	3,671	3	(D)	(D)	(D)	(D)	18	4	(D)	(D)	3
Integrated refining and extraction	(D)	3	(D)	1,453	(D)	435	18	4	(D)	(D)	3
Refining without extraction	(D)	0	0	(D)	0	0	0	0	0	0	0
Petroleum and coal products, nec	166	0	(D)	(D)	0	(D)	0	0	0	(*)	0
Petroleum wholesale trade	(D)	0	(D)	(D)	(D)	(D)	(*)	0	1	(D)	1
Other	35	0	0	1	1	(*)	0	(D)	(*)	(D)	0
Manufacturing	67,807	5,703	2,521	584	6,889	21,657	13,303	6,504	3,316	9,032	300
Food and kindred products	2,908	2,222	163	(D)	154	70	(D)	3	(D)	146	(D)
Grain mill and bakery products	(D)	(D)	(D)	(*)	(D)	10	0	0	1	(D)	(*)
Beverages	161	113	1	0	4	(D)	0	(*)	(D)	(D)	0
Other	(D)	(D)	(D)	(D)	(D)	(D)	(D)	3	20	88	(D)
Chemicals and allied products	9,237	313	806	217	5,859	666	17	(D)	127	1,206	(D)
Industrial chemicals and synthetics	6,127	(D)	(D)	142	3,967	534	(D)	(*)	74	750	(D)
Drugs	1,384	49	2	(D)	1,103	(D)	0	0	(D)	192	(*)
Soap, cleaners, and toilet goods	712	(D)	(D)	13	(D)	17	(*)	(D)	(D)	(D)	7
Agricultural chemicals	(D)	0	(D)	(D)	(D)	0	0	0	(*)	0	(*)
Other	(D)	5	(D)	6	331	(D)	(D)	(*)	(D)	(D)	0
Primary and fabricated metals	3,889	(D)	(D)	179	231	627	155	120	1,903	291	(D)
Primary metal industries	2,639	(D)	(D)	(D)	208	388	34	(D)	1,332	190	1
Ferrous	(D)	(D)	9	15	(D)	168	27	21	717	118	1
Nonferrous	(D)	(*)	(D)	(D)	(D)	220	7	(D)	614	72	(*)
Fabricated metal products	1,250	(D)	(D)	(D)	23	239	121	(D)	571	101	(D)
Machinery, except electrical	11,866	(*)	3	0	39	10,143	412	103	470	677	12
Farm and garden machinery and equipment	(D)	0	0	0	1	(D)	0	0	(D)	(D)	3
Construction and related machinery	4,268	0	1	1	(D)	3,321	371	(D)	271	217	1
Office and computing machines	(D)	0	0	0	5	2,932	1	1	(D)	(D)	4
Other	3,525	(*)	2	5	(D)	(D)	39	(D)	181	166	4
Electric and electronic equipment	7,458	1	(D)	(D)	85	5,684	62	(D)	136	822	10
Household appliances	(D)	0	(*)	1	3	478	5	4	(D)	(D)	0
Radio, television, and communication equipment	1,665	1	0	1	(D)	1,570	5	(D)	1	72	2
Electronic components and accessories	1,271	0	0	(*)	(D)	940	(D)	8	13	279	4
Other	(D)	(*)	(D)	(D)	(D)	2,696	(D)	(D)	(D)	(D)	4
Transportation equipment	22,593	(D)	10	(D)	106	3,610	(D)	5,489	303	366	(D)
Motor vehicles and equipment	15,139	(*)	4	7	(D)	1,867	12,297	709	76	112	(D)
Other	7,454	(D)	6	(D)	(D)	1,743	(D)	4,780	227	254	7
Other manufacturing	9,856	1,076	1,214	56	415	857	(D)	140	(D)	5,522	(D)
Tobacco manufactures	(D)	1,054	1	0	3	6	0	0	(D)	(D)	(*)
Textile products and apparel	670	1	0	(D)	10	54	(D)	(*)	(D)	500	(*)
Lumbers, wood, furniture, and fixtures	1,027	0	(D)	(D)	(D)	5	(*)	(*)	11	346	(*)
Paper and allied products	1,543	0	(D)	(D)	(D)	47	(*)	(*)	5	1,186	1
Printing and publishing	254	0	(D)	0	3	7	0	0	1	230	(D)
Rubber products	990	2	92	4	128	83	(D)	(D)	18	405	(D)
Miscellaneous plastics products	136	0	1	0	(D)	7	(D)	0	(D)	(D)	(*)
Glass products	356	0	5	(*)	2	(D)	(D)	0	(D)	264	(*)
Stone, clay, cement, and concrete	418	(*)	43	(D)	(D)	(D)	5	2	(D)	171	(D)
Instruments and related products	2,861	(D)	(D)	1	(D)	560	2	(D)	19	1,991	3
Other	(D)	(D)	9	(*)	5	60	(D)	2	78	335	(*)
Trade	17,083	9,343	5,280	(D)	417	501	(D)	25	427	979	26
Wholesale trade	(D)	(D)	5,279	(D)	417	468	(D)	25	409	873	26
Durable goods	2,133	(D)	372	(D)	189	415	(D)	24	408	355	(D)
Nondurable goods	(D)	8,928	4,908	(D)	228	53	(*)	1	1	518	(D)
Retail trade	(D)	(D)	1	0	0	33	1	0	18	107	1
Finance (except banking), insurance, and real estate	(D)	21	(D)	1	(D)	442	(D)	(D)	69	(D)	2
Finance, except banking	338	0	(D)	0	0	(D)	0	(D)	(D)	(D)	1
Insurance	694	(D)	(D)	0	5	(D)	(D)	(D)	(D)	(D)	0
Real estate	(D)	(*)	0	(*)	(D)	(*)	(*)	0	(*)	(*)	0
Holding companies	82	5	19	1	1	26	1	3	6	18	1
Individuals, estates, and trusts	(D)	(D)	5	(*)	1	3	(*)	(*)	(D)	19	(*)
Other industries	1,619	44	(D)	(D)	39	(D)	62	62	277	(D)	14
Agriculture, forestry, and fishing	50	22	(D)	0	0	2	0	0	0	0	0
Construction	857	(*)	17	(D)	5	394	(D)	(D)	167	226	1
Transportation, communication, and public utilities	540	(D)	(*)	(D)	(D)	4	(D)	(D)	(D)	(D)	(D)
Transportation	250	(D)	(*)	(D)	(D)	42	(D)	(D)	(D)	(D)	6
Communication and public utilities	290	0	0	0	(D)	(D)	3	(*)	(D)	(D)	(*)
Services	171	(D)	(*)	(D)	(D)	(D)	(*)	(D)	(D)	79	(D)

MOFA Majority-owned foreign affiliate.

D Suppressed to avoid disclosure of data of individual companies.

* Less than \$500,000 (*).

1. Excludes \$3.7 billion of U.S. exports to minority-owned foreign affiliates of the U.S. parents of MOFA's. See footnote 12 in text for further discussion.

NOTE.--In this table, data for U.S. parents are only for nonbank parents of nonbank affiliates and data for affiliates are only for nonbank affiliates of nonbank parents. MOFA's are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million in 1977.

industries. This tendency mainly reflected the large shares of exports in these industries that were shipped by U.S. parents and the large shares of the parents' exports that were their own products.

In mining, over four-fifths of the U.S. exports associated with MOFA's and their parents were mineral fuels, mainly coal; the remaining exports were largely inedible crude materials, except fuels. In petroleum, 40 percent of the exports were mineral fuels and 28 percent were chemicals; a large share of the latter was probably petrochemicals.

Among manufacturing industries, 85 percent of the exports in nonelectrical machinery, 81 percent of those in motor vehicles, and 76 percent of those in both foods and electric and electronic equipment were products of the parents' industries of classification. In "other transportation equipment" and chemicals, the shares of exports that were products of these same industries were 64 and 63 percent, respectively; in the former, most of the remaining exports were machinery, and, in the latter, most were "other manufactures" and inedible crude materials, except fuels. In "other manufacturing," 56 percent of the exports were "other manufactures" and, in primary and fabricated metals, 49 percent were metal products. The former share may have been somewhat understated because "other manufacturing" includes several industries whose major products are not classified in "other manufactures"--for example, in the SITC, tobacco products are in food, beverages, and tobacco, lumber is in inedible crude materials, except fuels, and plastic materials are in chemicals.

In non-goods-producing industries--trade; finance (except banking), insurance, and real estate; transportation, communication, and public utilities; and services--the products shipped were, by definition, from industries other than those of the U.S. parents. In trade, most of the exports were food, beverages, and tobacco or inedible crude materials, except fuels. These products tended to be marketed abroad by trade MNC's, rather than by the producers of the goods themselves. (Trade MNC's handled large shares of total exports associated with MOFA's and their parents in both product categories--71 and 64 percent, respectively.) In finance (except banking), insurance, and real estate, exports were scattered among several product categories; however, nearly 40 percent were machinery. A few highly diversified companies classified in this industry, but with significant operations in machinery, accounted for most of the machinery exports. Machinery exports were also a large share--over 40 percent--of exports in transportation, communication, and public utilities.

In construction, which is generally considered a goods-producing industry, but which has a significant services component, the final products normally do not cross national borders. The exports in this industry were, therefore, mainly products of industries that supply goods used in construction activities. They consisted largely of machinery, "other manufactures," and metal products.

U.S. exports associated with MOFA's and their parents for which a product breakdown is available accounted for 77 percent of all U.S. exports (table 7). (As noted earlier, total MNC-associated exports accounted for 84

Table 7.--Total U.S. Exports and U.S. Exports Associated With MOFA's and Their U.S. Parents for Which a Product Breakdown Is Available, 1977, by Product

	Total U.S. exports <u>1/</u>	Exports associated with MOFA's and their parents for which a product breakdown is available <u>2/</u>	Exports associated with MOFA's and their parents for which a product breakdown is available as a percentage of total U.S. exports
Millions of dollars			
	(1)	(2)	(3)
Total.....	121,293	93,232	76.9
Food, beverages, and tobacco.....	16,536	13,114	79.3
Inedible crude materials, except fuels.....	12,926	8,233	63.7
Mineral fuels, lubricants, and related materials..	4,200	3,230	76.9
Chemicals.....	10,992	8,745	79.6
Machinery.....	32,975	24,086	73.0
Road motor vehicles and parts.....	11,908	<u>3/</u> 13,433	<u>3/</u> 112.8
Other transportation equipment.....	6,747	<u>3/</u> 6,693	<u>3/</u> 99.2
Metal manufactures.....	5,285	4,337	82.1
Other manufactures.....	14,042	11,010	78.4
Other.....	5,682	352	6.2

MOFA Majority-owned foreign affiliate.

1. See footnote 1, table 1.

2. Excludes \$3.7 billion of U.S. exports to minority-owned foreign affiliates of the U.S. parents of MOFA's. See footnote 12 in text for further discussion.

3. For MOFA's, and their U.S. parents, exports of road motor vehicles and parts and of "other transportation equipment" are probably significantly overstated because of inclusion by reporters of certain parts and accessories for transportation equipment in these categories rather than in the appropriate other SITC category. See text for further discussion.

NOTE.--In this table, data for U.S. parents are only for nonbank parents of nonbank affiliates and data for affiliates are only for nonbank affiliates of nonbank parents. MOFA's are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million in 1977.

percent of all U.S. exports; thus, about 7 percent of all U.S. exports were associated with MNC's, but cannot be compared with all U.S. exports by product.)

In most product categories, the MNC's accounted for between 64 and 82 percent of the U.S. totals. There were, however, a few major exceptions. MNC shares of U.S. exports of road motor vehicles and of other transportation equipment were extraordinarily high--over 100 percent and 99 percent, respectively. These high shares partly reflected the previously mentioned misclassification of parts and accessories by reporters. They also may have reflected underreporting in the all-U.S. trade data, particularly with regard to overland shipments to Canada. The very low MNC share of total U.S. exports of "other" products (6 percent) probably reflected the large portion of these products that were of a type not normally produced, handled, or sold by U.S. MNC's--such as nonmonetary gold, which is shipped mainly by independent gold dealers; arms or other military equipment, a large share of which is shipped by U.S. Government military agencies; live animals; and commodities donated for relief or charity by individuals or private agencies.

U.S. exports shipped to MOFA's

As previously mentioned, more detail was obtained in the 1977 benchmark survey for U.S. exports to MOFA's than for those to other foreign affiliates or to unaffiliated foreigners. In particular, exports to MOFA's are available by product and intended use, crossclassified by country of destination and by industry of affiliate.

U.S. exports shipped to MOFA's were \$35.8 billion--35 percent of total MNC-associated exports (table 8). Compared with the total, they were more heavily concentrated, by product, in road motor vehicles and parts and machinery; by area, they were more heavily concentrated in developed countries, particularly Canada.

In all product categories except one--mineral fuels--over 70 percent of the exports to MOFA's were to developed countries. For mineral fuels, only 49 percent were to developed countries. In every product category, including mineral fuels, exports to Canada far exceeded those to any other single country. Canadian MOFA's accounted for a particularly large share--85 percent--of total exports of road motor vehicles and parts.

By industry of affiliate, 70 percent of exports to MOFA's were to MOFA's in manufacturing and 23 percent were to MOFA's in trade. Within manufacturing, transportation equipment accounted for a particularly large share of the total. "Other manufacturing," electric and electronic equipment, nonelectrical machinery, and chemicals accounted for most of the remainder.

In most manufacturing industries, exports to MOFA's were generally products of the affiliates' own industries. Ninety percent of the exports to MOFA's in transportation equipment were road motor vehicles and parts or other transportation equipment; 86 percent of those to MOFA's in nonelectrical machinery and 82 percent of those to MOFA's in electric and electronic equipment were machinery exports. In chemicals and food, the

Table 8.--U.S. Exports Shipped to MOFA's, 1977, Area of Destination and Industry of Affiliate by Product

	[Millions of dollars]										
	Total	Food, beverages, and tobacco	Inedible crude materials, except fuels	Mineral fuels, lubricants, and related materials	Chemicals	Machinery	Road motor vehicles and parts	Other transportation equipment	Metal manufactures	Other manufactures	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
All areas, all industries	35,813	2,324	1,299	574	3,798	10,497	10,794	264	1,215	4,957	92
<u>By area of destination:</u>											
Developed countries	29,210	2,085	1,134	281	2,844	8,004	9,754	220	877	3,935	76
Canada	16,201	468	314	130	792	3,110	9,184	119	433	1,615	37
Europe	10,866	1,541	782	120	1,591	3,927	381	80	393	2,024	27
European Communities (9)	9,250	1,408	545	93	1,334	3,375	325	80	266	1,699	26
Other Europe	1,615	134	138	27	257	551	56	(*)	127	325	1
Japan	709	11	16	(D)	222	319	(D)	0	9	72	(*)
Australia, New Zealand, and South Africa	1,434	65	21	(D)	239	648	(D)	21	43	225	12
Developing countries	6,489	238	165	(D)	954	2,460	1,041	42	338	(D)	16
Latin America	3,700	146	114	98	670	1,098	994	15	116	439	9
Other Africa	324	36	12	52	14	87	10	2	50	58	3
Middle East	937	6	3	12	32	455	23	9	105	292	1
Other Asia and Pacific	1,526	50	35	(D)	238	820	13	15	67	(D)	2
International	115	(*)	(*)	(D)	(*)	33	(*)	2	1	(D)	(*)
<u>By industry of affiliate:</u>											
Mining	194	(*)	(D)	(D)	29	66	6	9	18	20	(D)
Petroleum	1,639	3	14	428	176	565	22	5	137	284	6
Manufacturing	25,145	834	881	92	2,739	6,068	10,607	155	738	2,961	69
Food and kindred products	974	621	231	(*)	35	37	1	(*)	11	29	9
Chemicals and allied products	3,007	27	210	32	2,375	75	(*)	(*)	28	244	15
Primary and fabricated metals	845	(*)	166	39	38	139	55	(D)	318	81	(D)
Machinery, except electrical	3,036	0	3	3	17	2,606	14	28	168	197	2
Electric and electronic equipment	2,316	0	7	1	75	1,897	(D)	(D)	41	272	5
Transportation equipment	11,805	0	3	1	20	966	10,530	107	104	(D)	(D)
Other manufacturing	3,161	185	260	16	179	348	(D)	(D)	67	(D)	19
Trade	8,133	1,463	370	27	832	3,508	131	66	199	1,525	12
Finance (except banking), insurance, and real estate	20	1	0	(*)	(D)	5	0	(*)	(*)	(D)	0
Other industries	582	23	(D)	(D)	(D)	286	28	28	122	(D)	(D)

MOFA Majority-owned foreign affiliate.

* Less than \$500,000 (+).

D Suppressed to avoid disclosure of data of individual companies.

NOTE.--In this table, data for affiliates are only for nonbank affiliates of nonbank parents. MOFA's are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million in 1977.

corresponding percentages were 79 and 64 percent, respectively. In metals, in contrast, only 38 percent of the exports were metal manufactures; a large portion of the remainder was inedible crude materials, except fuels, and machinery.

Over 40 percent of all exports to MOFA's in trade were machinery, 19 percent were "other manufactures," and 18 percent were food, beverages and tobacco. Less than 15 percent of exports to MOFA's in mining and about one-fourth of those to MOFA's in petroleum were products of their own industries. Large shares of the remaining exports in both industries were machinery.

By intended use, 57 percent of total exports to MOFA's were for resale without further manufacture, 4 percent were capital equipment or other goods charged to fixed assets, and 38 percent were for "other" uses--mainly for further processing or assembly by affiliates (table 9). The small share for capital equipment reflected the fact that MOFA's obtained most of their capital equipment from local and other non-U.S. sources; U.S. exports of such equipment were less than 7 percent of total plant and equipment expenditures by MOFA's in 1977.

Exports for resale without further manufacture, most of which were from U.S. parents, were probably nearly all distributed by the MOFA's to unaffiliated foreign customers. In addition, the U.S. parents of MOFA's exported \$57.4 billion of goods directly to unaffiliated foreigners. Thus, U.S. exports that reached unaffiliated foreigners without further manufacture by MOFA's could have been as much as \$77.9 billion, more than four-fifths of total U.S. exports associated with MOFA's and their parents. Over one-fourth of these exports were channeled through MOFA's.

Exports for resale were a significantly larger share of total exports to MOFA's in developed countries than in developing countries. As noted earlier, MOFA's in developed countries served to a greater extent than those in developing countries as distributors of their U.S. parents' exports. By industry of affiliate, exports for resale accounted for almost one-half of total U.S. exports to MOFA's in manufacturing. Within manufacturing, they were a particularly large share (64 percent) of exports to MOFA's in transportation equipment. These exports were primarily shipments of road motor vehicles and parts from U.S. parents to MOFA's in Canada. In trade, nearly all--92 percent--of the exports to MOFA's were for resale.

Capital equipment and goods for "other" uses were both larger shares of total U.S. exports to MOFA's in developing than in developed countries. MOFA's in developing countries may have had more difficulty obtaining such goods locally or from other non-U.S. sources. Capital equipment exports were particularly large shares of total exports to MOFA's in the Middle East and "other Africa." By industry of affiliate, capital equipment was 39 percent of total exports to MOFA's in mining, 30 percent to MOFA's in petroleum, and less than 3 percent to MOFA's in manufacturing. The much larger shares in mining and petroleum partly reflected the greater capital intensiveness of these industries; also, a larger proportion of the MOFA's in these industries were located in developing countries, where the required capital equipment may not have been available locally. Within manufacturing, the share of

Table 9.--U.S. Exports Shipped to MOFA's, 1977, Area of Destination and Industry of Affiliate by Whom Shipped and Intended Use

[Millions of dollars]

	Shipped by all U.S. persons				Shipped by U.S. parents				Shipped by unaffiliated U.S. persons			
	Total	Capital equipment 1/	For resale without further manufacture	Other	Total	Capital equipment 1/	For resale without further manufacture	Other	Total	Capital equipment 1/	For resale without further manufacture	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
All areas, all industries	35,813	1,577	20,464	13,773	29,275	1,201	18,496	9,577	6,539	376	1,967	4,196
<u>By area of destination:</u>												
Developed countries	29,210	827	17,827	10,556	23,975	625	16,240	7,110	5,235	201	1,588	3,446
Canada	16,201	364	10,021	5,817	12,566	257	9,190	3,119	3,636	107	831	2,698
Europe	10,866	320	6,567	3,979	9,468	249	5,897	3,322	1,398	71	670	656
European Communities (9)	9,250	266	5,381	3,603	8,056	207	4,825	3,023	1,194	59	556	580
Other Europe	1,615	54	1,186	376	1,412	42	1,071	299	203	12	114	76
Japan	709	(D)	503	(D)	688	(D)	483	(D)	22	(*)	20	2
Australia, New Zealand, and South Africa	1,434	(D)	737	(D)	1,254	(D)	670	(D)	180	22	67	90
Developing countries	6,489	740	(D)	(D)	5,212	573	(D)	(D)	1,277	167	379	730
Latin America	3,700	294	1,595	1,810	2,908	199	1,307	1,402	791	95	289	408
Other Africa	324	73	70	181	213	56	48	109	111	17	22	72
Middle East	937	309	418	211	801	282	375	124	136	27	22	87
Other Asia and Pacific	1,528	64	(D)	(D)	1,289	35	(D)	(D)	238	29	47	163
International	115	10	(D)	(D)	87	3	(D)	(D)	28	7	0	20
<u>By industry of affiliate:</u>												
Mining	194	75	11	108	38	8	(D)	(D)	156	67	(D)	(D)
Petroleum	1,639	498	709	432	1,358	397	640	321	282	102	69	111
Manufacturing	25,145	676	12,103	12,355	20,510	527	11,282	8,701	4,634	149	821	3,665
Food and kindred products	974	30	161	783	454	9	118	327	520	21	44	456
Chemicals and allied products	3,007	41	1,132	1,834	2,655	26	1,134	1,526	351	15	28	308
Primary and fabricated metals	845	33	213	599	632	17	178	437	213	16	35	162
Machinery, except electrical	3,036	279	1,168	1,590	2,810	263	1,105	1,442	227	16	63	148
Electric and electronic equipment	2,316	53	697	1,566	1,986	39	622	1,325	330	14	75	241
Transportation equipment	11,805	98	7,593	4,115	9,483	65	7,131	2,318	2,322	33	492	1,797
Other manufacturing	3,161	144	1,137	1,879	2,490	109	1,054	1,327	671	35	84	553
Trade	8,133	242	7,513	378	7,023	227	6,488	308	1,110	15	1,025	70
Finance (except banking), insurance, and real estate	20	2	13	6	13	(*)	9	4	8	1	4	2
Other industries	682	83	115	484	333	42	(D)	(D)	349	41	(D)	(D)

MOFA Majority-owned foreign affiliate.

* Less than \$500,000 (+).

D Suppressed to avoid disclosure of data of individual companies.

1. Capital equipment and other goods charged to fixed assets.

NOTE.--In this table, data for affiliates are only for nonbank affiliates of nonbank parents. MOFA's are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million in 1977.

total exports accounted for by capital equipment was largest--9 percent--for MOFA's in nonelectrical machinery. The equipment, which was shipped mainly to MOFA's manufacturing computers, consisted largely of computers for lease or rental to others. Exports for "other" uses accounted for 56 percent of total exports to MOFA's in mining, 49 percent to MOFA's in manufacturing, and 26 percent to MOFA's in petroleum.

Growth from 1966 to 1977

This section discusses growth of exports associated with MOFA's and their parents from 1966 to 1977. The 1966 data are from the 1966 benchmark survey of U.S. direct investment abroad. ^{14/} They differ somewhat in concept, coverage, and methodology from the 1977 data; therefore, data for both years have been adjusted to improve comparability. The net effect of the adjustments was quite small--1966 exports were adjusted downward about 2 percent and 1977 exports were revised upward about 1 percent. ^{15/} Growth rates were calculated by country of destination and by industry of U.S. parent; they could not be calculated by product because a product breakdown of the 1966 data is not available.

U.S. exports associated with MOFA's and their parents grew at a compound annual rate of 16.2 percent, from \$18.8 billion in 1966 to \$97.9 billion in 1977 (table 10). During the same period, total U.S. exports grew at a significantly slower rate--13.4 percent--from \$30.4 billion to \$121.3 billion. ^{16/} Consequently, the share of total U.S. exports that were associated with MOFA's and their parents rose from 62 percent to 81 percent.

14. See U.S. Department of Commerce, Bureau of Economic Analysis, U.S. Direct Investment Abroad, 1966, Final Data (Washington, D.C.: U.S. GPO, n.d.), tables E-1 through E-16.

15. The adjustment for 1977 was applied to \$96.9 billion of total exports associated with MOFA's and their U.S. parents, as published in U.S. Direct Investment Abroad, 1977. This total differs from the one that appears in tables 5-7, which disaggregate U.S. exports associated with MOFA's and their parents by product. The difference occurs because this total includes, but the one in tables 5-7 excludes, \$3.7 billion of U.S. exports to minority-owned foreign affiliates of the U.S. parents of MOFA's for which no product breakdown is available.

In the adjusted data for both years, MOFA's are defined as affiliates owned more than 50 percent by a single U.S. parent, regardless of the size of each affiliate's assets, sales, or net income. (In previously published data for 1977 and in the rest of this article, they are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million.) The adjusted data exclude data for parents and affiliates in finance, except banking, and in insurance, because 1966 export data were not collected for them.

16. Growth rates for a period that are calculated from initial- and terminal-year data may differ from an average calculated from data for each year in the period if the initial- or terminal-year values have been affected by circumstances atypical of the period as a whole. For the 11-year period covered here, however, the initial- or terminal-year values of U.S. exports associated with MOFA's and their parents, or of total U.S. exports, would have had to differ by about 10 percent from those cited in order to change the growth rates by 1 percentage point.

Table 10.--Growth in U.S. Exports Associated With MOFA's and Their U.S. Parents, After Adjustments to Improve Comparability, 1966-77, Area of Destination and Industry of U.S. Parent by Transactor 1/

	1966					1977					Compound annual rate of growth				
	Total exports associated with MOFA's and their U.S. parents, as adjusted	Shipped to MOFA's			Shipped to other foreigners by U.S. parents 2/	Total exports associated with MOFA's and their U.S. parents, as adjusted	Shipped to MOFA's			Shipped to other foreigners by U.S. parents 2/	Total exports associated with MOFA's and their U.S. parents, as adjusted	Shipped to MOFA's			Shipped to other foreigners by U.S. parents 2/
		Total	By U.S. parents	By unaffiliated U.S. persons			Total	By U.S. parents	By unaffiliated U.S. persons			Total	By U.S. parents	By unaffiliated U.S. persons	
	Millions of dollars										Percent				
All areas, all industries	18,814	7,459	6,144	1,315	11,355	97,907	37,008	30,434	6,575	60,899	16.2	15.7	15.7	15.8	16.5
<u>By area of destination:</u>															
Developed countries	11,867	5,846	4,923	923	6,021	63,900	30,100	24,815	5,286	33,799	16.6	16.1	15.9	17.2	17.0
Canada	4,334	3,250	2,590	660	1,084	22,223	16,490	12,836	3,655	5,733	16.0	15.9	15.7	16.9	16.4
Europe	5,609	2,038	1,819	219	3,571	30,298	11,337	9,908	1,429	18,961	16.6	16.9	16.7	18.6	16.4
European Communities (9)	4,398	1,797	1,601	196	2,602	22,146	9,646	8,429	1,217	12,500	15.8	16.5	16.3	18.1	15.4
Other Europe	1,211	241	217	24	970	8,152	1,691	1,479	212	6,461	18.9	19.4	19.1	22.0	18.8
Japan	1,169	191	180	11	978	7,980	753	731	23	7,227	19.1	13.3	13.6	6.9	20.0
Australia, New Zealand, and South Africa	754	367	334	33	387	3,398	1,520	1,341	179	1,879	14.7	13.8	13.5	16.7	15.5
Developing countries	5,257	1,586	1,196	390	3,670	30,593	6,791	5,530	1,261	23,801	17.4	14.1	15.0	11.3	18.5
Latin America	2,801	1,097	917	180	1,704	12,275	3,904	3,117	787	8,371	14.4	12.2	11.8	14.4	15.6
Other Africa	507	150	69	81	358	2,896	332	221	111	2,563	17.2	7.5	11.2	2.9	19.6
Middle East	482	89	47	42	393	8,093	935	803	132	7,158	29.3	23.9	29.5	11.0	30.2
Other Asia and Pacific	1,467	251	163	88	1,216	7,328	1,619	1,388	231	5,709	15.8	18.5	21.5	9.2	15.1
International 3/	1,690	27	25	2	1,663	118	117	89	28	1	---	---	---	---	---
<u>By industry of U.S. parent:</u>															
Mining	324	116	84	32	208	757	19	(D)	(D)	738	8.0	-15.2	(D)	(D)	12.2
Petroleum	996	549	364	185	447	5,130	1,759	1,457	302	3,371	16.1	11.2	13.5	4.6	20.2
Manufacturing	14,420	6,158	5,210	948	8,262	71,825	31,779	26,802	4,976	40,046	15.7	16.1	16.1	16.3	15.4
Food and kindred products	777	327	195	131	450	3,050	922	544	378	2,128	13.3	9.9	9.8	10.1	15.2
Chemicals and allied products	2,045	893	789	104	1,152	9,692	4,427	3,931	497	5,265	15.2	15.7	15.7	15.3	14.8
Primary and fabricated metals	1,278	384	274	110	894	4,294	1,122	917	204	3,173	11.7	10.2	11.6	5.8	12.2
Machinery, except electrical	2,796	1,235	1,132	102	1,561	12,666	5,223	4,873	351	7,442	14.7	14.0	14.2	11.9	15.3
Electric and electronic equipment	1,473	460	417	42	1,013	8,135	2,909	2,517	392	5,226	16.8	18.3	17.8	22.4	16.1
Transportation equipment	3,907	1,974	1,601	372	1,933	23,357	12,715	10,223	2,492	10,642	17.7	18.5	18.4	18.9	16.8
Other manufacturing	2,144	887	801	86	1,258	10,631	4,460	3,797	663	6,171	15.7	15.8	15.2	20.4	15.6
Trade	2,699	384	334	50	2,315	17,999	2,215	1,499	716	15,783	18.8	17.3	14.6	27.5	19.1
Finance (except banking), insurance, and real estate 4/	51	45	15	31	5	477	467	(D)	(D)	10	22.7	23.7	(D)	(D)	6.0
Other industries	324	207	138	69	117	1,719	769	429	339	950	16.4	12.7	10.9	15.6	21.0

MOFA Majority-owned foreign affiliate.

D Suppressed to avoid disclosure of data of individual companies.

1. See text for discussion of adjustments made to the 1966 and 1977 data to improve comparability. In the adjusted data for both years, MOFA's are defined as affiliates owned more than 50 percent by a single U.S. parent, regardless of the size of each affiliate's assets, sales, or net income.

2. Consists of U.S. exports shipped to minority-owned affiliates and to unaffiliated foreigners by the U.S. parents of MOFA's.

3. Growth rates are not shown because the 1977 definition of "International" differed from that for 1966. (See footnote 17 in text for discussion.)

4. In order to improve its comparability with 1966, the 1977 data were adjusted to exclude U.S. parents and affiliates in insurance and finance, except banking. This adjustment significantly affected the finance (except banking), insurance, and real estate industry because, when classified by industry of U.S. parent, all parents and most affiliates in insurance or in finance, except banking, were in this major industry group.

Exports shipped to unaffiliated foreigners by the U.S. parents of MOFA's grew at a 16.5 percent rate. Exports shipped to MOFA's, both by U.S. parents and by other U.S. persons, grew at a 15.7 percent rate.

Exports associated with MOFA's and their parents that were destined for developing countries grew at a slightly faster rate than those destined for developed countries--17.4 percent compared with 16.6 percent. ^{17/} In the developing countries the growth rate was highest--29.3 percent--for the Middle East, where members of the Organization of Petroleum Exporting Countries (OPEC) used sizable portions of their growing oil revenues to purchase U.S. goods. The growth rate was lowest--at 14.4 percent--in Latin America. The low rate partly reflected policies in several countries that limited the import content of production by foreign-owned firms or encouraged foreign investment in import-competing industries. In "other Asia and Pacific," where the growth rate was 15.8 percent, very rapid growth of U.S. exports to some countries--particularly Singapore, Indonesia, South Korea, Taiwan, and Malaysia, whose economies were expanding rapidly--was partly offset by slower growth in exports to other countries.

Among the developed countries, growth rates ranged from 14.7 percent for Australia, New Zealand, and South Africa to 19.1 percent for Japan. The relatively high rate for Japan probably reflected the rapid growth of the Japanese economy, which is highly dependent on imported raw materials, and the gradual relaxation of Japanese import restrictions and foreign investment controls. Growth rates for Canada and Europe were 16.0 and 16.6 percent, respectively. The growth in exports to Canada was probably concentrated in transportation equipment. Within Europe, the growth rate for the European Communities (9) was significantly slower than that for "other Europe"--15.8 percent compared with 18.9 percent. The gradual elimination of internal tariffs and imposition of common external tariffs by the EC(9) encouraged U.S. companies to produce in, rather than export to, member countries. Also, relatively slow economic growth in the United Kingdom may have dampened U.S. exports to that country and, thus, to the EC(9) as a whole. ^{18/}

By industry of U.S. parent, the growth rate of U.S. exports associated with MOFA's and their parents was 18.8 percent in trade, 16.1 percent in petroleum, and 15.7 percent in manufacturing. In trade, growth was concentrated in wholesale trade of farm product raw materials and electrical

17. Growth rates for "international" were not calculated because the definition of the "international" category differed in the 1966 and 1977 benchmark surveys. As noted earlier, in the 1977 survey, "international" consisted of affiliates that had operations spanning more than one country and that were engaged in petroleum shipping, other water transportation, petroleum trading, or the operation of oil and gas drilling equipment that was moved from country to country during the year. In the 1966 survey, "international" was defined more broadly to include, in addition, affiliates in finance, nonpetroleum trading, insurance, and construction that were engaged in activities in more than one country. No adjustments could be made for these definitional differences.

18. For these comparisons, 1966 as well as 1977 data are for the EC(9), even though the United Kingdom, Denmark, and Ireland did not become members of the Communities until 1973.

goods. Within manufacturing, growth was highest in transportation equipment--probably in response to the U.S.-Canadian automotive agreement-- and in electrical machinery.

MNC-Associated U.S. Imports

Of total MNC-associated U.S. imports of \$86.8 billion, imports shipped by foreign affiliates to U.S. parents were \$32.6 billion (38 percent), imports shipped by foreign affiliates to unaffiliated U.S. persons were \$8.9 billion (10 percent), and imports shipped by unaffiliated foreigners to U.S. parents were \$45.2 billion (52 percent) (table 2). Total imports shipped by affiliates, the sum of the first two components, were \$41.5 billion, of which nearly four-fifths were to U.S. parents and just over one-fifth were to unaffiliated U.S. persons. Total imports shipped to U.S. parents, the sum of the first and third components, were \$77.9 billion, of which 58 percent were from unaffiliated foreigners and 42 percent from foreign affiliates.

As noted earlier, significantly less detail was obtained in the 1977 benchmark survey for imports than for exports. Specifically, imports shipped to U.S. parents by unaffiliated foreigners were not obtained by country of origin or by product. Because such imports accounted for more than one-half of total MNC-associated U.S. imports, generalizations about total MNC-associated imports, and comparisons of such imports with all U.S. imports by country of origin or by product are not appropriate. Also, the growth of MNC-associated U.S. imports from 1966 to 1977 cannot be calculated because no import data were obtained in the 1966 benchmark survey.^{19/} As a result of these limitations, this section will cover only total MNC-associated imports disaggregated by industry of U.S. parent and U.S. imports shipped by MOFA's disaggregated by product and crossclassified by country of origin and industry of affiliate.

19. A very rough estimate of U.S. imports associated with MOFA's and their parents in 1966 was given in a previous article on MNC trade. (See table 21 in Betty L. Barker, "U.S. Foreign Trade Associated with U.S. Multinational Companies," Survey 52 (December 1972): 20-28.) The estimate was made using preliminary data on MOFA sales to the United States, as reported in the 1966 benchmark survey, together with a universe estimate of 1966 U.S. parent imports from unaffiliated foreigners, based on data for a very small sample of MNC's from a special 1970 survey conducted by BEA. (Note that MOFA sales to the United States differ from U.S. imports from MOFA's. The sales data include both goods and services that were charged to U.S. customers by MOFA's; the import data include only goods and only to the extent they were physically shipped to U.S. customers by the MOFA's, regardless of to or by whom they were charged.) Using the same procedure as in the previous article, but with revised data on 1966 MOFA sales to the United States, a rough estimate of 1966 U.S. imports associated with MOFA's and their parents of \$12,489 million is obtained. In 1977, U.S. imports associated with MOFA's and their parents were \$82,363 million, 95 percent of total MNC-associated U.S. imports. Ignoring comparability problems, the approximate compound annual growth rate of these imports from 1966 to 1977 was 18.7 percent. During the same period, total U.S. imports grew from \$25,618 million to \$150,390 million, or at a 17.5 percent annual rate.

By industry of U.S. parent

By industry of U.S. parent, petroleum accounted for 44 percent and manufacturing for 40 percent of total MNC-associated U.S. imports (table 4). Trade accounted for 13 percent, "other industries" for 2 percent, and mining and finance (except banking), insurance, and real estate for less than 1 percent each.

In general, a U.S. parent's industry is probably not a good indicator of the types of products being imported. Manufacturing parents, for example, may import raw materials and supplies that are products of nonmanufacturing industries, or parts and capital equipment that are products of manufacturing industries other than the one in which they are classified.

In petroleum, however, most of the MNC-associated imports were probably crude petroleum, petroleum products, or natural gas. The large share of total MNC-associated imports accounted for by MNC's with petroleum parents primarily reflected the heavy U.S. dependence on foreign petroleum. In 1977, this dependence was exacerbated by strong U.S. economic expansion, an exceptionally cold winter, a drought in the West that led to a significant loss of hydroelectric power, and substantial private stockpiling of oil in anticipation of OPEC price increases.

Of total MNC-associated imports in manufacturing, the transportation equipment industry accounted for the largest share--39 percent. This large share probably reflected the stimulus that the U.S.-Canadian automotive agreement provided to U.S. imports, as well as exports, of road motor vehicles and parts. Primary and fabricated metals accounted for 11 percent, electric and electronic equipment for 10 percent, and chemicals and allied products for 9 percent, of the imports in manufacturing.

The shares of total MNC-associated imports that were shipped by foreign affiliates varied significantly by industry. They ranged from 14 percent in trade to roughly 80 percent in finance (except banking), insurance, and real estate. The shares in manufacturing and petroleum were 61 and 46 percent, respectively. Within manufacturing, imports shipped by affiliates were a particularly large share (76 percent) of MNC-associated imports in transportation equipment.

In most industries, imports shipped to U.S. parents were very large shares, and imports shipped to other U.S. persons very small shares, of total MNC-associated U.S. imports. The major exceptions were in industries--such as coal mining, paper, lumber, and glass--in which affiliates were engaged primarily in production of raw materials or other inputs that were often shipped directly to unaffiliated U.S. customers.

U.S. imports shipped by MOFA's

U.S. imports shipped by MOFA's were \$38.0 billion in 1977 (table 11). They accounted for 44 percent of total MNC-associated U.S. imports.

Table 11.--U.S. Imports Shipped by MOFA's, 1977, Area of Origin and Industry of Affiliate by Product

[Millions of dollars]

	Total	Food, beverages, and tobacco	Inedible crude materials, except fuels	Mineral fuels, lubricants, and related materials	Chemicals	Machinery	Road motor vehicles and parts	Other transportation equipment	Metal manufactures	Other manufactures	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
All areas, all industries	38,000	998	1,877	16,734	854	5,122	8,376	272	949	(D)	(D)
<u>By area of origin:</u>											
Developed countries	19,557	553	1,337	(D)	602	2,952	8,224	(D)	625	1,953	6
Canada	14,305	189	1,170	1,244	322	1,597	7,689	241	374	1,477	2
Europe	4,736	362	97	1,802	268	998	(D)	(D)	235	430	(D)
European Communities (9)	4,063	176	(D)	(D)	259	963	510	(D)	205	343	2
Other Europe	673	187	(D)	(D)	9	35	(D)	0	30	87	(D)
Japan	362	(*)	(D)	(D)	9	(D)	0	0	(D)	42	(D)
Australia, New Zealand, and South Africa	153	2	(D)	(D)	3	(D)	(D)	(*)	(D)	3	(*)
Developing countries	18,409	445	(D)	13,671	253	2,170	152	(D)	324	792	(D)
Latin America	5,240	356	209	3,410	(D)	486	152	5	(D)	155	(*)
Other Africa	4,618	2	(D)	4,407	0	(D)	0	0	(D)	(D)	0
Middle East	2,872	2	(D)	2,848	0	(D)	0	0	0	(D)	0
Other Asia and Pacific	5,680	85	183	3,006	(D)	1,677	0	(D)	(D)	623	(D)
International	34	0	(D)	(D)	0	0	0	0	0	(D)	0
<u>By industry of affiliate:</u>											
Mining	1,145	0	810	(D)	(D)	2	0	0	(D)	3	0
Petroleum	16,795	0	19	16,663	73	(D)	0	0	(D)	(D)	(*)
Manufacturing	17,656	484	556	27	568	4,521	(D)	268	656	(D)	(D)
Food and kindred products	513	448	(D)	0	1	(*)	0	0	(*)	1	(D)
Chemicals and allied products	637	(D)	(D)	(D)	463	2	(D)	0	(D)	10	(*)
Primary and fabricated metals	998	(*)	47	(D)	(D)	48	431	(D)	428	(D)	(*)
Machinery, except electrical	1,200	0	(*)	2	1	1,087	5	3	70	32	(*)
Electric and electronic equipment	2,548	2	(*)	1	(D)	2,346	(*)	(D)	14	174	1
Transportation equipment	9,172	0	0	(*)	1	1,004	7,869	250	(D)	(D)	1
Other manufacturing	2,588	(D)	(D)	1	89	33	(D)	(*)	122	1,940	1
Trade	1,706	284	402	(D)	(D)	522	(D)	4	(D)	211	2
Finance (except banking), insurance, and real estate	(D)	0	0	(*)	0	0	0	0	0	(D)	(*)
Other industries	(D)	231	90	0	(*)	(D)	0	(*)	(*)	(D)	1

MOFA Majority-owned foreign affiliate.

D Suppressed to avoid disclosure of data of individual companies.

* Less than \$500,000 (*).

NOTE.--In this table, data for affiliates are only for nonbank affiliates of nonbank parents. MOFA's are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million in 1977.

By product, 44 percent of the imports shipped by MOFA's were mineral fuels, 22 percent were road motor vehicles and parts, 13 percent were machinery, and 5 percent were inedible crude materials, except fuels. Imports of other products were relatively small. As with exports, imports of road motor vehicles and parts were probably overstated, and imports of other goods understated, because of reporters' incorrect classification of transportation equipment parts and accessories.

Imports from developed countries accounted for 51 percent, and those from developing countries for 49 percent, of total U.S. imports shipped by MOFA's. ^{20/} Among developed countries, Canada accounted for 38 percent and Europe for 12 percent of the global MOFA total. Among developing countries, "other Asia and Pacific" accounted for 15 percent, Latin America for 14 percent, "other Africa" for 12 percent, and the Middle East for 8 percent of the total.

Imports from MOFA's in developed countries exceeded those from MOFA's in developing countries in all product categories except mineral fuels and "other." For mineral fuels, more than four-fifths of the imports, probably mainly crude petroleum, were from developing countries--54 percent from members of OPEC alone. Imports of "other" products, which were very small in value, were mainly from "other Asia and Pacific."

Also, for all products except mineral fuels and "other," U.S. imports from MOFA's in Canada were larger than those from MOFA's in any other single country. Imports from Canadian MOFA's were particularly large shares of imports of road motor vehicles and parts (92 percent), "other transportation equipment" (89 percent), and inedible crude materials, except fuels (62 percent).

By industry of affiliate, 46 percent of total imports shipped by MOFA's were from MOFA's in manufacturing and 44 percent were from MOFA's in petroleum. More than one-half of the imports in manufacturing were from MOFA's in transportation equipment.

In goods-producing industries, large shares of the U.S. imports shipped by MOFA's were products of the affiliates' own industries of classification. Virtually all of the imports shipped by petroleum MOFA's were of mineral fuels, and 71 percent of those shipped by mining MOFA's were of inedible crude materials, except fuels (probably mostly minerals). Within manufacturing, the shares of imports that were products of the MOFA's own industries were highest in electric and electronic equipment and in nonelectrical machinery--over 90 percent in each. Corresponding shares were 87 percent in food and kindred products, 86 percent in transportation equipment, 75 percent in "other manufacturing," and 73 percent in chemicals. In primary and fabricated metals, in contrast, only 43 percent of the imports shipped by MOFA's were of metal manufactures; the remainder was mostly road motor vehicles and parts. Some of the latter may actually have been metal parts and accessories for road motor vehicles, which should have been classified as metal manufactures instead.

20. In all cases, the country of location of a MOFA was considered to be the country of origin of the U.S. imports shipped by it.

In non-goods-producing industries, imports shipped by MOFA's in trade were mainly machinery; inedible crude materials, except fuels; food, beverages, and tobacco; and "other manufactures." In services--which is part of "other industries" and which was the only other non-goods-producing industry with imports of any size--nearly all imports were of "other manufactures."

Technical Note

U.S. trade is defined by the Census Bureau as the physical movement of goods between the customs area of the United States and the customs area of a foreign country. The all-U.S. trade data in this article are as compiled by Census, except that they have been adjusted to include shipments between the Virgin Islands and foreign countries. (The 1977 Census data excluded these shipments, but the MNC data included them.)

All-U.S. exports and imports are valued f.a.s. at the U.S. or foreign port of exportation; thus, they include all costs incurred up to the point of loading the goods aboard the export carrier at the port of exportation, including the selling price at the interior point of shipment (or cost if not sold), packaging costs, and inland freight and insurance. All-U.S. exports include reexports and military grant shipments; all-U.S. imports include goods for immediate consumption as well as goods entering into U.S. Customs bonded warehouses.

The MNC data were defined to be as comparable as possible with the all-U.S. trade data. In practice, however, the MNC and all-U.S. trade data are not strictly comparable because they came from two different sources. The MNC data were based on company records, whereas the all-U.S. trade data were compiled by the Census Bureau from shippers' declarations filed with U.S. Customs on each transaction.

Although the MNC data, like the all-U.S. data, were required to be reported on a "shipped basis"--i.e., on the basis of when, where, and to (or by) whom the goods were physically shipped--most reporters maintained their books, and probably, in many cases, reported to BEA, on a "charged basis"--i.e., on the basis of when, where, and to (or by) whom the goods were billed or charged. Data on the two bases can differ significantly. For example, if a U.S. parent buys goods from an affiliate in country A and sells them to an affiliate in country B, but the goods are shipped directly from country A to country B, a U.S. import or export would not be recorded on the shipped basis, because the goods never physically entered or left the United States; however, on the charged basis, both a U.S. import (to show the purchase charged to the U.S. parent from country A) and a U.S. export (to show the sale charged by the U.S. parent to country B) would be recorded.

The MNC data may also contain duplication. For example, if one U.S. parent exported goods to an affiliate of another U.S. parent, the goods would be counted twice in total MNC-associated U.S. exports--once as goods shipped by U.S. parents to unaffiliated foreigners and once as goods shipped to

affiliates by U.S. persons other than their U.S. parents. This duplication would cause the MNC data to be overstated relative to the all-U.S. data. The amount of any such overstatement is unknown, but believed to be small.

The MNC and all-U.S. trade data may also differ because the timing, valuation, origin or destination, shipper, or product involved in a given transaction may have been recorded differently on company records than on the Customs export and import documents. Other comparability problems are noted in the text, including the misclassification of certain parts and accessories for transportation equipment in the MNC data disaggregated by product, and the use of the "unallocated" category in the data on MNC-associated U.S. exports disaggregated by country of destination.

Worldwide Sales by U.S. Multinational Companies

This article analyzes sales by U.S. nonbank multinational companies (MNC's) in 1977, by area of origin and destination, by industry of U.S. parent, and by affiliation between seller and customer.

As noted in the Introduction to this collection of articles, only sales by nonbank U.S. MNC's are covered; thus, the term "MNC's" refers only to nonbank MNC's, and MNC sales--defined as the sum of sales by U.S. parents and their foreign affiliates--refers only to sales by nonbank MNC's.

Total MNC sales could be disaggregated by area of origin (the location of the seller) because the location of each seller, that is, of each parent and foreign affiliate, was reported in the 1977 benchmark survey. In contrast, as explained below, only sales by U.S. nonpetroleum parents and by majority-owned foreign affiliates (MOFA's) could be disaggregated by area of destination (the location of the customer). For sales disaggregated by industry, unless noted otherwise, the industry used for MNC's, parents, and affiliates was that of the parent. 1/

The first section of the article discusses total MNC sales by industry and by area of origin. The second section discusses the destination of sales by U.S. nonpetroleum parents of MOFA's, and by all MOFA's. Sales are distributed into local sales (those where the customer is located in the same country as the seller) and nonlocal sales (those where the customer is located in a different country from the seller). In the third section, sales by U.S. nonpetroleum parents of MOFA's and by all MOFA's are distributed according to whether or not these sellers and their customers were affiliated--that is, were members of the same MNC. The technical notes discuss (1) the use of U.S. parents' export shipments as an estimate of their nonlocal sales, which were not reported in the 1977 benchmark survey, (2) the effect on the sales data of the consolidation rules applied in the 1977 benchmark survey, (3) the relationship between sales data in this article and BEA's earlier published data on sales by MNC's, and (4) the extent to which the distribution of affiliate sales by industry of affiliate differs from that by industry of U.S. parent.

1. In the 1977 benchmark survey, each parent and each affiliate was classified in the one industry in which its sales were largest; the U.S. MNC as a whole was not classified by industry because the data needed to assign an industry code based on the worldwide activities of the MNC's were not secured. In most cases, however, the MNC-wide industry code would have been the same as the parent's because each U.S. parent normally accounted for a much larger share of total sales by an MNC than did its foreign affiliates, and most affiliates were classified in the same industry as their U.S. parent (see the technical notes).

Highlights

- o In 1977, U.S. MNC's had worldwide sales of \$2,060 billion; \$1,412 billion were by U.S. parents and \$648 billion were by foreign affiliates.
- o Of the \$1,412 billion of sales by parents, more than two-thirds were by parents in goods-producing industries--mainly manufacturing and petroleum; the remainder were mainly in trade, insurance, and communication and public utilities.
- o Although fewer than 1 in 2,000 U.S. businesses were parents, the parents accounted for more than 35 percent of sales by all U.S. businesses, and nearly 62 percent of sales by U.S. businesses in goods-producing industries.
- o Sales by affiliates were concentrated more heavily in goods-producing industries than were sales by their U.S. parents, mainly because petroleum accounted for a much larger share of the affiliates' than of the parents' total sales.
- o Of the \$648 billion of sales by affiliates, 15 percent originated in Canada, 35 percent in the European Communities (9), 8 percent each in "other Europe" and Japan, 11 percent in Latin America, and 17 percent in developing areas other than Latin America.
- o Worldwide sales by U.S. nonpetroleum parents of MOFA's, and by all MOFA's, can be distributed both by destination and origin. Worldwide sales by the parents were \$1,106 billion. By destination, only 8 percent were to foreigners; the remaining 92 percent were local.
- o In contrast, of worldwide sales of \$507 billion by all MOFA's, 62 percent were local, 19 percent were to the United States, and nearly 20 percent were to third countries (that is, to countries other than the United States or the country of the MOFA).
- o Both for U.S. nonpetroleum parents and MOFA's, the bulk of worldwide sales were to unaffiliated customers.
- o Sales by U.S. nonpetroleum parents to unaffiliated customers were 97 percent of their worldwide sales; the share was high because most of their sales were local (i.e., were sold in the United States), and all of their local sales were, by definition, to unaffiliated customers (see footnote 8). In contrast, the share of their nonlocal sales that were to unaffiliated customers was only 67 percent.

- o Sales by all MOFA's to unaffiliated customers were about two-thirds of their worldwide sales. In most areas and industries, over 90 percent of their local sales, but markedly lower shares of their nonlocal sales, were to unaffiliated customers.

Sales by Industry and by Origin

By MNC's as a whole

In 1977, worldwide sales by U.S. MNC's totaled \$2,060 billion. Of this amount, \$1,412 billion (69 percent) were by U.S. parents and \$648 billion (31 percent) were by their foreign affiliates.

When each MNC was classified by industry of U.S. parent, nearly three-fourths of sales were in goods-producing industries--mainly manufacturing and petroleum. Most of the remainder was in trade, insurance, and communication and public utilities (table 1). 2/

MNC's in manufacturing had sales of \$1,037 billion, about one-half of worldwide sales by all U.S. MNC's. Within manufacturing, sales were largest, at \$241 billion, in transportation equipment; although most of these sales were by automobile manufacturers, sales by U.S. aircraft companies also were substantial.

MNC's in petroleum had sales of \$475 billion. Most of these sales were by a few large integrated companies engaged in all stages of the petroleum industry--extraction, refining, and marketing. MNC's that specialized in only one aspect of the industry, such as petroleum trade, tanker or pipeline operations, or refining without extraction, together had sales of only \$66 billion.

MNC's in trade had sales of \$229 billion; these sales were split about equally between retail and wholesale trade. In finance (except banking), insurance, and real estate, sales were \$145 billion; they mainly consisted of gross operating revenues of MNC's in insurance. In "other" industries--mainly transportation, communication, and public utilities--sales were \$168 billion; in mining, they were less than \$7 billion.

2. In this article, goods-producing industries cover mining (table 1, line 2), petroleum (line 8), manufacturing (line 18), agriculture, forestry, and fishing (line 71), and construction (line 72). Oil and gas field services and petroleum trade are considered part of the petroleum industry as shown on line 8, even though they are not "goods-producing" industries; because they constituted less than 3 percent of the petroleum total, however, their inclusion has little effect on the analysis. Non-goods-producing industries cover trade (line 59), finance (except banking), insurance, and real estate (line 64), transportation, communication, and public utilities (line 73), and services (line 76).

Table 1.--Sales by U.S. MNC's, 1977, by Industry of U.S. Parent

Line		Millions of dollars			Percent distribution by industry		
		Total	By U.S. parents	By foreign affiliates	Total	By U.S. parents	By foreign affiliates
		1	All industries -----	2,060,262	1,412,293	647,969	100.0
2	Mining -----	6,866	4,986	1,880	.3	.4	.3
3	Metal mining -----	2,672	1,467	1,205	.1	.1	.2
4	Iron -----	(D)	(D)	(D)	(D)	(D)	(D)
5	Copper, lead, zinc, gold, and silver -----	1,850	(D)	(D)	.1	(D)	(D)
6	Bauxite, other ores, and services -----	(D)	4	(D)	(D)	(D)	(D)
7	Coal and other nonmetallic minerals -----	4,194	3,519	675	.2	.2	.1
8	Petroleum -----	474,635	221,757	252,878	23.0	15.7	39.0
9	Oil and gas extraction -----	8,547	6,131	2,416	.4	.4	.4
10	Crude petroleum (no refining) and gas -----	6,140	4,144	1,996	.3	.3	.3
11	Oil and gas field services -----	2,407	1,987	420	.1	.1	(*)
12	Petroleum and coal products -----	411,457	181,568	229,889	20.0	12.9	35.5
13	Integrated refining and extraction -----	409,123	179,389	229,734	19.9	12.7	35.5
14	Refining without extraction -----	(D)	(D)	(D)	(D)	(D)	(D)
15	Petroleum and coal products, nec -----	(D)	(D)	(D)	(D)	(D)	(D)
16	Petroleum wholesale trade -----	42,252	22,321	19,930	2.1	1.6	3.1
17	Other -----	12,379	11,736	642	.6	.8	.1
18	Manufacturing -----	1,037,157	739,460	297,697	50.3	52.4	45.9
19	Food and kindred products -----	110,762	83,422	27,340	5.4	5.9	4.2
20	Grain mill and bakery products -----	19,132	14,497	4,635	.9	1.0	.7
21	Beverages -----	12,958	9,679	3,279	.6	.7	.5
22	Other -----	78,672	59,245	19,426	3.8	4.2	3.0
23	Chemicals and allied products -----	145,821	96,474	49,347	7.1	6.8	7.6
24	Industrial chemicals and synthetics -----	80,203	53,985	26,218	3.9	3.8	4.1
25	Drugs -----	27,464	16,423	11,042	1.3	1.2	1.7
26	Soap, cleaners, and toilet goods -----	23,729	14,790	8,939	1.2	1.1	1.4
27	Agricultural chemicals -----	4,066	3,303	762	.2	.2	.1
28	Other -----	10,360	7,974	2,386	.5	.6	.4
29	Primary and fabricated metals -----	119,639	94,563	25,076	5.8	6.7	3.9
30	Primary metal industries -----	82,575	66,152	16,423	4.0	4.7	2.5
31	Ferrous -----	52,897	46,902	5,996	2.6	3.3	.9
32	Nonferrous -----	29,678	19,250	10,428	1.4	.7	1.6
33	Fabricated metal products -----	37,064	28,411	8,652	1.8	2.0	1.3
34	Machinery, except electric -----	126,403	80,174	46,228	6.1	5.6	7.1
35	Farm and garden machinery and equipment -----	9,178	6,559	2,619	.5	.5	.4
36	Construction and related machinery -----	27,025	18,211	8,814	1.3	1.3	1.4
37	Office and computing machines -----	47,859	23,950	23,909	2.3	1.7	3.7
38	Other -----	42,342	31,455	10,887	2.1	2.2	1.7
39	Electric and electronic equipment -----	87,103	62,631	24,472	4.2	4.4	3.8
40	Household appliances -----	11,928	8,436	3,493	.6	.6	.5
41	Radio, television, and communication equipment -----	20,442	16,723	3,719	1.0	1.2	.6
42	Electronic components and accessories -----	9,176	6,247	2,929	.5	.4	.5
43	Other -----	45,557	31,225	14,332	2.2	2.2	2.2
44	Transportation equipment -----	240,716	165,681	75,035	11.7	11.7	11.6
45	Motor vehicles and equipment -----	181,105	115,877	65,228	8.8	8.2	10.1
46	Other -----	59,611	49,804	9,807	2.9	3.5	1.5
47	Other manufacturing -----	206,713	156,516	50,198	10.0	11.1	7.8
48	Tobacco manufactures -----	14,559	10,845	3,715	.7	.8	.6
49	Textile products and apparel -----	30,054	25,342	4,712	1.5	1.8	.7
50	Lumber, wood, furniture, and fixtures -----	20,493	18,218	2,276	1.0	1.3	.4
51	Paper and allied products -----	31,496	22,570	8,927	1.5	1.6	1.4
52	Printing and publishing -----	16,071	13,734	2,337	.8	1.0	.4
53	Rubber products -----	25,256	16,401	8,854	1.2	1.2	1.4
54	Miscellaneous plastics products -----	4,122	3,251	872	.2	.2	.1
55	Glass products -----	8,868	6,053	2,815	.4	.4	.4
56	Stone, clay, cement, and concrete -----	13,912	10,409	3,503	.7	.7	.5
57	Instruments and related products -----	28,832	19,087	9,745	1.4	1.4	1.5
58	Other -----	13,049	10,607	2,442	.6	.8	.4
59	Trade -----	228,750	183,706	45,044	11.1	13.0	7.0
60	Wholesale trade -----	108,215	77,683	30,532	5.3	5.5	4.7
61	Durable goods -----	37,516	29,252	8,264	1.8	2.1	1.3
62	Nondurable goods -----	70,699	48,431	22,268	3.4	3.4	3.4
63	Retail trade -----	120,536	106,023	14,513	5.9	7.5	2.2
64	Finance (except banking), insurance and real estate -----	144,650	119,596	25,054	7.0	8.5	3.9
65	Finance, except banking -----	11,178	9,051	2,127	.5	.6	.3
66	Insurance -----	123,446	108,088	15,358	6.0	7.7	2.4
67	Real estate -----	587	517	70	(*)	(*)	(*)
68	Holding companies -----	5,118	1,940	3,178	.2	.1	.5
69	Individuals, estates, and trusts ^{1/} -----	4,321	0	4,321	.2	0	.7
70	Other -----	168,204	142,789	25,416	8.2	10.1	3.9
71	Agriculture, forestry, and fishing -----	(D)	1,533	(D)	(D)	.1	(D)
72	Construction -----	(D)	17,165	(D)	(D)	1.2	(D)
73	Transportation, communication, and public utilities -----	108,710	100,314	8,396	5.3	7.1	1.3
74	Transportation -----	39,217	35,202	4,015	1.9	2.5	.6
75	Communication and public utilities -----	69,493	65,112	4,381	3.4	4.6	.7
76	Services -----	29,752	23,777	5,974	1.4	1.7	.9

MNC Multinational company.

D Suppressed to avoid disclosure of data of individual companies.

* Less than 0.05 percent.

1. Consists of U.S. parents that are individuals, estates, and trusts. Data for such U.S. parents appear as zero because those parents were not required to report financial and operating data in the 1977 benchmark survey. Foreign affiliates were not classified in this category; however, when data for affiliates are classified by industry of U.S. parent, the data for the affiliates of such parents are shown against this category.

NOTE.--In this table, data for U.S. MNC's are only for nonbank MNC's; data for U.S. parents are only for nonbank parents of nonbank affiliates; and data for affiliates are only for nonbank affiliates of nonbank parents.

By U.S. parents

Of the \$1,412 billion of sales by U.S. parents, more than two-thirds were by parents classified in goods-producing industries--mainly manufacturing (52 percent of the total) and petroleum (16 percent). Sales by parents classified in the other goods-producing industries (mining, agriculture, forestry and fishing and construction) together were less than 2 percent of the total.

The main non-goods-producing industry was trade, which accounted for 13 percent of total sales by the parents. The finance (except banking), insurance, and real estate and the transportation, communication, and public utilities industries each accounted for less than 8 percent, and services for less than 2 percent, of the total.

Table 2 compares sales by U.S. parents with sales by all U.S. businesses, by industry and by size of sales per company. The all-U.S.-business data are from the Bureau of the Census' 1977 Enterprise Statistics, and differ in industry scope (coverage) from the U.S. parent data. ^{3/} After adjustment for these differences, \$1,180 billion (84 percent) of sales by parents were in industries that were also within the scope of the 1977 Enterprise Statistics (lines 11 and 12). Although fewer than 1 in 2,000 of U.S. businesses were parents of foreign affiliates, the parents accounted for more than one-third of the sales by all in-scope U.S. businesses.

The industry distribution of the U.S. parents' sales differed markedly from that for all U.S. businesses. ^{4/} For parents, manufacturing, petroleum, and mining together accounted for over 80 percent of sales, with

3. For the all-U.S.-business data, see U.S. Department of Commerce, Bureau of the Census, 1977 Enterprise Statistics (Washington, D.C.: U.S. GPO, 1981). The industry scope of the U.S. parent data as reported to BEA was greater than that of all U.S. businesses as shown in the 1977 Enterprise Statistics. Differences in scope were resolved essentially by eliminating from the comparisons in table 2 the parents that were within the scope of BEA, but were out-of-scope of the 1977 Enterprise Statistics. Lines 11-13 of table 2 give a reconciliation of the parent data in table 2 to the BEA total for parents given in table 1, and the footnotes to table 2 describe the main items in the reconciliation.

4. Some of the differences between the BEA and the Census industry distributions reflected differences in statistical practices. In the 1977 Enterprise Statistics, each U.S. business was a consolidation of domestic enterprises under "common ownership or control." In contrast, in the BEA data, each U.S. parent was essentially a consolidation of the owning U.S. business and all of its majority-owned domestic (U.S.) subsidiaries (see the technical notes). Control of a company could be conferred by less than majority ownership positions; therefore, the Census consolidation rule may have been more inclusive than the BEA rule. Another source of difference between BEA and Census industry distributions arose because BEA assigned an industry code based on sales, but Census assigned one based mainly on payroll data. The impact of these differences in statistical practices upon the industry distribution of the data is not known.

Table 2.--Sales by U.S. Parents Compared With Sales by All U.S. Businesses, 1977

Line	Number of companies		Millions of dollars		Percent distribution		Millions of dollars per company	
	U.S. parents	All in-scope U.S. businesses ^{1/}	Sales by U.S. parents	Sales by all in-scope U.S. businesses ^{1/}	Sales by U.S. parents	Sales by all in-scope U.S. businesses ^{1/}	Sales by U.S. parents	Sales by all in-scope U.S. businesses ^{1/}
1 All industries covered in the 1977 benchmark survey and in 1977 Enterprise Statistics ^{1/} -----	2,700	5,589,802	1,179,625	3,324,550	100.0	100.0	436.9	.6
By industry:								
2 Mining -----	29	8,875	4,986	37,565	.4	1.1	172.0	4.3
3 Petroleum ^{2/} -----	148	198,595	210,530	263,805	17.9	7.9	1,422.5	1.4
4 Manufacturing -----	1,841	295,060	739,460	1,275,174	62.7	38.4	401.7	4.4
5 Trade -----	375	1,885,749	183,706	1,332,093	15.6	40.1	489.9	.7
6 Other ^{3/} -----	307	3,201,523	40,942	415,914	3.5	12.5	133.3	.1
By sales size class, millions of dollars:								
7 \$250 and over -----	665	1,060	1,065,763	1,293,663	90.3	38.9	1,602.7	1,220.7
8 \$100-249.9 -----	393	1,293	63,402	199,864	5.4	6.0	161.4	154.6
9 \$50-99.9 -----	371	2,186	26,580	150,132	2.2	4.5	71.7	68.7
10 Less than \$50 -----	1,271	5,585,263	23,879	1,680,891	2.0	50.5	18.8	.3
Addenda: Reconciliation of U.S. parent data:								
11 U.S. parent total from 1977 benchmark survey -----	3,425	n.a.	1,412,293	n.a.	n.a.	n.a.	412.4	n.a.
12 U.S. parents in industries covered in 1977 Enterprise Statistics -----	2,700	n.a.	1,179,625	n.a.	n.a.	n.a.	436.9	n.a.
13 U.S. parents not in industries covered in 1977 Enterprise Statistics ^{4/} -----	725	n.a.	232,669	n.a.	n.a.	n.a.	321.0	n.a.

n.a. Not applicable.

1. The "scope"--coverage by industry--of U.S. parents, as reported in the 1977 benchmark survey, was broader than that for all U.S. businesses, as shown in the 1977 Enterprise Statistics. The industry groups given in lines 2-6 include only those industries that are in scope of both BEA's 1977 benchmark survey and the 1977 Enterprise Statistics. Data for direct investment industries that are out of scope of the 1977 Enterprise Statistics are shown in line 13 (see footnote 4).

2. Petroleum excludes petroleum tanker operations; pipeline transmission, including natural gas; petroleum storage for hire; and lessors of gasoline service stations and sites. These categories, which are part of the direct investment petroleum industry, are out of scope of the 1977 Enterprise Statistics. Several parents, accounting for \$11,227 million in sales in 1977, were excluded.

3. "Other" consists of construction and services that are in-scope of the 1977 Enterprise Statistics.

4. Parents not within the scope of the 1977 Enterprise Statistics consist of the U.S. petroleum parents cited in footnote 2 plus those classified in agriculture, forestry, and fishing; finance (except banking), insurance, and real estate; and transportation, communication, and public utilities. See text for further discussion of comparability of sales between the benchmark survey and 1977 Enterprise Statistics.

NOTE.--In this table, data for U.S. parents are only for nonbank parents of nonbank affiliates.

manufacturing the major industry; trade and "other" industries together accounted for less than 20 percent of the total. In contrast, for all U.S. businesses (which include the parents), trade accounted for the largest share--40 percent; manufacturing, petroleum, and mining together accounted for less than one-half of the total.

Sales per company were far higher for parents than for all U.S. businesses, both in total and in each industry shown. In terms of number, parents accounted for nearly two-thirds of the U.S. businesses with sales of \$250 million or more (the largest size class in table 2), but a negligible proportion of those with sales of less than \$50 million (the smallest size class). In terms of sales, parents accounted for most of the sales in the largest, but a negligible proportion of sales in the smallest, size class. In the largest size class, most U.S. businesses in goods-producing industries, but relatively few of those in other industries, were also U.S. parents.

U.S. parents were predominant in the largest size classes for several reasons. First, investments abroad often involved significant commitments of capital and management, both of which could be mobilized more readily by large than by small businesses. Second, a U.S. business that already had a major share of the U.S. market may have needed access to foreign markets in order to obtain further sales growth or economies of scale in production. In contrast, many medium- and small-scale U.S. businesses may have needed to use most of their resources domestically, in order to remain competitive in U.S. markets. Moreover, many small businesses were in trade or services and therefore mainly served local markets.

By foreign affiliates

When sales by foreign affiliates were classified by industry of U.S. parent, the sales were chiefly in goods-producing industries. Of the \$648 billion of sales, manufacturing accounted for 46 percent, petroleum (including petroleum trade) for 39 percent, and other goods-producing industries for only 2 percent of the total (table 1, column 6).

The main non-goods-producing industry, trade, accounted for 7 percent of total sales by affiliates. The finance (except banking), insurance, and real estate industry accounted for less than 4 percent, and the transportation, communication, and public utilities and the services industries each accounted for roughly 1 percent, of the total.

The share of petroleum was markedly higher, and the shares of non-goods-producing industries markedly lower, in sales by foreign affiliates than in sales by U.S. parents (table 1, columns 5 and 6). The share of petroleum was higher for affiliates, partly because they supply a large portion of the petroleum needed by both the U.S. and foreign customers of the petroleum MNC's. Also, the affiliate sales data are more likely to contain duplication than are the parent sales data: crude petroleum may be sold by an extractive affiliate to a refining affiliate, which may resell refined petroleum products to an unaffiliated customer; each of the sellers is a foreign affiliate of a U.S. petroleum parent and, therefore, sales by each are

correctly included in affiliate sales. In contrast, as explained in the technical notes, domestic sales by U.S. parents were reported on a consolidated basis; thus, only a petroleum parent's sales to unaffiliated customers would be counted in the parent's domestic sales. Further, for petroleum that was both produced and consumed locally, the U.S. Government held prices below world market levels. This policy, since dropped, tended to reduce the dollar volume of sales by U.S. petroleum parents, and, thus, the U.S. petroleum parents' share of total sales by U.S. parents.

The relatively low shares of sales by foreign affiliates in non-goods-producing industries--in particular, retail trade, insurance, and transportation, communication, and public utilities--reflected a tendency for the markets served by these industries to be fragmented by country-to-country differences in commercial practices, regulatory framework, and language. Overcoming these differences can be expensive and can inhibit investment; in some countries, formal and informal restrictions on foreign investment particularly affected these industries.

In table 3, affiliate sales by major industry of U.S. parent are classified by area of origin (the seller's country of location). Affiliates in developed countries accounted for 69 percent of total sales by the affiliates, those in developing countries for 28 percent, and those in "international", which mainly were engaged in international petroleum transportation, for 2 percent. Among developed countries, Canada and the European Communities (EC (9)), accounted for 15 and 35 percent, respectively, "other Europe" and Japan for about 8 percent each, and Australia, New Zealand, and South Africa for 4 percent, of worldwide sales by affiliates.

Among developing countries, Latin America accounted for 11 percent, and other developing areas ("other Africa," the Middle East, and "other Asia and Pacific") for 17 percent, of the worldwide affiliate total.

In both developed and developing countries, most of the sales originated in a few countries. Ranked according to size of affiliate sales originating in each, the top five developed countries were Canada, the United Kingdom, Germany, Japan, and France (table 3, line 81). Together, they accounted for sales of \$307 billion, more than two-thirds of the developed country total. More than one-half of the sales were by affiliates of U.S. manufacturing parents. Except in Japan, transportation equipment was the largest manufacturing industry. In Japan, the largest manufacturing industry was electric and electronic equipment; this mainly reflected sales by a very large Japanese affiliate in which a U.S. parent held a minority ownership position.

Affiliates of U.S. petroleum parents accounted for roughly one-fourth of affiliate sales originating in the five countries. In Japan, these affiliates accounted for nearly one-half of sales by all affiliates, a much higher proportion than in any of the other four countries; sales were especially large because these affiliates were the major importers of petroleum into Japan. In oil and gas extraction, affiliate sales originating in Canada and in the United Kingdom (mainly the North Sea area) were particularly large; in refining and distribution, affiliate sales originating in each of the five countries were a significant part of the total.

Table 3.--MNC Sales, 1977, Area of Origin by Industry of U.S. Parent

Line		Millions of dollars					Percent distribution by industry			
		Total	Petroleum	Manufacturing	Trade	Other	Petroleum	Manufacturing	Trade	Other
1	All areas	2,060,262	474,635	1,037,157	228,750	319,721	23.0	50.4	11.1	15.5
2	Sales by U.S. parents	1,412,293	221,757	739,460	183,706	267,371	15.7	52.4	13.0	19.0
3	Sales by foreign affiliates	647,969	252,878	297,697	45,044	52,350	39.0	45.9	7.0	8.1
4	Located in:									
4	Developed areas	449,015	126,108	246,715	39,474	36,717	28.1	55.0	8.8	8.2
5	Canada	94,876	16,462	54,661	9,895	13,859	17.4	57.6	10.4	14.6
6	Europe	276,275	80,403	148,516	27,446	19,910	29.1	53.8	9.9	7.2
7	European Communities (9)	225,909	67,968	125,935	15,987	16,020	30.1	55.8	7.1	7.1
8	Belgium	16,998	4,147	10,159	1,256	1,436	24.4	59.8	7.4	8.5
9	Denmark	3,452	1,926	1,323	27	177	55.8	38.3	.8	5.1
10	France	34,747	(D)	23,846	1,710	(D)	(0)	68.6	4.9	(D)
11	Germany	60,435	19,971	33,373	2,487	4,604	33.1	55.2	4.1	7.6
12	Ireland	2,009	(D)	1,458	28	(D)	(0)	72.6	1.4	(D)
13	Italy	15,899	4,374	9,488	794	1,243	27.5	59.7	5.0	7.8
14	Luxembourg	696	105	569	17	5	15.0	81.8	2.4	.8
15	Netherlands	27,008	12,718	10,554	2,652	1,084	47.1	39.1	9.8	4.0
16	United Kingdom	64,666	17,157	35,165	7,017	5,327	26.5	54.4	10.9	8.2
17	Other Europe	50,366	12,436	22,581	11,459	3,891	24.7	44.8	22.8	7.7
18	Austria	3,180	(D)	1,599	(D)	(D)	(0)	50.3	(D)	(D)
19	Greece	1,498	898	475	(D)	(D)	60.0	31.7	(D)	(D)
20	Norway	3,945	1,852	1,298	16	780	46.9	32.9	.4	19.8
21	Portugal	803	(D)	524	(D)	48	(0)	65.2	(D)	5.9
22	Spain	12,202	3,586	7,100	801	716	29.4	58.2	6.6	5.9
23	Sweden	4,921	1,493	2,891	53	484	30.3	58.8	1.1	9.8
24	Switzerland	21,373	2,491	7,690	10,265	926	11.7	36.0	48.0	4.3
25	Turkey	1,079	(D)	342	(D)	(D)	(0)	31.7	(D)	(D)
26	Other	1,364	(D)	662	210	(D)	(0)	48.5	15.4	(D)
27	Japan	51,895	24,176	26,080	848	790	46.6	50.3	1.6	1.5
28	Australia, New Zealand, and South Africa	25,970	5,067	17,459	1,286	2,158	19.5	67.2	5.0	8.3
29	Australia	18,125	(D)	12,893	1,157	(D)	(0)	71.1	6.4	(D)
30	New Zealand	1,393	(D)	845	16	(D)	(0)	60.7	1.1	(D)
31	South Africa	6,453	1,748	3,721	113	871	27.1	57.7	1.8	13.5
32	Developing areas	183,219	113,033	50,431	5,393	14,363	61.7	27.5	2.9	7.8
33	Latin America	73,287	25,377	36,978	4,243	6,689	34.6	50.5	5.8	9.1
34	South America	35,331	7,397	23,702	2,032	2,201	20.9	67.1	5.8	6.2
35	Argentina	4,075	505	2,748	597	225	12.4	67.4	14.7	5.5
36	Brazil	19,340	4,376	13,019	892	1,053	22.6	67.3	4.6	5.5
37	Chile	610	(D)	315	(D)	71	(0)	51.7	(D)	11.6
38	Colombia	2,410	643	1,322	174	271	26.7	54.8	7.2	11.2
39	Ecuador	629	(D)	255	(D)	(D)	(0)	40.5	(D)	(D)
40	Peru	1,021	148	774	55	45	14.5	75.8	5.4	4.4
41	Venezuela	6,436	1,041	4,839	200	357	16.2	75.2	3.1	5.6
42	Other	810	198	431	(D)	(D)	24.4	53.3	(D)	(D)
43	Central America	15,083	1,969	10,641	1,067	1,407	13.1	70.6	7.1	9.3
44	Mexico	10,833	510	8,772	840	711	4.7	81.0	7.8	6.6
45	Panama	1,681	736	728	41	177	43.8	43.3	2.4	10.5
46	Other	2,569	724	1,141	186	519	28.2	44.4	7.2	20.2
47	Other Western Hemisphere	22,873	16,010	2,636	1,145	3,081	70.0	11.5	5.0	13.5
48	Bahamas	2,425	1,953	244	78	149	80.5	10.1	3.2	6.2
49	Bermuda	14,414	10,384	582	950	2,499	72.0	4.0	6.6	17.3
50	Netherlands Antilles	2,160	1,775	275	27	83	82.2	12.7	1.3	3.9
51	Trinidad and Tobago	1,395	1,229	92	14	60	88.1	6.6	1.0	4.3
52	Other	2,478	670	1,442	76	290	27.0	58.2	3.1	11.7
53	Other Africa	16,662	13,010	2,124	87	1,441	78.1	12.8	.5	8.7
54	Saharan	6,758	5,897	372	(D)	(D)	87.3	5.5	(D)	(D)
55	Egypt	839	665	31	1	143	79.2	3.7	.1	17.0
56	Libya	5,068	4,931	113	(D)	(D)	97.3	2.2	(D)	(D)
57	Other	850	301	228	(D)	(D)	35.4	26.8	(D)	(D)
58	Sub-Saharan	9,904	7,114	1,752	(D)	(D)	71.8	17.7	(D)	(D)
59	Liberia	268	25	192	0	51	9.4	71.5	0	19.1
60	Nigeria	4,808	4,227	269	(D)	(D)	87.9	5.6	(D)	(D)
61	Other	4,828	2,861	1,291	(D)	(D)	59.3	26.7	(D)	(D)
62	Middle East	66,607	60,238	2,131	132	4,105	90.4	3.2	.2	6.2
63	Israel	995	(D)	263	59	(D)	(0)	26.4	6.0	(D)
64	OPEC	63,660	58,614	1,519	72	3,456	92.1	2.4	.1	5.4
65	Iran	11,675	(D)	774	(D)	(D)	(0)	6.6	(D)	(D)
66	Other	51,984	(D)	745	(D)	(D)	(0)	1.4	(D)	(D)
67	Other	1,952	(D)	350	1	(D)	(0)	18.0	(*)	(D)
68	Other Asia and Pacific	26,664	14,408	9,197	931	2,128	54.0	34.5	3.5	8.0
69	Hong Kong	5,301	2,784	1,816	283	419	52.5	34.3	5.3	7.9
70	India	2,287	821	1,385	(D)	(D)	(0)	60.6	(D)	(D)
71	Indonesia	5,605	4,240	465	4	905	75.7	8.1	.1	16.2
72	Malaysia	1,245	521	612	52	60	41.9	49.2	4.1	4.8
73	Philippines	3,080	(D)	1,300	210	(D)	(0)	42.2	6.8	(D)
74	Singapore	2,554	877	1,492	24	160	34.3	58.4	1.0	6.3
75	South Korea	3,511	2,807	590	76	39	79.9	16.8	2.2	1.1
76	Taiwan	1,304	(D)	890	169	(D)	(0)	68.3	12.9	(D)
77	Thailand	1,070	(D)	459	87	(D)	(0)	42.9	8.2	(D)
78	Other	707	425	197	(D)	(D)	60.2	27.8	(D)	(D)
79	International	15,734	13,737	551	177	1,270	87.3	3.5	1.1	8.1
80	Addenda:									
80	OPEC	75,204	63,614	6,808	269	4,514	84.6	9.1	.4	6.0
	Sum of top 5 countries, ranked by amount of sales by affiliates located in each country:									
81	Developed countries--Canada, United Kingdom, Germany, Japan, and France	306,617	(D)	173,125	21,956	(D)	(D)	56.5	7.2	(D)
82	Developing countries--Saudi Arabia, Brazil, Bermuda, Iran, and Mexico	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

MNC Multinational company.

OPEC Organization of Petroleum Exporting Countries: consists of Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, Venezuela, and the United Arab Emirates.

D Suppressed to avoid disclosure of data of individual companies.

* Less than 0.05 percent.

NOTE.--In this table, data for U.S. MNC's are only for nonbank MNC's; data for U.S. parents are only for nonbank parents of nonbank affiliates and data for affiliates are only for nonbank affiliates of nonbank parents.

Affiliates of U.S. parents in trade and in "other" industries together accounted for less than one-fifth of affiliate sales originating in the five countries. Sales were particularly large in Canada and the United Kingdom, and particularly small in Japan, where commercial practices and policies may have inhibited foreign investment, especially in these industries.

The top five developing countries were Saudi Arabia, Brazil, Bermuda, Iran, and Mexico. Together, they accounted for well over one-half of total affiliate sales originating in developing countries. Sales originating in each country except Saudi Arabia are shown separately in table 3. Sales for Saudi Arabia separately, and, hence, the sum of sales for the five countries combined, are not shown in order to avoid disclosure of data for individual companies (one affiliate accounted for most of the sales originating in Saudi Arabia). Sales originating in Saudi Arabia, however, accounted for a very large share of the \$52 billion of sales in "other" Middle East OPEC (line 66); these sales, of course, were almost entirely by affiliates of U.S. petroleum parents.

Affiliates of petroleum parents accounted for well over 60 percent of affiliate sales originating in the five developing countries. (In contrast, in the top five developed countries, petroleum accounted for about one-fourth of the total.) In both Saudi Arabia and Iran, which are members of OPEC, the share of petroleum exceeded 90 percent. In Bermuda, petroleum accounted for 72 percent of the total; this large share reflected sizable sales by affiliates of petroleum parents that were engaged in financial activities on behalf of their U.S. parents. (In Bermuda, the largest industries after petroleum were trade, and finance and insurance (included in "other"); Bermuda is one of the several countries that, for various business reasons, including tax minimization, were favored by U.S. parents as locations for their captive trade, finance, and insurance affiliates.) In Brazil, the share of petroleum was 23 percent, and, in Mexico, it was less than 5 percent, respectively, of affiliate sales originating in each country. The share of affiliate sales in Mexico was particularly low because most petroleum activity there is reserved to a government-owned company.

Affiliates of U.S. manufacturing parents accounted for roughly 20 percent of total affiliate sales originating in the five countries. In Brazil and Mexico, the shares of manufacturing were 67 and 81 percent, respectively, and in each of the other three countries, less than 7 percent. In both Brazil and Mexico, the largest manufacturing industry was chemicals, with transportation equipment almost as large. Except in Bermuda, the share of affiliate sales in the remaining industries (trade and "other") was less than 10 percent of the total. In Bermuda, affiliates of parents in the finance (except banking), insurance, and real estate industry (part of "other") accounted for 17 percent of affiliate sales originating there.

Sales by Destination

As noted previously, all MNC sales could not be distributed by destination, because the benchmark survey obtained sales by destination only

for MOFA's, but not for minority-owned foreign affiliates or for U.S. parents. For U.S. nonpetroleum parents, however, sales by destination could be derived. This section first discusses the effect on the data of excluding minority-owned affiliates, and explains the derivation of sales by destination for U.S. nonpetroleum parents of MOFA's. For those parents and for all MOFA's, it then analyzes sales to the United States and to major foreign destinations.

The data

Exclusion of minority-owned foreign affiliates.--Table 4 shows that, after excluding minority-owned affiliates, and, for consistency, parents that had only minority-owned affiliates, from the MNC's, the remaining affiliates (the MOFA's) and their parents accounted for well over three-fourths of total MNC sales in each major industry group, and in each major area of origin except Japan. In Japan, coverage was only 26 percent, reflecting barriers there to majority foreign ownership of Japanese businesses.

Derivation of sales by destination for U.S. nonpetroleum parents.--Because data on nonlocal sales by U.S. parents were not available from the benchmark survey, data on the parents' merchandise export shipments (which were available) were used as a rough approximation of their nonlocal sales. The U.S. parents' local sales then were estimated by subtracting their export shipments from their total sales.

The resulting estimates by destination of U.S. parents' nonlocal sales are rough. Parents' exports cover physical shipments of goods across the U.S. customs frontier, irrespective of to whom the goods were charged. Parents' nonlocal sales, in contrast, cover all sales of goods and services charged to foreign countries, irrespective of whether the goods were actually shipped from the United States to, or the services were actually performed in, those countries.

This method of estimating the destination of U.S. parents' sales was used in each industry except petroleum. The destination of sales by U.S. petroleum parents could not be estimated by this method, because the evidence indicated that these parents' nonlocal sales generally were much larger than their export shipments. Their nonlocal sales were often resales of petroleum previously purchased from foreign sources. In many cases, the petroleum was shipped directly from a foreign supplier to a foreign purchaser, but was charged (sold) by the foreign supplier to the U.S. parent rather than to the foreign purchaser directly; the parent, in turn, billed the foreign purchaser. (This was particularly likely if the foreign supplier or the foreign purchaser, or both, were affiliated with the parent.) The sale by the parent to a foreigner would have been recorded in the benchmark survey as

Table 4.--Comparison of Sales by U.S. MNC's With Sales by U.S. Parents of MOFA's and Their MOFA's, 1977, by Industry of U.S. Parent and by Area of Origin

Line	Millions of dollars			Column 2 as a percentage of column 1 (4)	
	U.S. MNC's (1)	U.S. parents of MOFA's and their MOFA's (2)	Other U.S. parents, and all minority-owned foreign affiliates (3)		
1	Total sales-----	2,060,262	1,832,565	227,700	88.9
2	By U.S. parents-----	1,412,293	1,325,546	86,747	93.9
3	By foreign affiliates-----	647,969	507,019	140,950	78.2
	By industry of U.S. parent:				
4	Petroleum-----	474,635	421,754	52,881	88.9
5	Manufacturing-----	1,037,157	930,209	106,948	89.7
6	Trade-----	228,750	190,795	37,955	83.4
7	Other-----	319,721	289,805	29,916	90.6
	By area of origin:				
8	United States-----	1,412,293	1,325,546	86,747	93.9
9	Canada-----	94,876	84,659	10,217	89.2
10	Europe-----	276,275	220,213	56,062	79.7
11	Japan-----	51,895	13,232	38,663	25.5
12	Australia, New Zealand, and South Africa-----	25,970	20,233	5,737	77.9
13	Latin America-----	73,287	58,208	15,079	79.4
14	Other-----	125,667	110,475	15,192	87.9

MNC Multinational company.

MOFA Majority-owned foreign affiliate.

NOTE.--In this table, data for U.S. MNC's are only for nonbank MNC's; data for U.S. parents are only for nonbank parents of nonbank affiliates; and data for affiliates are only for nonbank affiliates of nonbank parents. MOFA's are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million in 1977.

part of total sales by the parent; however, no export to or from the United States would have been recorded, because the petroleum did not cross the U.S. customs frontier--it was not actually shipped to or from the United States. 5/

Sales by U.S. petroleum parents were \$220 billion. When these sales were excluded from total parent sales, sales by the remaining (nonpetroleum) U.S. parents were \$1,106 billion. Sales by all MOFA's (whether of petroleum or of nonpetroleum parents) were \$507 billion. Thus, sales by those two subsets--which are analyzed in this and subsequent sections of the article--together covered \$1,613 billion, or 88 percent, of sales by all U.S. parents of MOFA's and their MOFA's.

Industry and destination of sales by U.S. nonpetroleum parents

Local sales (sales to U.S. customers) accounted for 92 percent of nonpetroleum parents' total sales of \$1,106 billion (table 6). In each major nonpetroleum industry, the bulk of sales--about 90 percent in manufacturing and in trade, and nearly 99 percent in "other" industries--were local. The larger share in "other" reflected the inclusion of large service-type subindustries--mainly insurance, communication, public utilities, and services. Most sales in these subindustries probably were local because they often depended on proximity to customers and familiarity with local customs and opportunities. Also, because parents' local sales were calculated as the difference between the parents' total sales and their exports of merchandise, all parent sales of services were forced into local sales.

Nonlocal sales by U.S. nonpetroleum parents were \$84 billion. Of the total, sales to Canada were \$18 billion, nearly all in manufacturing (tables 7A and 7B). Within manufacturing, sales in transportation equipment--mainly automotive--were by far the largest (table 7B, line 62, column 4). (These sales--mostly to Canadian MOFA's of U.S. automotive parents--were approximately offset by sales by the Canadian MOFA's to the United States. The fact that these automotive sales to Canada were approximately equal to those from Canada is attributed to the operation of the 1965 U.S.-Canadian automotive agreement, which encouraged expansion of automotive trade in both directions.)

Sales to Europe were \$27 billion, larger than those to any of the other major foreign areas (table 7A, line 17, column 5). Within Europe, sales to

5. The dollar amounts involved in transactions in which U.S. parents sold petroleum to foreigners, but did not ship the petroleum from the United States, apparently were large. Partial data by area of destination provided informally by some large petroleum parents during a prepublication review of the benchmark survey results showed that they charged \$57 billion of sales to foreigners; in contrast, export shipments reported by all petroleum parents were less than \$5 billion. Thus, at a minimum, there were \$53 billion of parent sales to foreigners that did not result in parent export shipments of petroleum (table 5). Because of their partial coverage, the data on petroleum parents' sales probably seriously understated actual nonlocal sales by all petroleum parents.

Table 5.--Partial Estimates of Nonlocal Sales and U.S. Export Shipments by U.S. Petroleum Parents, 1977

(Millions of dollars)

Line	Total	Known nonlocal sales by U.S. petroleum parents that were not shipped from the United States	Reported U.S. export shipments of U.S. petroleum parents
	(1)	(2)	(3)
1 All areas -----	57,506	52,710	4,796
2 Canada -----	1,466	1,040	426
3 Europe -----	21,920	20,659	1,261
4 Other -----	26,625	23,516	3,109
5 Not distributed by area ---	7,495	7,495	---

--- None.

NOTE.--Data in column 3 are from the benchmark survey. They were known not to overlap with the data on nonlocal sales by U.S. petroleum parents shown in column 2. The latter were obtained informally from some, but not all, U.S. petroleum parents during the prepublication review of the benchmark survey data. Because of their partial coverage, these data underestimate U.S. parent sales abroad to some unknown extent.

Table 6.--Total, Local, and Nonlocal Sales by U.S. Parents of MOFA's and Their MOFA's, 1977

Line		Millions of dollars							Percent distributions					
		U.S. and foreign destinations			Local and nonlocal sales				U.S. and foreign destinations		Local and nonlocal sales			
		Total	Sales to United States	Sales to other areas	Local sales	Nonlocal sales		Sales to United States	Sales to other areas	Local sales	Nonlocal sales			
						Total	To United States				To other areas	Total	To United States	To other areas
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)		
A	Sales by U.S. parents 1/-----	1,325,546	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1	Nonpetroleum, total-----	1,105,990	1,021,560	84,430	1,021,560	84,430	---	84,430	92.4	7.6	92.4	7.6	---	7.6
2	Manufacturing-----	697,804	632,993	64,811	632,993	64,811	---	64,811	90.7	9.3	90.7	9.3	---	9.3
3	Trade-----	157,243	140,691	16,552	140,691	16,552	---	16,552	89.5	10.5	89.5	10.5	---	10.5
4	Other-----	250,943	247,876	3,067	247,876	3,067	---	3,067	98.8	1.2	98.8	1.2	---	1.2
5	Petroleum 1/-----	219,556	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
B	Sales by MOFA's-----	507,019	93,574	413,445	313,307	193,496	93,574	100,138	18.5	81.5	61.8	38.2	18.5	19.8
	By industry of parent:													
6	Nonpetroleum, total-----	304,821	22,726	282,095	211,325	93,496	22,726	70,770	7.5	92.5	69.3	30.7	7.4	23.2
7	Manufacturing-----	232,405	19,680	212,725	160,024	72,381	19,680	52,701	8.5	91.5	68.9	31.1	8.5	22.7
8	Trade-----	33,552	1,470	32,083	20,076	13,476	1,470	12,006	4.4	95.6	59.8	40.2	4.4	35.8
9	Other-----	38,863	1,576	37,287	31,225	7,638	1,576	6,062	4.1	95.9	80.3	19.7	4.1	15.6
10	Petroleum-----	202,198	70,848	131,351	101,982	100,216	70,848	29,368	35.0	65.0	50.4	49.6	35.0	14.5
	By area of location of MOFA:													
11	Canada-----	84,659	14,659	70,000	66,402	18,258	14,659	3,599	17.3	82.7	78.4	21.6	17.3	4.3
12	Europe-----	220,213	7,791	212,422	145,603	74,611	7,791	66,820	3.5	96.5	66.1	33.9	3.5	30.3
13	Japan-----	13,231	(D)	(D)	12,274	957	(D)	(D)	(D)	(D)	92.8	7.2	(D)	(D)
14	Australia, New Zealand, and South Africa-----	20,233	(D)	(D)	17,780	2,453	(D)	(D)	(D)	(D)	87.9	12.1	(D)	(D)
15	Latin America-----	58,208	11,092	47,117	36,786	21,421	11,092	10,329	19.1	80.9	63.2	36.8	19.1	17.7
16	Other-----	110,475	59,230	51,244	34,463	76,012	59,230	16,782	53.6	46.4	31.2	68.8	53.6	15.2

MOFA Majority-owned foreign affiliate.

n.a. Not available.

(D) Suppressed to avoid disclosure of data of individual companies.

--- None, by definition. See text for explanation.

1. A distribution by area of destination of sales by U.S. petroleum parents is not available.

NOTE.--In this table, data for U.S. parents are only for nonbank parents of nonbank affiliates and data for affiliates are only for nonbank affiliates of nonbank parents. MOFA's are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million in 1977.

Table 7A.--Sales by U.S. Parents of MFA's and by their MFA's, 1977, Selected Industry of U.S. Parent and Area of Origin by Area of Destination

Line	Enillions of dollars														
	All areas	United States	Area of destination												
			Total	Canada	Europe							Japan	Australia, New Zealand, and South Africa	Latin America	Other developing areas
					Total	France	Germany	Italy	Netherlands	United Kingdom	Other Europe				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
All industries:															
Total	1	1,832,565	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
By U.S. parents	2	1,325,546	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
By MFA's	3	507,019	93,573	413,445	68,025	206,441	28,413	46,232	17,825	13,629	47,391	52,950	18,651	19,940	45,031
Located in:															
Canada	4	84,459	14,459	70,000	66,401	1,676	131	280	121	104	477	562	612	225	540
Europe	5	220,213	7,790	212,423	62	195,554	27,353	45,005	16,704	12,630	44,457	49,425	718	1,284	3,167
France	6	28,509	374	28,135	47	27,064	21,727	1,576	735	466	760	1,801	79	67	11,037
Germany	7	48,026	1,113	46,914	112	45,609	1,587	36,233	922	1,037	1,499	4,391	95	180	212
Italy	8	16,067	343	15,724	34	15,080	344	278	17,617	68	159	620	12	25	67
Netherlands	9	17,070	1,365	15,705	58	14,158	179	1,776	466	8,142	791	2,204	66	107	137
United Kingdom	10	55,860	2,418	53,442	275	47,780	818	1,593	768	38,462	4,576	191	591	825	3,780
Other Europe	11	56,680	2,178	54,503	162	47,794	2,097	3,578	1,372	2,148	2,766	35,833	275	315	1,795
Japan	12	13,232	372	12,860	38	139	(0)	24	(0)	(0)	28	60	12,274	54	120
Australia, New Zealand, and South Africa	13	20,233	431	19,802	24	404	(0)	51	(0)	(0)	71	117	989	17,994	44
Latin America	14	58,208	11,091	47,117	358	4,121	317	542	599	387	763	1,514	395	145	(0)
Other developing areas	15	110,475	59,230	51,244	542	4,547	524	331	341	465	1,616	1,271	3,663	237	(0)
Nonpetroleum:															
Total	16	1,410,811	1,044,286	366,525	72,551	176,551	24,158	37,881	13,995	13,473	37,875	49,269	15,565	18,243	42,559
By U.S. parents	17	1,105,990	1,021,560	84,430	17,849	26,954	2,685	4,190	1,936	3,711	4,042	10,389	7,405	3,047	10,344
By MFA's	18	304,821	22,726	282,095	54,702	149,597	21,473	33,691	12,060	9,761	33,833	38,880	8,160	15,196	32,215
Located in:															
Canada	19	70,726	13,469	57,257	53,805	1,613	131	(0)	121	90	476	(0)	(0)	224	532
Europe	20	161,885	3,740	158,145	605	144,114	(0)	32,629	(0)	9,243	32,882	36,803	(0)	1,223	2,910
France	21	22,073	(0)	22,073	47	(0)	(0)	1,540	(0)	(0)	(0)	79	(0)	66	131
Germany	22	36,183	(0)	36,183	(0)	112	34,016	1,556	24,986	909	1,006	(0)	(0)	94	178
Italy	23	9,919	(0)	9,919	(0)	(0)	332	270	7,866	(0)	(0)	(0)	(0)	11	23
Netherlands	24	11,696	(0)	11,696	(0)	53	10,625	730	1,501	456	5,386	(0)	(0)	64	106
United Kingdom	25	39,687	907	38,780	(0)	34,516	(0)	1,258	(0)	28,055	3,549	(0)	(0)	170	19
Other Europe	26	42,327	1,117	41,210	146	35,118	(0)	3,074	(0)	1,686	1,973	25,182	(0)	(0)	(0)
Japan	27	5,789	(0)	5,789	38	138	(0)	24	(0)	(0)	28	60	4,878	49	120
Australia, New Zealand, and South Africa	28	15,579	(0)	15,579	(0)	(0)	(0)	51	(0)	(0)	(0)	(0)	(0)	13,459	43
Latin America	29	34,382	2,469	32,114	(0)	2,695	243	458	(0)	333	275	(0)	(0)	92	28,453
Other developing areas	30	16,459	2,456	14,003	(0)	(0)	(0)	49	54	(0)	196	888	149	156	11,950
Manufacturing total	31	950,209	652,673	277,536	53,758	136,210	20,535	29,995	10,875	8,929	28,838	37,038	9,602	15,609	35,141
By U.S. parents	32	697,804	632,993	64,811	17,031	18,332	2,246	3,039	1,160	1,709	3,300	6,878	3,564	2,868	8,661
By MFA's	33	252,405	19,680	212,725	36,727	117,878	18,289	26,957	9,715	7,219	25,538	30,160	6,038	12,741	26,480
Located in:															
Canada	34	50,786	12,569	38,217	36,094	1,020	98	195	75	60	317	277	185	208	432
Europe	35	126,619	2,814	123,805	454	114,825	19,793	26,370	9,473	6,925	24,952	29,131	369	1,095	1,466
France	36	18,924	285	18,639	39	17,776	13,462	1,400	540	322	1,460	57	62	114	592
Germany	37	29,951	847	29,104	106	28,248	1,369	20,057	774	894	1,354	3,400	86	170	19
Italy	38	8,217	142	8,075	6	7,623	309	250	6,448	53	147	416	11	20	43
Netherlands	39	8,877	156	8,721	27	8,134	602	1,120	405	4,088	376	1,542	37	92	91
United Kingdom	40	30,550	718	29,842	213	26,426	593	1,022	372	380	21,097	2,961	100	524	642
Other Europe	41	30,089	667	29,422	65	26,819	1,639	2,521	933	1,189	1,386	19,152	77	227	378
Japan	42	4,929	189	4,740	10	119	14	20	5	4	23	53	4,286	42	111
Australia, New Zealand, and South Africa	43	12,930	411	12,520	13	306	70	17	(0)	(0)	51	80	709	11,165	38
Latin America	44	27,757	1,732	26,025	97	1,113	99	173	88	174	115	464	157	87	24,299
Other developing areas	45	9,383	1,964	7,419	60	496	34	181	(0)	(0)	81	156	332	145	134
Trade total	46	190,795	142,161	48,635	7,315	25,563	1,781	4,277	1,961	3,799	5,502	8,242	4,303	1,199	3,968
By U.S. parents	47	157,243	140,691	16,552	399	7,812	359	996	661	1,959	601	3,237	3,390	109	1,315
By MFA's	48	33,552	1,470	32,083	6,916	17,751	1,422	3,282	1,301	1,840	4,901	5,006	912	1,089	2,653
Located in:															
Canada	49	7,676	281	7,395	6,762	356	3	3	(0)	(0)	(0)	(0)	(0)	2	18
Europe	50	19,794	620	19,173	(0)	15,868	1,268	3,012	1,183	1,635	4,663	4,105	270	(0)	1,049
France	51	(0)	(0)	1,389	(0)	1,305	808	68	(0)	(0)	91	(0)	(0)	4	(0)
Germany	52	2,293	36	2,257	4	2,241	50	1,933	(0)	44	51	(0)	2	(0)	2
Italy	53	(0)	(0)	(0)	(0)	(0)	2	3	(0)	(0)	2	18	0	1	(0)
Netherlands	54	1,960	(0)	1,960	(0)	1,875	110	(0)	43	1,010	124	(0)	(0)	2	(0)
United Kingdom	55	5,294	(0)	5,294	(0)	4,819	73	(0)	(0)	55	3,997	428	38	7	(0)
Other Europe	56	8,170	399	7,772	(0)	7,311	231	443	299	421	398	(0)	193	(0)	(0)
Japan	57	493	(0)	493	(0)	(0)	(0)	(0)	(0)	(0)	5	7	238	7	(0)
Australia, New Zealand, and South Africa	58	1,183	2	1,182	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	131	1,003	5
Latin America	59	3,417	206	3,211	(0)	1,373	(0)	236	93	158	(0)	637	(0)	(+)	1,575
Other developing areas	60	989	(0)	989	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Others total	61	289,806	249,452	40,354	11,477	14,879	1,842	3,609	1,160	745	3,335	3,989	1,640	1,435	3,450
By U.S. parents	62	250,943	247,876	3,067	418	810	80	156	116	43	141	275	451	69	367
By MFA's	63	38,863	1,576	37,287	11,059	14,068	1,762	3,453	1,044	702	3,394	3,714	1,209	1,366	3,082
Located in:															
Canada	64	12,264	618	11,646	10,949	237	30	(0)	(0)	(0)	(0)	(0)	(0)	14	82
Europe	65	15,472	305	15,167	(0)	13,421	(0)	3,247	(0)	683	3,267	3,566	(0)	(0)	395
France	66	(0)	(0)	(0)	(0)	(0)	(0)	72	(0)	(0)	(0)	(0)	(0)	1	(0)
Germany	67	3,938	(0)	3,938	(0)	3,727	137	2,996	(0)	69	(0)	8	(0)	15	(0)
Italy	68	(0)	(0)	(0)	(0)	(0)	20	16	(0)	(0)	(0)	(0)	(0)	2	(0)
Netherlands	69	858	(0)	858	(0)	616	19	(0)	7	488	(0)	(0)	(0)	11	(0)
United Kingdom	70	3,833	(0)	3,833	(0)	3,271	(0)	(0)	(0)	7	3,000	(0)	(0)	(0)	(0)
Other Europe	71	4,058	52	4,016	(0)	4,016	(0)	111	(0)	76	189	(0)	(0)	(0)	(0)
Japan	72	367	(0)	367	(0)	(0)	(0)	(0)	(0)	(0)	(+)	(+)	353	(+)	(0)
Australia, New Zealand, and South Africa	73	1,465	(0)	1,465	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	1,291	(+)
Latin America	74	3,208	331	2,878	26	209									

Table 78.--Sales by U.S. Parents of MOFA's and by Their MOFA's, 1977, Selected Manufacturing Industry of U.S. Parent and Area of Origin by Area of Destination

(Millions of dollars)

Line	Area of destination															
	All areas	United States	Foreign countries													
			Total	Canada	Europe							Japan	Australia, New Zealand, and South Africa	Latin America	Other developing areas	
					Total	France	Germany	Italy	Netherlands	United Kingdom	Other Europe					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)		
Food and kindred products	1	101,672	76,248	25,424	5,394	12,480	2,014	2,465	953	1,243	3,089	2,717	1,038	1,332	3,855	1,324
By U.S. parents	2	78,230	75,608	2,622	466	1,047	75	115	67	398	102	291	198	66	342	502
By MOFA's	3	23,442	640	22,802	4,929	11,433	1,939	2,350	886	845	2,987	2,426	840	1,265	3,513	822
Located in:																
Canada	4	5,112	145	4,967	4,868	(0)	3	(0)	(+)	(0)	21	26	(0)	4	13	(0)
Europe	5	11,362	165	11,197	27	10,276	1,858	2,226	840	773	2,918	2,131	28	20	27	262
France	6	1,945	(0)	(0)	4	1,874	1,696	54	19	22	19	63	(+)	2	9	(0)
Germany	7	2,159	8	2,151	(0)	2,098	58	1,827	(0)	26	(0)	116	(0)	1	7	33
Italy	8	776	(0)	(0)	1	768	15	12	717	2	6	17	(+)	(0)	(+)	5
Netherlands	9	1,228	5	1,218	(0)	1,130	245	192	17	867	32	195	(0)	(0)	10	(0)
United Kingdom	10	3,254	97	3,157	8	3,032	20	48	13	16	2,805	130	10	11	34	63
Other Europe	11	2,005	29	1,977	7	1,883	64	92	(0)	39	(0)	1,608	3	4	17	62
Japan	12	646	(+)	646	0	1	0	1	0	0	0	(+)	645	(+)	(+)	(+)
Australia, New Zealand, and South Africa	13	1,337	3	1,334	(0)	20	(+)	1	(+)	1	(0)	(0)	(0)	1,241	(+)	55
Latin America	14	4,289	228	4,061	(0)	495	(0)	100	45	(0)	(0)	242	(0)	(+)	3,422	85
Other developing areas	15	696	100	596	(0)	(0)	(0)	(0)	1	(0)	(0)	(0)	(0)	1	(+)	(0)
Chemicals and allied products	16	134,720	86,214	48,506	7,052	24,954	3,859	4,870	2,634	1,354	4,557	7,680	1,950	2,524	7,531	4,494
By U.S. parents	17	94,168	85,052	9,117	1,404	3,158	369	422	214	269	513	1,370	622	483	1,863	1,587
By MOFA's	18	40,552	1,165	39,389	5,648	21,796	3,489	4,448	2,420	1,085	4,044	6,310	1,328	2,041	5,668	2,907
Located in:																
Canada	19	6,192	501	5,691	5,523	83	6	(0)	2	(0)	17	(0)	14	26	23	22
Europe	20	23,358	407	22,952	99	21,476	3,464	4,358	2,405	1,057	4,005	6,186	61	174	224	918
France	21	3,197	27	3,170	5	3,017	2,505	128	74	40	251	2	9	13	124	12
Germany	22	4,119	23	4,096	(0)	4,000	131	3,023	90	136	96	522	(0)	10	25	43
Italy	23	2,124	14	2,110	1	2,011	64	40	1,766	11	13	117	1	3	24	71
Netherlands	24	2,162	87	2,075	(0)	1,919	167	320	119	475	121	717	(0)	12	22	103
United Kingdom	25	4,519	64	4,455	35	4,276	81	55	43	3,243	533	11	4	20	56	239
Other Europe	26	7,237	193	7,044	43	6,454	516	752	301	344	4,065	26	100	83	359	527
Japan	27	1,160	14	1,145	1	9	2	1	1	(+)	(+)	5	1,105	3	2	27
Australia, New Zealand, and South Africa	28	1,829	6	1,823	1	10	2	2	1	1	3	1	(0)	1,740	(0)	78
Latin America	29	5,821	138	5,683	23	116	11	9	8	18	15	54	22	36	5,408	78
Other developing areas	30	2,192	96	2,095	2	102	3	(0)	4	(0)	4	(0)	(0)	62	(0)	85
Machinery, except electrical	31	115,124	66,163	48,960	6,984	26,327	4,380	5,766	2,216	1,385	4,744	7,836	2,248	2,959	5,169	5,274
By U.S. parents	32	76,751	64,711	12,040	2,532	4,056	628	611	208	215	722	1,671	491	775	1,783	2,402
By MOFA's	33	38,373	1,453	36,920	4,451	22,271	3,752	5,155	2,009	1,169	4,021	6,164	1,756	2,184	3,385	2,872
Located in:																
Canada	34	5,162	538	4,623	4,268	94	(0)	5	(0)	9	32	29	13	52	108	88
Europe	35	25,405	577	24,827	171	21,971	3,711	5,100	1,989	1,153	3,949	6,069	169	300	399	1,818
France	36	3,912	82	3,829	(0)	3,676	81	276	195	46	1,05	315	(0)	9	15	152
Germany	37	3,871	169	3,703	(0)	3,297	411	3,860	154	73	228	571	(0)	70	92	166
Italy	38	1,813	53	1,760	1	1,689	88	73	1,350	18	53	107	4	8	7	52
Netherlands	39	1,683	12	1,671	9	1,514	138	164	50	800	114	248	2	32	11	74
United Kingdom	40	5,258	135	5,123	109	4,756	249	545	141	98	3,081	600	49	84	95	370
Other Europe	41	6,867	97	6,771	3	5,486	322	563	179	116	278	4,227	31	77	165	1,009
Japan	42	1,748	85	1,663	(0)	46	10	10	(0)	1	(0)	16	1,514	28	(0)	20
Australia, New Zealand, and South Africa	43	1,830	(0)	1,830	(+)	3	(+)	(+)	(+)	(+)	2	1	(0)	1,768	(0)	41
Latin America	44	3,208	91	3,116	(0)	149	(0)	(0)	(0)	(0)	29	45	(0)	29	2,828	57
Other developing areas	45	1,021	(0)	1,021	1	7	(+)	(0)	(0)	(0)	4	7	6	6	(0)	88
Electrical and electronic equipment	46	72,677	51,579	21,098	3,360	8,834	1,464	1,896	837	519	2,088	2,031	1,289	987	2,804	3,824
By U.S. parents	47	57,227	49,895	7,333	846	2,203	330	512	174	189	379	619	396	306	913	2,669
By MOFA's	48	15,450	1,685	13,766	2,515	6,631	1,134	1,383	663	330	1,709	1,412	894	681	1,891	1,155
Located in:																
Canada	49	2,788	161	2,627	2,477	46	6	4	2	(+)	25	8	(0)	6	22	(0)
Europe	50	6,864	183	6,681	15	6,244	1,054	1,322	598	296	1,637	1,336	6	56	40	319
France	51	1,003	4	998	1	973	778	60	31	13	26	64	(+)	2	3	18
Germany	52	1,360	21	1,340	1	1,298	41	949	46	34	30	177	2	4	32	4
Italy	53	745	14	731	(+)	560	51	29	402	7	18	54	(+)	(0)	(0)	(0)
Netherlands	54	444	2	442	(+)	418	37	83	24	183	31	61	(+)	(0)	(0)	(0)
United Kingdom	55	2,045	61	1,983	11	1,847	42	78	30	25	1,466	206	4	27	21	73
Other Europe	56	1,267	81	1,186	2	1,147	104	103	65	34	66	774	(+)	5	7	26
Japan	57	440	50	390	(0)	8	1	3	1	(+)	1	2	339	5	(0)	29
Australia, New Zealand, and South Africa	58	1,373	(0)	1,373	1	(0)	(0)	1	(0)	(0)	(0)	(0)	(0)	601	(0)	7
Latin America	59	1,973	134	1,839	3	18	(0)	(0)	(+)	(+)	1	(0)	1	1	1,809	7
Other developing areas	60	2,013	(0)	2,013	(0)	12	(0)	9	(0)	9	(0)	11	(0)	11	(0)	748
Transportation equipment	61	226,928	151,971	72,957	18,966	32,883	4,651	8,026	2,036	1,928	7,204	9,039	672	4,863	8,478	7,094
By U.S. parents	62	162,474	142,083	20,332	9,143	2,878	364	466	143	126	641	1,138	424	677	2,236	4,923
By MOFA's	63	62,514	9,888	52,626	9,823	30,005	4,286	7,560	1,893	1,802	6,563	7,901	248	4,187	6,241	2,171
Located in:																
Canada	64	18,696	8,541	10,155	9,694	159	7	(0)	(0)	2	27	52	(0)	84	169	(0)
Europe	65	33,037	881	32,156	91	29,784	4,277	7,485	1,886	1,799	6,516	7,820	29	379	512	1,362
France	66	5,137	80	5,056	(0)	4,852	3,360	528	(0)	(0)	204	601	(0)	(0)	26	143
Germany	67	10,667	(0)	10,667	(0)	9,813	523	5,872	(0)	469	(0)	1,735	8	(0)	49	151
Italy	68	1,217	(0)	1,217	(0)	1,172	27	32	1,065	2	13	33	5	3	5	17
Netherlands	69	945	3	943	(+)	924	(0)	(0)	688	22	55	(+)	(0)	(+)	(+)	(0)
United Kingdom	70	8,638	162	8,476	16	6,820	95	410	(0)	(0)	5,201	(0)	(0)	289	383	(0)
Other Europe	71	6,432	93	6,340	(0)	6,203	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	49	73
Japan	72	335	(+)	335	0	(0)	(+)	0	0	0	0	0	195	(+)	(0)	(0)
Australia, New Zealand, and South Africa	73	3,732	14	3,718	(0)	(0)										

Germany, the United Kingdom, and the Netherlands were particularly large. In most major European countries, the bulk of the sales were by U.S. manufacturing parents; however, in the Netherlands and Switzerland (part of "other Europe"), trade parents accounted for a sizable part of the total; sales by parents in other nonpetroleum industries were small.

Sales to Japan were \$7 billion; manufacturing and trade parents each accounted for nearly one-half. Sales to Australia, New Zealand, and South Africa were \$3 billion, and were mostly by manufacturing parents. Sales to Latin America were \$10 billion, and were mostly by manufacturing parents; trade parents accounted for most of the remainder. Within Latin America, the destinations with the largest sales--more than \$2 billion each--were Mexico, Venezuela, and Brazil.

Sales to "other developing" areas were nearly \$19 billion: manufacturing parents accounted for about three-fourths, and trade parents for most of the remainder. Within the "other developing" areas, roughly one-half of the sales were to members of OPEC; most of the remainder were unclassified by area of destination, but were included in this article in "other developing" areas (these were low-value export shipments for which destination data were not obtained in the benchmark survey in order to reduce the reporting burden). 6/

Industry and destination of sales by MOFA's

Of the \$507 billion of sales by all MOFA's, \$202 billion were by MOFA's of U.S. petroleum parents and \$305 billion were by MOFA's of nonpetroleum--mainly manufacturing--parents (tables 6 and 7A). In petroleum, the distribution between local and nonlocal sales differed sharply from that in nonpetroleum industries. In petroleum, one-half of sales were local, roughly one-fourth were to the United States, and one-fourth to third countries (countries other than the United States or that of the seller). In contrast, in nonpetroleum industries, 69 percent of sales were local, 7 percent were to the United States, and 23 percent were to third countries.

In each of the nonpetroleum industries, nonlocal sales were a much higher proportion of total sales by MOFA's than by their U.S. parents. The higher proportion for MOFA's may have reflected several factors. First, MOFA's may need to produce for external markets, in order to attain more efficient scales of operation than would have been possible by producing mainly for their local markets. In contrast, many parents could attain efficient scales of operation by producing mainly for the U.S. market. Second, a major part of MOFA's nonlocal sales were by affiliates located in Europe, particularly in the EC(9). Preferential trade arrangements among the EC(9) member countries encouraged sales among the members. This contributed to a relatively high ratio of nonlocal to total sales by European MOFA's. Third,

6. These low-value shipments are discussed separately in Betty L. Barker, U.S. Merchandise Trade Associated with U.S. Multinational Companies, in this collection of articles.

to obtain approval to operate in certain countries, some foreign affiliates agreed to sell part of their output abroad; also, in certain countries, some affiliates were offered incentives, such as increased availability of foreign exchange, to purchase imported parts and supplies, if they would meet export goals.

Sales by Canadian MOFA's were \$85 billion. The destinations of about three-fourths of the sales were local. Most of the remainder were to U.S. customers; sales to Europe were only 2 percent, and sales to other destinations were even smaller. By industry of U.S. parent, sales by MOFA's of U.S. manufacturing parents were more than one-half of the total; within manufacturing, sales in transportation equipment were particularly large, chiefly because of the previously noted U.S.-Canadian automotive agreement. Petroleum accounted for about 16 percent of the sales, which were primarily local; most of the remainder were to the United States.

Sales by MOFA's located in Europe were \$220 billion. The destinations of nearly two-thirds of their sales were local. More than one-third were nonlocal, and were mostly to other European countries. ^{7/} The main destinations of sales outside Europe were the OPEC members in "other developing" areas, which accounted for less than 5 percent, and the United States and Latin America, each of which accounted for roughly 2 percent, of the total.

By industry of U.S. parent, manufacturing accounted for nearly three-fifths of total sales by European MOFA's; these sales were chiefly local. Petroleum accounted for nearly one-fourth of the sales (table 7A, lines 5 and 80); most of these sales were local, partly because major refining and distribution affiliates were located in Europe specifically to serve European markets. Also, some of the crude petroleum and natural gas produced in Europe, especially in the North Sea area, was sold to European customers. Sales to the United States were relatively small and, for the most part, consisted of petroleum that was subsequently resold to foreign customers by U.S. petroleum parents. (In such cases, the European MOFA's usually would not actually ship the petroleum to the United States, but instead would ship it directly to foreign customers of the U.S. parents.) Sales in trade and "other," which were much smaller than the sales in petroleum, were also chiefly to European destinations.

Sales by MOFA's located in Japan and Australia, New Zealand, and South Africa were, respectively, \$13 and \$20 billion; in each area, the bulk of the sales were local. By industry of U.S. parent, roughly three-fifths of sales

7. Because local sales covered only the sales where seller and customer were in the same country (as opposed to the same area or region), local sales in Europe would have included, for example, sales by a French MOFA to a French customer, but would have excluded sales by a French MOFA to a German customer.

by Japanese MOFA's were in petroleum, and three-fifths of sales by MOFA's in Australia, New Zealand, and South Africa were in manufacturing.

Sales by Latin American MOFA's were \$58 billion, of which nearly two-thirds were local and one-fifth to U.S. customers. Sales to European customers and to nonlocal customers in Latin America each were less than 8 percent of the total. By industry of U.S. parent, nearly one-half of total sales by Latin American MOFA's were in manufacturing; these sales were chiefly local. Petroleum accounted for 40 percent of the total; of these sales, 60 percent were nonlocal. (In contrast, sales by European and Canadian MOFA's of petroleum parents were chiefly local.) The nonlocal sales in petroleum were primarily to parents, by MOFA's in Bermuda and the other Caribbean islands, for resale to foreign customers (most of the petroleum was shipped directly to the foreign customers rather than to the United States). The local sales in petroleum were mainly by MOFA's in South America--chiefly Brazil.

Sales by MOFA's located in "other developing" areas were \$110 billion; more than two-thirds were nonlocal. These nonlocal sales were mainly to the United States and, to a lesser extent, to third countries in "other developing" areas. Most of the nonlocal sales originated in the African and Middle Eastern members of OPEC. By industry of U.S. parent, petroleum accounted for 85 percent of the sales originating in "other developing" areas. More than one-half of these sales were to U.S. parents; as was the case with sales by European MOFA's to their U.S. petroleum parents, most of the petroleum from "other developing" areas was not actually shipped to parents, but instead was shipped directly to the parents' foreign customers. Manufacturing and "other" accounted for 8 and 5 percent, and trade for less than 1 percent, of the total.

Sales by Affiliation Between Seller and Customer

This section distributes sales by U.S. nonpetroleum parents of MOFA's, and by all MOFA's, (the same subset just discussed by area of destination) into sales to affiliated and to unaffiliated customers. Affiliated customers are those that are members of the same MNC as the seller; all other customers are unaffiliated.

To affiliated customers

By U.S. nonpetroleum parents.--Sales by U.S. nonpetroleum parents to affiliated customers were only \$28 billion, or 3 percent, of their sales to all customers. All of these sales were to their own MOFA's because, by

definition, a U.S. parent has no sales to affiliated U.S. (domestic) customers. ^{8/} The sales to MOFA's were roughly one-third of the parents' total sales to foreign customers (table 8). About one-third of the sales to MOFA's were by U.S. auto manufacturers to their Canadian MOFA's; very few sales to other foreign areas were to affiliated customers.

By MOFA's.--Sales by MOFA's to affiliated customers--either their U.S. parents or other foreign affiliates of the parents--were \$168 billion, about one-third of their total sales. ^{9/} The share of total sales to affiliated customers varied considerably by industry and area of destination. In petroleum, more than one-half of sales were to affiliated customers; this large share reflected the high degree of vertical integration in the operations of the petroleum MNC's, from crude oil production through refining, marketing, and distribution. By destination, a relatively small portion of their local sales, but most of their nonlocal sales, were to affiliated customers. Most of their sales to the United States were to parents, and most of their other nonlocal sales were to other affiliates. The large shares of MOFA sales that were to affiliated customers, both in the U.S. and third countries, primarily reflected an industrywide practice of channeling petroleum sales from MOFA's in petroleum-exporting areas through the parents, or through refining or distribution affiliates, to final customers in petroleum-importing areas.

In nonpetroleum, about one-fifth of the \$305 billion of sales by MOFA's were to affiliated customers. By destination, nearly all of the U.S. sales by MOFA's were to their own parents, and more than two-fifths of their sales to third countries were to other affiliates. (In contrast, most of their local sales were to unaffiliated customers.) Some of the nonlocal sales to affiliated customers probably reflected use of the customers' knowledge of local conditions and established marketing arrangements to penetrate markets in those areas. Also, they reflected specialization of production among members of an MNC in different countries. Thus, a German affiliate may produce some components and a British affiliate other components of a product; the components may be exported to yet a third country for assembly into a finished product. Such specialization tends to result in larger production runs, and more efficient operations, in each affiliate than otherwise would be possible.

8. In conformance with U.S. generally accepted accounting principles, each U.S. parent was asked to consolidate fully its domestic (U.S.) operations in reporting in the benchmark survey; the full consolidation was to include all domestic subsidiaries in which the parent had, directly or indirectly, a majority-ownership interest. Such consolidation eliminated sales among the domestic companies that were part of the consolidated parent. Domestic enterprises that were minority-owned by a parent were treated in the benchmark survey as unaffiliated. A parent, therefore, by definition, had no affiliated U.S. customers.

9. Sales to minority-owned foreign affiliates were included in MOFA sales to affiliated customers, but, for consistency with the treatment of sales to affiliated customers by U.S. parents, they should have been excluded. Unfortunately, sales by MOFA's to minority-owned foreign affiliates could not be separated in the benchmark data from their sales to other affiliates. Because these sales were small, their inclusion in sales to affiliated customers probably had little effect on the distribution of the data by affiliation.

Table 8.--Sales by Affiliation of Customer and by Industry of U.S. Parent, 1977

(Millions of dollars)

Line		U.S. and foreign destinations			Local and nonlocal sales			
		Total	Sales to United States	Sales to other areas	Local sales	Nonlocal sales		
						Total	To United States	To other areas
(1)	(2)	(3)	(4)	(5)	(6)	(7)		
1	Sales by U.S. parents-----	1,325,546	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Nonpetroleum, total-----	1,105,990	1,021,560	84,430	1,021,560	84,430	---	84,430
3	To affiliated customers-----	27,846	---	27,846	---	27,846	---	27,846
4	To unaffiliated customers-----	1,078,144	1,021,560	56,584	1,021,560	56,584	---	56,584
5	Petroleum-----	219,556	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sales by MOFA's, total-----	507,019	93,574	413,445	313,307	193,712	93,574	100,138
7	To affiliated customers-----	168,023	84,155	83,869	34,115	133,909	84,155	49,754
8	To unaffiliated customers-----	338,995	9,419	329,576	279,192	59,803	9,419	50,384
9	Nonpetroleum, total-----	304,821	22,726	282,095	211,325	93,496	22,726	70,770
10	To affiliated customers-----	58,333	18,048	40,285	9,733	48,601	18,048	30,553
11	To unaffiliated customers-----	246,487	4,678	241,809	201,592	44,895	4,678	40,217
12	Petroleum, total-----	202,198	70,848	131,351	101,982	100,216	70,848	29,368
13	To affiliated customers-----	109,690	66,107	43,584	24,382	85,308	66,107	19,201
14	To unaffiliated customers-----	92,508	4,741	87,767	77,600	14,908	4,741	10,167

MOFA Majority-owned foreign affiliate.

n.a. Not available. See text for explanation.

--- None, by definition. See text for explanation.

NOTE.--In this table, data for U.S. parents are only for nonbank parents of nonbank affiliates and data for affiliates are only for nonbank affiliates of nonbank parents. MOFA's are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million in 1977.

To unaffiliated customers

Sales to unaffiliated customers accounted for the bulk of total sales, both by U.S. nonpetroleum parents of MOFA's, and by all MOFA's. They are, therefore, only summarized here because most of the points already made about total sales also apply to sales to unaffiliated customers. In some individual areas and industries, however, differences between sales to unaffiliated customers and total sales were substantial. To show these differences, table 9A gives sales to unaffiliated customers in the same detail by area and by industry as did table 7A for total sales; table 9B gives, for each area-industry cell, the sales figure in table 9A as a percentage of the comparable total sales figure in table 7A.

By U.S. nonpetroleum parents.--Sales by U.S. nonpetroleum parents to all unaffiliated U.S. and foreign customers were \$1,078 billion, 97 percent of total sales by the parents. The share was high because almost all of the parents' total sales were local and, as noted earlier, all of their local sales were, by definition, to unaffiliated customers. In contrast, the share of the parents' nonlocal sales that was to unaffiliated customers was considerably smaller--67 percent. Sales to unaffiliated customers were especially large shares of parents' sales to Japan and "other" areas, and especially small shares of their sales to Canada and the United Kingdom.

By MOFA's.--Sales by MOFA's to all unaffiliated U.S. and foreign customers were \$339 billion, 67 percent of their total sales. For most of the areas and industries shown in tables 9A and B, well over 90 percent of total local sales were to unaffiliated customers.^{10/} In general, the shares of their nonlocal sales that were to unaffiliated customers were markedly smaller. This was particularly true, by area, of sales to the United States and, by industry, of sales by affiliates of petroleum parents.

Technical Notes

Estimation of U.S. parents' nonlocal sales

In this article, U.S. nonpetroleum parents' export shipments were used as an estimate of their nonlocal sales; however, export shipments differed in concept, and could differ in amount, from sales. Exports were physical shipments of goods to foreign countries, irrespective of to whom the goods were charged. In contrast, nonlocal sales were all sales of both goods and services charged on the parent's books to foreign customers, irrespective of whether the goods were actually shipped from the United States or of where the services actually were performed.

10. For individual countries, local sales are given in the line and column intersections in table 9A (the "diagonal" of the table). For example, for Canada, local sales were \$64 billion (table 9A, column 4, line 4).

Table 9A.--Sales to Unaffiliated Customers by U.S. Parents of MOFA's and by their MOFA's, 1977, Selected Industry of U.S. Parent and Area of Origin by Area of Destination

(Millions of dollars)

Line	Area of destination															
	All areas	United States	Foreign countries												Other developing areas	
			Total	Canada	Europe							Japan	Australia, New Zealand, and South Africa	Latin America		
					Total	France	Germany	Italy	Netherlands	United Kingdom	Other Europe					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)		
All industries:																
Total	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
By U.S. parents	2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
By MOFA's	3	338,995	9,419	329,576	64,106	161,870	22,915	38,911	13,600	9,934	36,983	39,528	16,672	17,855	39,482	29,592
Located in:																
Canada	4	69,858	3,593	66,265	63,597	1,134	111	258	86	89	327	263	(0)	(0)	354	486
Europe	5	170,205	1,888	168,317	356	156,550	22,251	38,041	13,068	9,454	36,040	37,677	(0)	(0)	2,122	8,325
France	6	22,365	51	22,294	3	21,514	20,074	537	181	106	124	691	12	25	99	642
Germany	7	38,388	76	38,312	14	37,527	425	34,658	265	323	169	1,687	45	44	118	564
Italy	8	12,505	38	12,466	4	12,005	124	107	11,370	26	63	315	7	11	29	410
Netherlands	9	10,881	30	10,851	42	10,300	340	848	261	7,406	319	1,126	42	37	(0)	(0)
United Kingdom	10	41,804	684	41,120	182	37,768	265	510	223	298	34,282	2,190	118	157	457	2,428
Other Europe	11	44,282	1,008	43,274	110	37,437	1,023	1,580	768	1,295	1,102	31,669	(0)	(0)	(0)	(0)
Japan	12	11,980	20	11,960	5	32	(0)	(0)	(0)	(0)	(0)	22	11,826	6	24	88
Australia, New Zealand, and South Africa	13	18,745	129	18,616	15	335	(0)	(0)	(0)	(0)	(0)	103	865	17,080	38	283
Latin America	14	42,279	1,765	40,514	62	2,551	277	413	257	207	392	1,005	326	57	(0)	(0)
Other developing areas	15	25,928	2,025	23,903	72	1,267	203	165	134	150	159	457	(0)	(0)	(0)	(0)
Nonpetroleum:																
Total	16	1,324,631	1,026,238	298,393	57,371	137,664	18,490	30,364	11,007	10,096	30,719	36,788	13,997	15,608	37,198	36,555
By U.S. parents	17	1,078,144	1,021,560	56,584	5,378	119,693	(0)	2,566	1,402	2,732	2,104	(0)	6,755	1,841	7,601	17,317
By MOFA's	18	246,487	4,678	241,809	51,994	119,970	(0)	27,999	9,603	7,364	28,615	(0)	7,243	13,767	29,591	19,239
Located in:																
Canada	19	57,354	(0)	(0)	51,379	1,375	111	(0)	85	(0)	326	(0)	549	114	348	(0)
Europe	20	127,954	606	127,348	(0)	116,326	(0)	27,217	9,261	7,044	28,006	(0)	(0)	488	1,992	7,827
France	21	16,745	(0)	(0)	3	(0)	(0)	335	174	(0)	123	(0)	(0)	25	99	(0)
Germany	22	27,824	73	27,751	14	26,970	406	24,266	254	309	164	1,570	(0)	(0)	116	(0)
Italy	23	8,700	(0)	(0)	2	8,240	115	103	7,688	21	63	251	(0)	10	27	(0)
Netherlands	24	8,453	(0)	(0)	38	7,894	315	730	259	5,325	(0)	(0)	41	57	(0)	(0)
United Kingdom	25	32,673	(0)	(0)	148	29,397	(0)	445	(0)	177	26,498	(0)	(0)	153	448	(0)
Other Europe	26	33,557	357	33,200	(0)	(0)	(0)	1,338	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Japan	27	4,733	20	4,713	5	32	(0)	(0)	(0)	(0)	(0)	22	4,583	6	24	64
Australia, New Zealand, and South Africa	28	14,716	129	14,586	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	13,089	38	(0)
Latin America	29	30,019	383	29,636	46	1,808	216	352	(0)	167	206	(0)	170	37	27,185	390
Other developing areas	30	11,712	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	37	(0)	662	33	11	10,251
Manufacturing, total	31	853,287	636,598	216,888	39,593	101,718	15,267	23,316	9,290	6,144	22,573	26,129	8,289	13,101	30,453	23,735
By U.S. parents	32	672,035	632,993	39,042	4,847	10,400	1,253	1,645	760	988	1,634	4,120	2,944	1,722	6,068	13,062
By MOFA's	33	181,252	3,605	177,646	34,745	91,317	14,013	21,671	7,350	5,155	20,939	22,009	5,366	11,379	24,386	10,673
Located in:																
Canada	34	38,804	2,704	36,100	34,532	825	83	176	62	48	254	203	155	100	255	233
Europe	35	95,036	232	94,804	166	89,366	13,777	21,284	7,337	4,997	20,551	21,400	140	383	830	4,939
France	36	14,178	26	14,152	2	13,521	12,350	272	156	80	96	507	11	32	86	510
Germany	37	21,999	57	21,942	8	21,358	275	19,387	169	225	117	1,185	36	36	104	420
Italy	38	7,144	10	7,135	2	6,771	101	89	6,283	18	57	222	6	9	12	335
Netherlands	39	5,944	6	5,938	12	5,561	193	407	209	3,872	105	775	14	43	31	276
United Kingdom	40	24,189	82	24,108	124	21,747	141	255	96	122	19,774	1,358	27	139	348	1,722
Other Europe	41	22,582	71	22,511	18	20,588	718	872	424	681	401	17,293	45	134	249	1,676
Japan	42	4,132	9	4,124	(*)	24	2	1	1	(*)	1	19	4,036	3	14	47
Australia, New Zealand, and South Africa	43	12,184	111	12,073	3	261	(0)	(0)	(0)	(0)	31	70	706	10,832	36	234
Latin America	44	24,502	265	24,237	35	662	74	110	70	86	81	262	92	33	23,245	169
Other developing areas	45	5,593	85	5,508	9	199	(0)	(0)	(0)	(0)	21	54	217	29	5	5,050
Trade, total	46	185,756	141,163	44,594	7,004	22,621	1,532	3,922	1,684	3,308	4,910	7,245	4,192	1,155	3,637	5,985
By U.S. parents	47	153,799	140,691	15,108	236	6,718	219	836	535	1,707	391	3,030	3,364	83	1,245	3,462
By MOFA's	48	29,957	472	29,485	6,768	15,903	1,333	3,086	1,148	1,601	4,319	4,216	828	1,071	2,393	2,523
Located in:																
Canada	49	7,087	(0)	(0)	6,654	38	1	(0)	(0)	(0)	2	(0)	(0)	2	(0)	(0)
Europe	50	18,073	299	17,774	(0)	14,733	1,183	2,849	1,043	1,457	4,396	3,825	248	69	830	(0)
France	51	947	(0)	(0)	0	903	801	(0)	(0)	(0)	39	(*)	4	(0)	(0)	37
Germany	52	2,173	(0)	(0)	(0)	2,130	(0)	1,930	(0)	25	31	(0)	2	(0)	2	(0)
Italy	53	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	1	2	(0)	0	(0)	(*)	(0)
Netherlands	54	1,829	(0)	(0)	(0)	1,759	109	(0)	(0)	984	103	215	(0)	2	(0)	(0)
United Kingdom	55	4,924	(0)	(0)	(0)	4,615	64	184	54	49	3,861	403	37	5	(0)	190
Other Europe	56	(0)	(0)	7,269	(0)	(0)	184	(0)	(0)	(0)	3,043	(0)	(0)	58	(0)	(0)
Japan	57	263	10	253	2	(0)	2	(*)	1	(*)	2	(0)	222	3	(0)	10
Australia, New Zealand, and South Africa	58	1,096	(0)	(0)	0	(0)	0	(0)	(*)	0	1	(0)	88	994	1	11
Latin America	59	2,809	13	2,796	(*)	(0)	(0)	(0)	90	(0)	(0)	(0)	(0)	0	1,540	(0)
Other developing areas	60	629	(0)	(0)	(0)	86	(0)	(0)	(0)	(0)	(0)	(0)	(0)	3	3	483
Other, total	61	285,589	248,677	36,912	10,775	13,325	1,671	5,326	1,033	644	3,237	3,414	1,516	1,352	3,107	6,836
By U.S. parents	62	250,310	247,876	24,433	294	575	(0)	84	106	37	79	(0)	447	36	288	793
By MOFA's	63	35,279	801	34,478	10,480	12,750	(0)	3,242	925	607	3,157	(0)	1,069	1,316	2,819	6,043
Located in:																
Canada	64	11,462	420	11,043	10,393	211	27	66	(0)	(0)	70	19	(0)	12	(0)	(0)
Europe	65	15,845	75	15,770	(0)	12,227	(0)	3,085	881	590	3,059	(0)	(0)	36	332	(0)
France	66	1,620	(0)	(0)	1	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(*)	(0)	(0)
Germany	67	3,651	(0)	(0)	(0)	3,462	(0)	2,949	(0)	59	17	(0)	(0)	(0)	12	(0)
Italy	68	(0)	(0)	(0)	1	(0)	(0)	(0)	(0)	1	(0)	(0)	(0)	(0)	15	(0)
Netherlands	69	681	(0)	(0)	(0)	574	13	(0)	(0)	470	(0)	(0)	(0)	11	(0)	(0)
United Kingdom	70	3,560	(0)	(0)	(0)	3,033	(0)	5	(0)	6	2,862	(0)	(0)	9	(0)	(0)
Other Europe	71	(0)	(0)	3,421	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Japan	72	338	1	336	3	(

Table 9B.--Sales to Unaffiliated Customers as a Percentage of Total Sales by U.S. Parents of MOFA's and by Their MOFA's, 1977, Selected Industry of U.S. Parent and Area of Origin by Area of Destination

(Millions of dollars)

Line	Area of destination															
	All areas	United States	Foreign countries													
			Total		Europe					Japan	Australia, New Zealand, and South Africa	Latin America	Other developing areas			
			(3)	(4)	Total	France	Germany	Italy	Netherlands					United Kingdom	Other Europe	
(1)	(2)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)				
All industries:																
Total	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
By U.S. parents	2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
By MOFA's	3	66.9	10.1	79.7	94.2	78.4	80.6	84.2	76.3	72.9	78.0	74.7	89.4	89.5	87.7	53.5
Located in:																
Canada	4	82.5	24.5	94.7	95.8	67.6	85.2	92.1	70.6	84.1	68.6	46.8	(D)	(D)	65.6	89.0
Europe	5	77.3	24.2	79.2	53.8	80.1	81.3	84.5	78.2	74.9	81.1	76.2	(D)	(D)	67.0	75.4
France	6	78.4	13.6	79.2	7.4	79.5	92.4	21.4	24.7	22.7	16.4	38.4	14.6	38.0	75.2	85.9
Germany	7	79.9	6.8	81.7	12.8	82.2	26.8	95.7	28.7	31.2	11.3	38.4	47.1	24.4	55.7	87.4
Italy	8	88.9	11.2	90.8	51.3	91.7	35.7	38.5	97.9	37.8	39.8	50.8	57.7	45.6	43.9	78.2
Netherlands	9	65.7	2.2	69.1	71.7	72.8	43.4	67.8	56.1	95.0	40.3	51.1	63.8	53.6	51.1	60.1
United Kingdom	10	74.8	28.3	76.9	66.4	79.0	32.4	32.7	14.0	38.7	89.1	47.9	61.7	26.6	55.4	64.5
Other Europe	11	78.1	46.3	79.4	67.9	78.3	48.8	44.2	56.0	60.3	39.8	88.4	(D)	(D)	(D)	(D)
Japan	12	90.5	5.4	93.0	13.3	23.1	26.1	(D)	37.6	6.9	(D)	36.9	96.3	11.9	19.5	28.8
Australia, New Zealand, and South Africa	13	92.6	30.0	94.0	59.8	83.0	93.5	(D)	99.3	90.4	(D)	88.1	87.5	94.9	85.5	81.7
Latin America	14	72.6	15.9	86.0	17.3	61.9	87.6	76.2	43.0	53.5	51.4	66.4	82.5	35.9	91.3	49.4
Other developing areas	15	23.5	3.4	45.6	13.2	27.9	38.8	49.8	39.1	32.2	9.8	36.0	(D)	(D)	40.1	47.2
Nonpetroleum:																
Total	16	93.9	98.3	81.4	79.1	77.9	76.5	80.7	78.6	74.9	81.1	74.7	89.9	85.6	87.4	89.3
By U.S. parents	17	97.5	100.0	67.0	30.1	65.6	(D)	61.2	72.4	73.6	52.0	(D)	91.2	60.4	75.5	92.0
By MOFA's	18	80.9	20.6	85.7	95.0	80.1	(D)	83.1	79.6	75.4	84.6	(D)	88.8	90.6	91.9	87.0
Located in:																
Canada	19	81.1	(D)	(D)	95.9	65.6	85.2	91.7	70.5	(D)	68.6	43.7	(D)	50.8	65.5	88.1
Europe	20	79.0	16.2	80.5	(D)	80.7	78.9	83.4	(D)	76.2	85.2	(D)	62.2	39.9	68.5	(D)
France	21	75.9	9.6	76.9	7.4	77.0	92.6	21.7	(D)	24.1	(D)	40.4	(D)	38.4	75.2	87.4
Germany	22	76.9	(D)	(D)	12.8	79.3	26.1	97.1	27.9	30.7	(D)	(D)	(D)	(D)	55.6	87.6
Italy	23	87.7	8.8	88.9	(D)	(D)	34.6	38.1	97.7	(D)	(D)	(D)	(D)	42.4	42.5	78.4
Netherlands	24	72.3	7.1	74.0	72.3	74.3	48.7	56.7	95.3	42.5	57.0	64.4	52.8	54.1	83.8	85.8
United Kingdom	25	82.3	(D)	(D)	(D)	85.2	31.9	35.4	36.1	(D)	94.3	(D)	49.3	(D)	90.7	90.7
Other Europe	26	79.3	32.0	80.6	(D)	(D)	48.1	43.5	56.8	(D)	(D)	(D)	88.0	65.5	76.7	94.3
Japan	27	81.8	(D)	(D)	13.3	23.1	26.1	(D)	37.6	7.3	(D)	36.9	94.0	12.4	19.5	(D)
Australia, New Zealand, and South Africa	28	94.5	(D)	(D)	44.7	82.5	93.5	(D)	99.2	90.3	56.5	87.4	94.9	97.3	86.4	81.4
Latin America	29	87.3	16.9	92.3	(D)	67.1	88.8	76.9	81.7	50.1	75.0	59.2	(D)	40.8	95.5	(D)
Other developing areas	30	71.2	(D)	(D)	48.1	54.7	69.6	57.7	(D)	(D)	(D)	74.6	61.9	6.9	85.8	85.8
Manufacturing total	31	91.7	97.5	78.1	73.6	74.7	74.3	77.7	76.2	68.8	78.3	70.5	86.3	83.9	86.7	87.2
By U.S. parents	32	96.3	100.0	60.2	28.5	56.7	55.8	54.1	65.6	57.8	49.5	59.9	82.4	60.0	70.1	91.0
By MOFA's	33	78.0	17.3	83.6	94.6	77.5	76.6	80.4	77.5	71.4	82.0	73.0	88.5	89.3	92.1	83.0
Located in:																
Canada	34	76.4	21.5	94.5	95.7	80.9	85.3	90.2	82.5	79.7	80.3	73.3	83.9	48.0	59.0	83.9
Europe	35	75.8	8.2	77.4	36.7	77.8	76.7	77.4	72.2	82.4	73.1	37.9	35.0	56.6	88.2	88.2
France	36	74.9	9.2	75.9	5.9	76.1	91.7	19.5	28.8	24.8	16.2	38.8	20.1	35.0	74.8	86.2
Germany	37	73.4	4.4	75.5	7.8	76.1	20.1	96.7	21.8	25.2	8.6	32.9	41.9	21.3	52.7	84.3
Italy	38	86.9	6.8	88.4	32.1	88.8	32.8	35.7	97.4	33.8	39.1	53.5	56.8	42.9	28.3	90.0
Netherlands	39	67.0	3.9	68.1	43.5	68.4	32.0	36.4	51.7	94.7	28.0	50.2	37.8	47.0	34.3	81.2
United Kingdom	40	79.2	11.4	80.8	58.0	82.3	23.8	45.0	25.9	32.1	93.7	45.9	27.2	26.6	54.1	88.9
Other Europe	41	75.1	10.7	76.5	28.8	76.0	43.8	34.6	45.4	57.3	26.9	90.3	57.9	58.9	66.0	98.2
Japan	42	83.8	4.5	87.0	2.8	19.9	15.4	2.8	27.9	5.3	2.5	35.7	94.2	6.7	12.8	27.3
Australia, New Zealand, and South Africa	43	94.2	27.1	96.4	24.5	85.5	(D)	(D)	99.5	95.7	60.5	88.3	99.6	97.0	95.5	81.0
Latin America	44	88.3	15.3	93.1	36.0	59.5	74.3	63.5	79.7	37.6	70.9	56.5	58.4	37.9	95.7	62.3
Other developing areas	45	59.6	4.3	74.2	14.2	40.1	(D)	(D)	34.5	54.5	26.4	34.8	65.2	20.2	3.9	80.8
Trade total	46	97.4	99.3	91.7	95.8	88.5	87.1	91.7	85.9	87.1	89.2	87.9	97.4	96.3	91.7	95.2
By U.S. parents	47	99.1	100.0	91.5	59.2	86.0	61.1	84.0	81.0	87.1	65.0	93.6	99.2	76.1	94.6	98.2
By MOFA's	48	89.3	32.1	91.9	97.9	89.6	93.7	94.0	88.3	87.0	92.2	84.2	90.7	98.3	90.2	91.4
Located in:																
Canada	49	92.5	(D)	(D)	98.4	10.7	22.6	(D)	55.6	97.9	(D)	4.1	99.6	99.7	(D)	93.3
Europe	50	91.3	48.2	92.7	92.2	93.0	93.3	94.6	88.1	89.1	94.3	93.2	91.8	(D)	79.1	(D)
France	51	(D)	0	(D)	0	67.2	99.8	(D)	6.8	19.8	(D)	(D)	(D)	100.0	55.3	(D)
Germany	52	94.8	(D)	(D)	95.9	(D)	99.8	99.6	97.8	59.9	85.8	100.0	100.0	0	100.0	100.0
Italy	53	96.1	0	96.1	14.3	96.2	(D)	(D)	98.7	(D)	87.6	(D)	---	(D)	(D)	94.7
Netherlands	54	93.3	19.9	94.0	99.9	93.8	99.6	85.6	(D)	97.4	83.5	(D)	100.0	97.1	100.0	99.0
United Kingdom	55	93.0	6.1	95.7	95.9	95.8	87.1	(D)	90.0	96.6	94.2	99.8	64.9	99.9	93.2	93.2
Other Europe	56	(D)	(D)	93.5	97.5	94.4	80.0	(D)	(D)	(D)	(D)	(D)	(D)	(D)	78.2	99.5
Japan	57	53.4	(D)	(D)	(D)	42.9	(D)	(D)	(D)	(D)	37.4	(D)	93.1	44.2	100.0	(D)
Australia, New Zealand, and South Africa	58	92.6	0	(D)	0	5.7	0	.2	(D)	0	(D)	.4	66.7	99.1	21.6	(D)
Latin America	59	82.2	6.3	87.1	(D)	(D)	98.8	(D)	96.6	(D)	92.0	(D)	97.5	0	97.8	(D)
Other developing areas	60	63.6	13.5	75.6	40.6	(D)	100.0	44.8	100.0	97.5	64.7	75.4	99.4	(D)	(D)	(D)
Other total	61	98.5	99.7	71.5	93.9	89.6	90.8	92.2	89.1	86.4	91.6	85.6	91.3	94.2	90.1	91.7
By U.S. parents	62	99.7	100.0	79.3	70.3	71.0	(D)	54.1	91.9	84.7	56.2	(D)	99.2	52.1	78.4	83.4
By MOFA's	63	90.8	50.8	92.5	94.8	90.6	(D)	93.9	88.8	86.6	93.0	(D)	88.4	96.4	91.5	92.9
Located in:																
Canada	64	93.5	67.9	94.8	94.9	89.0	91.7	(D)	48.0	93.1	(D)	(D)	98.9	86.0	(D)	93.5
Europe	65	89.5	24.7	90.8	81.1	91.1	92.0	95.0	(D)	86.4	93.6	(D)	98.6	(D)	84.2	90.8
France	66	(D)	14.8	94.3	(D)	94.2	96.7	(D)	69.6	61.6	69.5	85.0	80.0	30.1	90.1	98.0
Germany	67	92.7	61.1	93.1	(D)	92.9	(D)	98.5	57.5	85.7	(D)	71.1	(D)	74.9	94.6	98.8
Italy	68	88.4	48.6	88.6	(D)	96.0	(D)	99.5	(D)	92.4	(D)	66.0	(D)	(D)	94.1	97.1
Netherlands	69	79.3	9.5	91.6	100.0	93.1	66.5	74.0	(D)	96.3	57.4	97.7	99.9	100.0	54.6	92.9
United Kingdom	70	92.9	55.5	93.2	35.5	92.8	61.4	(D)	74.7	(D)	95.4	82.6	98.7	(D)	92.0	97.6
Other Europe	71	(D)	(D)	85.2	6.8	84.3	43.9	(D)	44.2	(D)	(D)	87.8	99.7	42.2	87.0	94.0
Japan	72	92.0	(D)	(D)	(D)	42.5	---	100.0								

Although comparison of data on the two bases is not available for parents, it is for MOFA's (table 10). The MOFA data show that, for manufacturing and trade, percent differences between the two bases were small, but for petroleum and "other", they were quite large; whether or not a similar relationship holds for parent data is not known.

Consolidation rules applied in the benchmark survey

The benchmark survey defined a U.S. parent as a fully consolidated U.S. domestic business enterprise. If incorporated, it consisted of (1) the U.S. parent corporation not owned more than 50 percent by another U.S. corporation, and (2) in each ownership chain under that parent corporation, any U.S. corporation more than 50 percent owned by the U.S. corporation above it in the ownership chain. All other U.S. corporations and all foreign business enterprises were excluded from the consolidation.

In the reported sales of the consolidated U.S. parent, sales among the U.S. business enterprises included in the consolidation were eliminated, so that a parent's sales to U.S. persons consisted of its sales to U.S. business enterprises in which it had a minority ownership interest, plus its sales to U.S. persons in which it had no ownership interest. Both types of sales were considered sales to unaffiliated U.S. customers. Sales by a U.S. parent to foreigners consisted of its sales to foreign affiliates and to all other foreigners.

Each foreign affiliate had to be reported on an unconsolidated basis, unless the recordkeeping system of the affiliate made this extremely difficult. In that case, foreign business enterprises could be reported on a consolidated basis if they were in the same country and industry, or were integral parts of the same business enterprise.

Relationship of sales data in this article to BEA's earlier published MNC sales data

A previous article, "Worldwide Sales by U.S. Multinational Companies," published in the January 1973 Survey, presented sales for MOFA's and their parents for a sample of 298 U.S. MNC's; those data are not comparable with the data in the current article, which cover the direct investment universe.

Also, an annual time series of universe estimates of sales by MOFA's covering years prior to 1977 was published in various past issues of the Survey. The universe estimates, obtained by expanding annual sample data to universe levels based on data from prior benchmark surveys, may not be fully comparable with data in the current article for 1977 because of the improved methodology applied in the 1977 benchmark (see the Methodology to U.S. Direct Investment Abroad, 1977, cited in the Introduction to this

Table 10.--Comparison of Export Shipments With Sales to the United States by MOFA's, 1977, by Industry of U.S. Parent

(Millions of dollars or percent)

Line	Total	Petro- leum	Manufac- turing	Trade	Other
1 Sales to United States by MOFA's -----	93,573	70,848	19,680	1,470	1,575
2 Export shipments to United States by MOFA's -----	38,000	16,552	18,816	1,493	1,138
3 Difference: sales less export shipments -----	55,573	54,296	864	-23	436
4 Percent difference (line 3 ÷ line 1) ---	59.4	76.6	4.4	-1.6	27.7

MOFA Majority-owned foreign affiliate.

NOTE.--In this table, data are only for nonbank affiliates of nonbank parents. MOFA's are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million in 1977.

collection of articles), and because some of the changes in the benchmark survey sales universe were not reflected in the annual sample for years prior to 1977.

Affiliates' sales by industry of affiliate and by industry of U.S. parent

In this article, each MNC was assigned the industry code of the U.S. parent, that is, the code of the industry in which the parent's sales were largest. In effect, this meant that sales by the affiliates were also classified by industry of the parent.

Table 11 compares the distribution of sales by affiliates (including minority owned) by industry of parent (lines) with that by industry of affiliate (columns). The intersection of a line and a column for the same industry gives sales by affiliates that were in the same industry as their parents. In general, most sales were by affiliates that were in the same industry as their parents. For example, in petroleum, sales by all affiliates of petroleum parents were \$253 billion (line 3, column 1); of this total, \$232 billion were supplied by petroleum affiliates of petroleum parents (line 3, column 3). Only \$20 billion were supplied by affiliates that were not themselves classified in petroleum.

A comparison of the distribution of sales by industry of seller with that by type of product or service rendered is not given. The two distributions would differ because parents and affiliates often are diversified and have product or service lines outside their own major industries of classification.

Table 11.--Sales by Foreign Affiliates, 1977, Industry of Parent by Industry of Affiliate

(Millions of dollars)

Line	Industry of parent	Industry of affiliate													
		Manufacturing										Finance (except banking), insurance, and real estate			
		Total	Mining	Petroleum	Total	Food and kindred products	Chemicals and allied products	Primary and fabricated metals	Machinery, except electrical	Electric and electronic equipment	Transportation equipment	Other	Trade	Other	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)		
1	All industries -----	647,969	9,611	237,346	246,325	25,604	43,326	20,035	33,046	22,326	57,788	44,200	102,997	14,746	36,945
2	Mining -----	1,880	1,634	71	20	0	0	(D)	2	0	0	(D)	25	(D)	(D)
3	Petroleum -----	252,878	(D)	231,573	6,876	(D)	5,956	335	150	(D)	(D)	(D)	2,605	1,070	(D)
4	Manufacturing -----	297,697	5,945	2,269	222,426	22,520	36,777	17,798	32,099	15,012	56,372	41,847	57,864	2,558	6,635
5	Food and kindred products -----	27,340	0	(D)	22,503	20,735	870	53	69	(D)	(D)	586	3,574	116	(D)
6	Chemicals and allied products -----	49,347	327	906	39,347	1,448	32,680	1,145	290	(D)	(D)	2,265	8,176	237	354
7	Primary and fabricated metals -----	25,076	4,228	447	16,601	(D)	584	13,609	661	548	383	(D)	2,516	163	1,120
8	Machinery, except electrical -----	46,228	(D)	221	29,765	0	265	1,250	24,498	1,354	(D)	(D)	14,636	119	(D)
9	Electric and electronic equipment -----	24,472	(D)	(D)	13,043	0	(D)	305	764	10,554	225	(D)	9,281	108	1,080
10	Transportation equipment -----	75,035	(D)	268	61,908	(D)	(D)	635	4,251	761	54,681	617	10,616	1,487	(D)
11	Other -----	50,198	89	290	39,259	299	1,232	802	1,566	159	328	34,874	9,065	329	1,166
12	Trade -----	45,044	(D)	153	4,074	2,151	378	547	160	144	93	601	39,293	625	(D)
13	Finance (except banking), insurance, and real estate -----	25,054	1,142	106	9,620	835	(D)	(D)	484	5,214	(D)	815	2,234	9,939	2,014
14	Other -----	25,416	(D)	3,175	3,310	(D)	(D)	326	151	(D)	241	554	978	(D)	17,388

D Suppressed to avoid disclosure of data of individual companies.

NOTE.--Data cover nonbank minority- and majority-owned foreign affiliates and reconcile to affiliate sales data given in table 1.

Technology-Related Activities of U.S. Multinational Companies

This article presents and analyzes two types of data on technology-related activities of U.S. multinational companies (MNC's) from the 1977 benchmark survey: (1) data on research and development (R&D), specifically R&D expenditures and R&D scientists and engineers, and (2) data on royalties and license fees.

The first part of this article discusses R&D, including the industry distribution of U.S. parents' R&D, U.S. parents' R&D compared with the R&D of all U.S. businesses, the country and industry distribution of foreign affiliates' R&D, and the intensity of, and growth from 1966 to 1977 in, R&D expenditures by U.S. parents and their foreign affiliates. The second part will examine royalty and license fee transactions between U.S. parents and their foreign affiliates, between U.S. parents and other foreigners, and between foreign affiliates and other U.S. and foreign persons.

The article will cover only nonbank MNC's. Also, the data for affiliates will cover only majority-owned foreign affiliates (MOFA's), and those for parents will cover only the parents of MOFA's.^{1/} The coverage lost due to these data limitations is small. Bank parents and affiliates usually do not have significant technology-related activities, and MOFA's and their parents accounted for most of the technology-related activities of all nonbank MNC's. For example, MOFA's accounted for nine-tenths of the royalties and license fees of all nonbank affiliates of nonbank U.S. parents, and nonbank U.S. parents of nonbank MOFA's accounted for 98 percent of the R&D expenditures and 97 percent of the R&D scientists and engineers of all nonbank U.S. parents of nonbank affiliates.

Highlights

- o Worldwide, U.S. MNC's spent \$20.7 billion for R&D and employed 470,000 R&D scientists and engineers.
- o U.S. parents spent \$18.6 billion, or nine-tenths of the MNC total. Most of the spending was in manufacturing, particularly in transportation equipment, nonelectrical machinery, and chemicals. Compared with the R&D performed by all U.S. businesses, U.S. parents accounted for a dominant share of the total.

1. MOFA's are defined as affiliates that were owned more than 50 percent by all U.S. parents combined and that had assets, sales, or net income over \$3 million.

NOTE.--Richard Mauery did the computer programming for the tables in this article.

- o R&D expenditures by MOFA's were \$2.1 billion, or one-tenth of the MNC total. MOFA's in developed countries accounted for 93 percent and those in developing countries for about 7 percent. By industry of affiliate, most MOFA spending was in manufacturing.
- o In all industries combined, the R&D intensity ratio for U.S. parents was 14, i.e., parents spent \$14 on R&D per each \$1,000 of sales. The R&D intensity ratio for MOFA's was 4--considerably below that for their U.S. parents. The lower ratio for MOFA's probably reflected the centralization of R&D activities in U.S. parents and the dependence of MOFA's on their parents for technology.
- o From 1966 to 1977, R&D expenditures by MNC's grew at an average annual compound rate of 7.9 percent. The growth rate for MOFA's--12.3 percent--was higher than that for U.S. parents--7.5 percent.
- o Net receipts of royalties and license fees of U.S. parents from all foreign persons were \$2.8 billion. Of the total, more than two-thirds were from MOFA's. MOFA's had net payments of royalties and license fees of \$2.0 billion. Transactions with U.S. persons, particularly parents, more than accounted for the total.

R&D Activities of U.S. MNC's

R&D consists of basic research for the advancement of scientific knowledge, applied research for the discovery of know-how that may have commercial application, and development of methods for translating the findings of basic and applied research into products or processes. R&D expenditures include all costs incurred by a company in conducting R&D for its own account, plus the cost of R&D conducted by others on behalf of the company, less the cost of R&D conducted for others by the company. R&D scientists and engineers are employees who have a college-level knowledge of science, engineering, or mathematics and who spend a majority of their working hours engaged in R&D work. Employment is defined as the average number of full-time and part-time employees on the payroll during the year.

In 1977, R&D expenditures by U.S. MNC's worldwide were \$20.7 billion, about 1 percent of total MNC sales (table 1). U.S. parents accounted for 90 percent, and their MOFA's for 10 percent, of the expenditures. By industry of U.S. parent, about nine-tenths of the spending was in manufacturing, and the remainder largely in petroleum, "other industries," and finance (except banking), insurance, and real estate. ^{2/} In trade and mining, expenditures were negligible. Within

2. MNC data are classified by industry of U.S. parent, because an MNC-wide industry code was not obtained in the benchmark survey. However, in most cases, the U.S. parent's industry was probably also the MNC-wide industry, because U.S. parents normally accounted for a large share of total MNC operations, and a majority of MOFA's were classified in the same industries as their parents.

Table 1.--Selected Data on R&D Activities of U.S. MNC's, U.S. Parents,
and MOFA's, 1977, by Industry of U.S. Parent

	R&D expenditures			R&D scientists and engineers			MOFA's as a percent of MNC's	
	(Millions of dollars)			(Number of employees)			R&D expenditures	R&D scientists and engineers
	MNC's	U.S. parents	MOFA's	MNC's	U.S. parents	MOFA's		
All industries.....	20,670	18,595	2,075	469,707	406,662	63,045	10	13
Mining.....	23	18	5	(D)	(D)	104	22	15
Petroleum.....	1,092	964	128	23,884	21,083	2,801	12	12
^D Manufacturing.....	18,296	16,731	1,565	381,737	331,929	49,808	9	13
Food and kindred products.....	447	384	63	11,401	8,682	2,719	14	24
Chemicals and allied products.....	3,240	2,861	379	66,043	55,213	10,830	12	16
Primary and fabricated metals.....	751	719	32	14,501	13,443	1,058	4	7
Machinery, except electrical.....	3,539	3,350	189	73,672	63,199	10,473	5	14
Electric and electronic equipment.....	2,275	2,198	77	50,235	46,251	3,984	3	8
Transportation equipment.....	5,580	5,018	562	110,521	97,809	12,712	10	12
Other manufacturing.....	2,462	2,200	262	55,364	47,332	8,032	11	15
Trade.....	137	128	9	2,810	2,349	461	7	16
Finance (except banking), insurance, and real estate.....	(D)	162	(D)	(D)	5,639	(D)	60	59
Other industries.....	(D)	592	(D)	(D)	(D)	(D)	18	4

R&D Research and development.

MNC Multinational company.

MOFA Majority-owned foreign affiliate.

D Suppressed to avoid disclosure of data of individual companies.

manufacturing, expenditures were high in transportation equipment, both electrical and nonelectrical machinery, chemicals, and "other manufacturing," and low in metals and in food.

R&D scientists and engineers employed by U.S. MNC's worldwide totaled 470,000, less than 2 percent of total MNC employment. The distribution of R&D scientists and engineers between U.S. parents and MOFA's and among industries was similar to that of R&D expenditures. Thus, although both R&D expenditures and employment are shown in table 1 and subsequent tables, discussion will focus mainly on expenditures to avoid repetition.

R&D of U.S. parents, by industry

R&D expenditures by U.S. parents totaled \$18.6 billion. As with MNC's worldwide, 90 percent of the spending by U.S. parents was in manufacturing. About 5 percent was in petroleum, 3 percent in "other industries," and less than 1 percent each in finance (except banking), insurance, and real estate and in trade. In mining, spending was insignificant.

Within manufacturing, three industries--transportation equipment, nonelectrical machinery, and chemicals--accounted for more than two-thirds of the total, and five industries--the above three, plus electrical machinery and "other manufacturing"--accounted for more than nine-tenths. Food and metals accounted for only about 2 and 4 percent, respectively.

Spending in transportation equipment was \$5.0 billion, or 30 percent, of the manufacturing total. About two-thirds was by U.S. parents manufacturing automotive products and most of the remainder was in aerospace. The spending in the automotive industry was probably mainly for body design and for development of fuel-efficient engines, pollution abatement equipment, and vehicle safety devices. It was partly in response to the shift in consumers' preferences toward smaller cars in the wake of soaring petroleum prices.

Spending in nonelectrical machinery was \$3.4 billion. Nearly two-thirds was by U.S. parents manufacturing office and computing equipment. The high spending reflected the rapid technological progress in this industry and strong competition that U.S. parents faced both in the United States and abroad.

In chemicals, \$2.9 billion was spent on R&D. The spending was concentrated in industrial chemicals--especially in the fast-growing petrochemical and plastic products industries--and in drugs--probably largely for development of new products.

In electrical machinery and in "other manufacturing," \$2.2 billion was spent. More than four-fifths of the spending in electrical machinery was accounted for by U.S. parents manufacturing radio, television, and communication equipment; in electronic components and

accessories, spending was relatively small. Nearly one-half of the spending in "other manufacturing" was accounted for by U.S. parents manufacturing instruments and related products, particularly photographic equipment and scientific instruments; spending was also sizable in paper and in rubber products.

R&D of U.S. parents and all U.S. businesses compared

Table 2 shows R&D expenditures and the number of R&D scientists and engineers employed by all U.S. businesses and by U.S. parents. The data for all U.S. businesses are from the National Science Foundation (NSF).^{3/} They differ significantly from the BEA data for U.S. parents in definition, industry coverage, and survey methodology. (See the technical notes for a discussion of these differences.) Consequently, the U.S. parent data exceeded the all-U.S. business data in several industries for R&D expenditures, and in total and most industries for the number of R&D scientists and engineers employed. However, these differences do not negate the primary conclusion of a comparison of the two data sets--i.e., that U.S. parent companies accounted for the bulk of both the R&D expenditures and R&D scientists and engineers employed by all U.S. companies.

U.S. parents accounted for 96 percent of the \$19.4 billion of R&D expenditures by all U.S. businesses. Within manufacturing, parents' shares were particularly large in transportation equipment, nonelectrical machinery, and chemicals. In no industry within manufacturing was the parents' share below 90 percent.

The data on R&D expenditures for all U.S. businesses and for U.S. parents discussed thus far cover only those expenditures that were company-funded. In addition to company-funded R&D expenditures, BEA's benchmark survey also collected data on federally funded R&D expenditures by U.S. parents. Such data are compared with NSF data for all U.S. businesses in table 3. Federally funded R&D expenditures by all U.S. companies were \$10.5 billion in 1977; U.S. parents accounted for three-fourths--\$7.9 billion--of the total. Parent shares varied among industries. They were relatively high in primary and fabricated metals and in nonelectrical machinery, and low in chemicals and in transportation equipment.

It is not surprising that U.S. parent companies dominated R&D activity in the United States. U.S. parents are among the largest and most technologically advanced companies in the United States. Exploitation of technological advantages has enabled them to expand their markets, often by investing abroad. Also, because of their size, U.S. parents, to a greater extent than other U.S. firms, can derive the benefits of economies of scale in their R&D activities.

3. See footnote to table 2 for data sources.

Table 2.--R&D Expenditures and R&D Scientists and Engineers of All U.S. Businesses and U.S. Parents, 1977, by Industry

	R&D expenditures 1/ (Millions of dollars)		R&D scientists and engineers (Thousands of employees)	
	All U.S. businesses	U.S. parents	All U.S. businesses	U.S. parents
	All industries.....	19,407	18,595	393
Manufacturing.....	18,059	<u>2/</u> 17,100	369	<u>2/</u> 371
Chemicals and allied products.....	2,956	2,861	47	55
Primary and fabricated metals.....	856	719	15	13
Machinery, except electrical.....	3,391	3,350	57	63
Electric and electronic equipment.....	3,238	<u>2/</u> 2,567	85	<u>2/</u> 86
Transportation equipment.....	4,520	5,018	108	98
Other manufacturing.....	3,098	2,584	56	56
Nonmanufacturing	1,348	1,495	25	36
Petroleum extracting and refining.....	842	964	10	21
Other <u>3/</u>	506	531	15	15

R&D Research and development.

1. The definition of R&D expenditures by all U.S. businesses differs from that by U.S. parents. See the technical notes for discussion.
2. These numbers differ from those in other tables due to the reclassification by industry of two U.S. parents in order to improve comparability of BEA and NSF data.
3. Data for both all-U.S. businesses and U.S. parents include mining; trade (including petroleum wholesale trade, retail trade, etc.); finance, insurance, and real estate; and "all other industries." Within finance, banking is included in the data for all U.S. businesses, but excluded from those for U.S. parents; within "other industries," the data for all U.S. businesses exclude, but those for U.S. parents include, "agricultural production," and "motion pictures."

Source: Data on R&D expenditures for all U.S. businesses were obtained from National Science Foundation, *Research and Development in Industry, 1978: Detailed Statistical Tables (NSF 80-307)*, p. 14, except that data for "transportation equipment" were from the 1977 issue of the same publication (NSF 79-313), p. 12, because data for this industry were incomplete in the 1978 issue.

Table 3.--Federally Funded R&D Expenditures by All U.S. Businesses and U.S. Parents, 1977, by Industry

(Millions of dollars)

	All U.S. businesses	U.S. parents
All industries.....	10,521	7,938
Manufacturing.....	10,030	<u>1/</u> 7,501
Chemicals and allied products.....	300	66
Primary and fabricated metals.....	70	163
Machinery, except electrical.....	576	1,083
Electrical and electronic equipment...	2,699	<u>1/</u> 1,302
Transportation equipment.....	5,977	4,679
Other manufacturing.....	408	208
Nonmanufacturing.....	491	437
Petroleum extracting and refining.....	76	53
Other.....	415	384

R&D Research and development.

1. These numbers differ from those published in U.S. Direct Investment Abroad, 1977 due to the reclassification by industry of two U.S. parents in order to improve comparability of BEA and NSF data.

Source: Same as in table 2, except that data are from p. 17, instead of p. 14.

R&D of MOFA's, by industry and area

Worldwide, MOFA's spent \$2.1 billion on R&D and employed 63,000 R&D scientists and engineers. In table 1, these R&D data are disaggregated by industry of U.S. parent. In tables 4 and 5, they are disaggregated by each MOFA's own industry. By industry of U.S. parent, 75 percent of MOFA spending was in manufacturing, 12 percent in finance (except banking), insurance, and real estate, 6 percent each in petroleum and "other industries," and less than 1 percent each in trade and mining. By industry of affiliate, 86 percent of the spending was in manufacturing, 5 percent in petroleum, 4 percent each in trade and "other industries," and less than 1 percent each in mining and in finance (except banking), insurance, and real estate.

The distributions of MOFA spending on the two bases differ significantly. Spending by trade MOFA's was ten times as large as that by MOFA's of trade parents. Nearly all of the difference was accounted for by trade MOFA's of manufacturing parents, which served as distributors of goods produced by their parents and other foreign affiliates of their parents. Spending by mining MOFA's was three times as large as that of MOFA's of mining parents, because a large share of U.S. direct investment in mining was by parents not classified in that industry. Spending by manufacturing MOFA's was slightly larger than that by MOFA's of manufacturing parents. Manufacturing MOFA's of parents in finance (except banking), insurance, and real estate accounted for most of the difference.

In contrast, spending by petroleum MOFA's was smaller than that by MOFA's of petroleum parents, mainly because petroleum parents had a number of MOFA's in chemicals with large expenditures. Also, spending by MOFA's in finance (except banking), insurance, and real estate was much smaller than spending by MOFA's whose parents were classified in this industry; as noted above, parents in this industry had several manufacturing MOFA's with sizable expenditures. 4/

By area, 92 percent of R&D expenditures by MOFA's were in developed countries and about 7 percent were in developing countries. The small share in the latter may have partly reflected the limited technical absorptive capacity of these countries, due to the generally low levels of education among the population, low rates of capital formation, and the limited size of these countries' markets.

Within developed countries, R&D expenditures were highly concentrated. Expenditures by MOFA's in 4 countries--Germany, the United Kingdom, France, and Canada--accounted for almost three-fourths of the total, and that in 10 countries--the above 4, plus Australia, Belgium, Italy, the Netherlands, Switzerland, and Japan--accounted for nearly all--94 percent. Within developing countries, expenditures were also concentrated in a few areas, primarily Brazil, Mexico, and "other Asia and Pacific."

4. One such parent was a large conglomerate that was classified in insurance but engaged in a wide range of other activities, both in the United States and abroad, including telecommunications, engineering services, and consumer products.

Table 4.--R&D Expenditures of MOFA's, 1977, Country by Industry of Affiliate
(Millions of dollars)

	All industries	Mining	Petroleum	Manufacturing								Trade	Finance (except banking), insurance and real estate	Other industries
				Total	Food and kindred products	Chemicals and allied products	Primary and fabricated metals	Machinery, except electrical	Electric and electronic equipment	Transportation equipment	Other manufacturing			
All countries.....	2,075	16	109	1,785	66	346	42	169	307	624	231	91	1	73
Developed countries.....	1,916	15	93	1,652	60	321	39	158	283	583	207	86	1	69
Canada.....	255	5	44	191	12	45	14	12	24	47	36	9	0	6
Europe.....	1,515	1	48	1,337	42	247	24	141	248	473	161	66	1	62
European Communities (9).....	1,395	0	44	1,253	41	233	24	127	211	(D)	(D)	40	(*)	59
Belgium.....	92	0	3	72	(*)	30	1	(D)	(D)	(*)	(D)	4	(*)	14
Denmark.....	4	0	(*)	3	1	(*)	(*)	0	1	0	1	1	0	0
France.....	291	0	(D)	258	5	43	2	24	(D)	131	(D)	12	0	(D)
Germany.....	462	0	(D)	430	13	43	11	31	86	(D)	(D)	14	0	(D)
Ireland.....	11	0	0	11	2	1	(*)	(D)	(*)	0	(D)	0	0	0
Italy.....	85	0	(D)	74	2	28	(*)	13	19	3	8	(D)	0	(D)
Luxembourg.....	3	0	0	3	0	1	0	(*)	(*)	0	2	0	0	0
Netherlands.....	55	0	1	50	5	21	2	11	4	1	6	2	0	2
United Kingdom.....	393	0	18	352	14	65	7	40	44	131	51	(D)	(*)	(D)
Other Europe.....	119	1	4	84	1	15	(*)	14	37	(D)	(D)	26	1	3
Japan.....	36	0	(*)	27	1	17	(*)	1	6	0	2	8	(*)	1
Australia, New Zealand, and South Africa.....	111	9	1	98	5	12	1	4	6	63	7	3	0	(*)
Developing countries.....	(D)	1	(D)	132	6	25	2	11	24	40	24	5	0	4
Latin America.....	111	1	4	100	5	21	2	8	4	40	19	3	0	3
South America.....	85	(*)	2	80	3	16	2	6	3	(D)	(D)	2	0	1
Argentina.....	16	0	1	13	(*)	3	0	1	1	(D)	(D)	2	0	1
Brazil.....	55	0	1	54	2	10	(*)	5	3	(D)	(D)	0	0	1
Other.....	14	(*)	(*)	14	1	2	2	0	(*)	5	3	(*)	0	0
Central America.....	23	(*)	1	20	2	5	0	2	1	(D)	(D)	(*)	0	2
Mexico.....	19	0	0	19	1	5	0	2	1	(D)	(D)	(*)	0	(*)
Other.....	4	(*)	1	1	(*)	(*)	0	0	0	0	(*)	(*)	0	1
Other Western Hemisphere.....	3	(*)	2	(*)	(*)	0	0	0	0	0	(*)	(*)	0	0
Other Africa.....	4	0	2	1	(*)	(*)	(*)	0	(*)	0	1	0	0	(*)
Middle East.....	5	0	(*)	4	0	(*)	0	3	1	0	(*)	(*)	0	(*)
Other Asia and Pacific.....	31	0	(D)	27	1	4	(*)	(*)	18	(*)	4	3	0	(*)
International.....	(D)	0	(D)	0	0	0	0	0	0	0	0	0	0	0
Addendum: OPEC.....	10	0	(*)	10	1	2	(*)	0	(*)	5	2	0	0	(*)

R&D Research and development.

MOFA Majority-owned foreign affiliate.

* Less than \$500,000 (+).

D Suppressed to avoid disclosure of data of individual companies.

Table 5.--R&D Scientists and Engineers of MOFA's, 1977, Country by Industry of Affiliate

(Number of employees)

	All industries	Mining	Petroleum	Manufacturing									Trade	Finance (except banking), insurance and real estate	Other industries
				Total	Food and kindred products	Chemicals and allied products	Primary and fabricated metals	Machinery, except electrical	Electric and electronic equipment	Transportation equipment	Other manufacturing				
All countries.....	63,045	248	2 747	55,550	2,435	10,255	1,291	10,298	10,986	11,814	8,471	2,372	69	2,059	
Developed countries.....	54,998	109	2,032	49,069	1,994	8,631	1,201	9,840	9,887	10,492	7,024	2,221	(D)	(D)	
Canada.....	5,848	66	686	4,877	369	1,107	241	724	874	727	835	115	(D)	(D)	
Europe.....	44,263	(D)	1,275	39,853	1,473	6,662	931	8,550	8,716	7,848	5,673	1,765	(D)	(D)	
European Communities (9).....	41,292	(D)	1,169	37,469	1,387	6,368	893	8,068	7,873	(D)	(D)	1,360	(D)	(D)	
Belgium.....	1,900	0	(D)	1,676	(D)	458	19	93	(D)	(D)	193	(D)	0	(D)	
Denmark.....	(D)	0	0	152	(D)	(D)	(D)	0	(D)	0	(D)	(D)	0	0	
France.....	6,336	0	(D)	5,189	115	776	85	1,389	306	1,634	884	153	0	(D)	
Germany.....	9,758	0	(D)	9,208	281	912	280	2,078	2,067	2,227	1,363	260	0	(D)	
Ireland.....	183	0	(D)	(D)	(D)	(D)	(D)	19	(D)	0	(D)	0	0	0	
Italy.....	2,567	0	(D)	2,285	37	731	23	361	505	(D)	(D)	43	0	(D)	
Luxembourg.....	(D)	0	0	(D)	0	(D)	(D)	(D)	(D)	0	(D)	0	0	0	
Netherlands.....	1,797	0	57	1,632	101	469	88	721	41	(D)	(D)	85	0	23	
United Kingdom.....	18,403	(D)	474	16,955	774	2,901	356	3,407	3,978	3,511	2,028	(D)	(D)	194	
Other Europe.....	2,971	(D)	106	2,384	86	294	38	482	843	(D)	(D)	405	(D)	72	
Japan.....	1,460	0	(D)	1,207	(D)	458	(D)	(D)	173	0	159	151	(D)	59	
Australia, New Zealand, and South Africa.....	3,427	(D)	(D)	3,132	(D)	404	(D)	(D)	124	1,917	357	190	0	(D)	
Developing countries.....	(D)	139	(D)	6,481	441	1,624	90	458	1,099	1,322	1,447	151	(D)	(D)	
Latin America.....	5,226	(D)	105	4,621	330	1,272	(D)	446	240	(D)	933	113	(D)	(D)	
South America.....	3,465	(D)	89	3,198	205	808	12	407	150	872	744	(D)	0	(D)	
Argentina.....	979	(D)	64	810	60	239	0	40	(D)	359	(D)	69	0	(D)	
Brazil.....	2,011	(D)	(D)	1,946	120	457	8	367	(D)	420	(D)	(D)	0	(D)	
Other.....	475	(D)	(D)	442	25	112	4	0	(D)	93	204	7	0	8	
Central America.....	1,627	(D)	(D)	1,390	(D)	(D)	(D)	39	90	(D)	(D)	(D)	0	195	
Mexico.....	1,331	0	(D)	1,299	106	411	75	39	(D)	(D)	156	(D)	0	(D)	
Other.....	296	(D)	(D)	91	(D)	(D)	(D)	0	(D)	0	(D)	30	0	171	
Other Western Hemisphere.....	134	(D)	(D)	33	(D)	(D)	0	0	0	0	(D)	0	(D)	(D)	
Other Africa.....	242	(D)	(D)	158	(D)	(D)	(D)	0	(D)	0	(D)	0	0	(D)	
Middle East.....	114	0	(D)	82	0	17	0	0	65	0	0	0	0	(D)	
Other Asia and Pacific.....	(D)	(D)	491	1,620	(D)	(D)	0	12	(D)	(D)	(D)	38	(D)	(D)	
International.....	(D)	0	(D)	0	0	0	0	0	0	0	0	0	0	0	
Addendum: OPEC.....	861	(D)	493	339	14	58	0	0	(D)	(D)	184	(D)	0	20	

R&D Research and development.

MOFA Majority-owned foreign affiliate.

D Suppressed to avoid disclosure of data of individual companies.

R&D intensity of U.S. parents and MOFA's

The R&D intensity of parents or MOFA's in an industry can be measured as the amount of R&D expenditures per \$1,000 of sales or the number of R&D scientists and engineers per 1,000 employees in that industry (table 6). (Unless otherwise specified, parent expenditures hereafter refer only to company-funded, not federally funded, expenditures; no affiliate expenditures were federally funded.)

In all industries combined, the intensity ratio for U.S. parents based on expenditures was 14, i.e., out of every \$1,000 of sales, U.S. parents spent \$14 on R&D. Among the six major industries, manufacturing was the most R&D intensive, with a ratio of 24. In contrast, the ratios were only about 4 or 5 in "other industries," petroleum, and mining, and about 1 in finance (except banking), insurance, and real estate and in trade.

Within manufacturing, ratios were between 30 and 44 in four industries; in two industries, they were 8 or lower and, in one, the ratio was 16. Nonelectrical machinery, with a ratio of 44, was the most R&D intensive, primarily because of the very heavy investment in R&D by U.S. parents manufacturing office and computing equipment.

In electric and electronic equipment, the ratio was 38. The ratios for U.S. parents manufacturing electronic components and radio, television, and communication equipment were especially high. In transportation equipment and chemicals, ratios were 31 and 30, respectively. The high ratio in the former was attributable mostly to U.S. parents manufacturing aerospace equipment, and, in the latter, to those manufacturing drugs. Within "other manufacturing," the ratio for U.S. parents manufacturing instruments and related products was particularly high.

MOFA's were, overall, much less R&D intensive than their U.S. parents. In all industries combined, MOFA's spent \$4 on R&D per every \$1,000 of sales. Among the six major industries, the ratio for MOFA's was relatively high in manufacturing--9. It was 3 in each of "other industries" and mining and about 1 in each of trade, petroleum, and finance (except banking), insurance, and real estate. Within manufacturing, MOFA's were relatively R&D intensive in electric and electronic equipment (17), transportation equipment (13), and chemicals (11), and less intensive in food and kindred products (3), primary and fabricated metals (4), nonelectrical machinery (6), and "other manufacturing" (7).

In all industries combined, U.S. parents employed 23 R&D scientists and engineers out of every 1,000 employees, compared with 12 for MOFA's. The industry distribution of the employment ratios was similar to that of the expenditure ratios for both parents and MOFA's, except in petroleum. In petroleum, the expenditure ratios for both parents and MOFA's were relatively low compared with their employment ratios. The expenditure ratios were lower, perhaps due to the overstatement of

Table 6.--R&D Expenditures per \$1,000 of Sales and Number of R&D Scientists and Engineers per 1,000 Employees of U.S. Parents and MOFA's, 1977, by Industry of U.S. Parent/Affiliate

	U.S. Parents						MOFA's					
	R&D expenditures	Sales	R&D expenditures per \$1,000 of sales	R&D scientists and engineers	Total employment	Number of R&D scientists and engineers per 1,000 employees	R&D expenditures	Sales	R&D expenditures per \$1,000 of sales	R&D scientists and engineers	Total employment	Number of R&D scientists and engineers per 1,000 employees
	Millions of dollars			Number of employees			Millions of dollars			Number of employees		
All industries	18,595	1,325,546	14	406,662	17,509,800	23	2,075	507,019	4	63,045	5,368,826	12
Mining	18	4,631	4	(D)	60,225	(D)	16	5,086	3	248	79,241	3
Petroleum	964	219,556	4	21,083	865,470	24	109	198,624	1	2,747	287,826	10
Manufacturing	16,731	697,804	24	331,929	11,009,671	30	1,785	194,200	9	55,550	3,773,325	15
Food and kindred products	384	78,230	5	8,682	968,273	9	66	21,756	3	2,435	377,306	7
Chemicals and allied products	2,861	94,168	30	55,213	1,181,468	47	346	32,396	11	10,255	464,437	22
Primary and fabricated metals	719	87,266	8	13,443	1,355,755	10	42	11,560	4	1,291	228,964	6
Machinery, except electrical	3,350	76,751	44	63,199	1,480,613	43	169	28,406	6	10,298	523,234	20
Electric and electronic equipment	2,198	57,227	38	46,251	1,168,578	40	307	18,655	17	10,986	628,779	18
Transportation equipment	5,018	162,414	31	97,809	2,225,839	44	624	48,686	13	11,814	740,480	16
Other manufacturing	2,200	141,747	16	47,332	2,629,145	18	231	32,741	7	8,471	810,125	11
Trade	128	157,243	1	2,349	2,173,252	1	91	77,362	1	2,372	637,515	4
Finance (except banking), insurance, and real estate	162	114,492	1	5,630	817,692	7	1	10,002	(*)	69	62,560	1
Other industries	592	131,819	5	(D)	2,583,490	(D)	73	21,745	3	2,059	528,359	4

R&D Research and development.

MOFA Majority-owned foreign affiliate.

D Suppressed to avoid disclosure of data of individual companies.

* Less than 0.5.

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petroleum sales that results from sales among members of the same MNC being counted more than once; as noted in the Lupo article, sales among members of the same MNC often occur in petroleum. Thus, for this industry, the employment ratio is perhaps a better measure of R&D intensity than the expenditure ratio.

The much lower R&D intensity for MOFA's than for their U.S. parents and the small share of total R&D expenditures by MNC's that was accounted for by MOFA's reflected their apparent dependence on parents for technology. This dependence was attributable to several factors.

First, R&D facilities tended to be concentrated in U.S. parents, because supplies of scientific and technical talents were more readily available in the United States than in many areas abroad. Also, because more than two-thirds of total sales by MNC's worldwide were by U.S. parents, and because most of the parents' sales were to U.S. customers, a very large share of the worldwide R&D activities of MNC's was located in the United States to serve U.S. markets more efficiently. Furthermore, U.S. parents can minimize R&D costs of the MNC as a whole if they assume the major burden of investment in R&D. MOFA's may benefit from the technology but spend only a fraction of what their parents spend on R&D because use of technology by an affiliate abroad will involve only small additional cost.

Growth in R&D expenditures

Table 7 presents data on growth of R&D expenditures by MNC's for 1966-77, by industry of U.S. parent. Growth in expenditures by U.S. parents and MOFA's is separately discussed.

1966 data are from BEA's 1966 benchmark survey of U.S. direct investment abroad. ^{5/} The definition of a MOFA differs in the 1966 and 1977 surveys. To improve comparability, the 1966 data have been adjusted to be as consistent as possible with the 1977 data. Details of the adjustments are presented in the technical notes.

R&D expenditures by MNC's increased from \$8.9 billion in 1966 to \$20.7 billion in 1977, or at a compound annual rate of 7.9 percent. In contrast, the growth rate of MNC total assets was 11.1 percent. Apparently, MNC spending on R&D has failed to keep pace with the growth of total assets in 1966-77. ^{6/}

5. See U.S. Department of Commerce, Bureau of Economic Analysis, U.S. Direct Investment Abroad, 1966, Final Data (Washington, D.C.: U.S. G.P.O., n.d.).

6. See Howenstine, "Growth," p. 35. Note that the data coverage of affiliate assets differs from that of affiliate R&D expenditures. For assets, affiliates are defined to include "allied affiliates"--those in which U.S. parents had equity ownership of 25 percent or more; for R&D expenditures, they are defined to include only MOFA's. The effect of this difference in coverage is not likely to be large, because the total assets of "allied affiliates" that were not MOFA's accounted for less than 10 percent of total affiliate assets in 1977.

Table 7.--Growth in R&D Expenditures by U.S. MNC's, U.S. Parents, and MOFA's,
1966-77, by Industry of U.S. Parent

(Millions of dollars, or percent)

	MNC's			U.S. parents			MOFA's		
	1966 <u>1/</u>	1977	Compound annual rate of growth	1966 <u>1/</u>	1977	Compound annual rate of growth	1966 <u>1/</u>	1977	Compound annual rate of growth
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
All industries	8,941	20,670	7.9	8,361	18,595	7.5	580	2,075	12.3
Mining	22	23	0.4	21	18	-1.7	1	5	14.6
Petroleum	474	1,092	7.9	441	964	7.4	33	128	13.1
Manufacturing	8,110	18,296	7.7	7,573	16,731	7.5	537	1,565	10.2
Food and kindred products	153	447	10.2	136	384	9.8	17	63	12.5
Chemicals and allied products	1,357	3,240	8.2	1,254	2,861	7.8	103	379	12.6
Primary and fabricated metals	326	751	7.8	311	719	7.9	15	32	7.2
Machinery, except electrical	795	3,539	14.5	740	3,350	14.7	55	189	11.9
Electric and electronic equipment	1,927	2,275	1.5	1,811	2,198	1.8	116	77	-3.7
Transportation equipment	2,674	5,580	6.9	2,537	5,018	6.4	137	562	13.7
Other manufacturing	878	2,462	9.8	784	2,200	9.8	94	262	9.8
Trade	11	137	26.0	10	128	26.0	1	9	20.4
Finance (except banking), insurance, and real estate	5	(D)	(D)	4	162	41.5	1	(D)	(D)
Other industries	319	(D)	(D)	312	592	6.0	7	(D)	(D)

R&D Research and development.

MNC Multinational company.

MOFA Majority-owned foreign affiliate.

D Suppressed to avoid disclosure of data of individual companies.

1. Data for 1966 were adjusted to improve comparability with data for 1977; therefore, they differ from previously published data. See the technical notes for details of the adjustments.

R&D expenditures by U.S. parents grew from \$8.4 billion to \$18.6 billion, or at a 7.5-percent rate. About nine-tenths of the growth was in manufacturing.

R&D expenditures by U.S. manufacturing parents, which more than doubled, grew at a 7.5-percent rate. Within manufacturing, growth was widespread. By far the fastest growth--14.7 percent--was in nonelectrical machinery. The growth was largely accounted for by U.S. parents manufacturing office and computing equipment, whose expenditures increased more than sixfold over the period. Expenditures grew at a 9.8-percent rate in both food and "other manufacturing." Nearly one-half of the growth in the latter was accounted for by U.S. parents manufacturing instruments, particularly photographic equipment and scientific instruments. Also strong was the growth in both paper and rubber products.

R&D expenditures in primary and fabricated metals grew at a 7.9-percent rate. The growth was largely in primary metals. In chemicals, expenditures grew at a 7.8-percent rate. The growth was accounted for mainly by U.S. parents manufacturing drugs and industrial chemicals. In drugs, spending more than tripled over the period.

In transportation equipment, the growth rate was 6.4 percent. Much of the growth was in spending by U.S. parents manufacturing automotive products. In aerospace equipment, where federally funded R&D spending was large, company-funded spending grew relatively slowly. The slowest growth--1.8 percent a year--was in electrical machinery. Spending actually declined in radio, television, and communication equipment, because a few large companies classified in this industry group in 1966 were in other industries in 1977.

Among industries other than manufacturing, growth was unusually strong in finance (except banking), insurance, and real estate and trade. Growth in each industry was from a small 1966 base. Also, a number of companies in these industries were either new in 1977 or were classified in these industries in 1977, but not in 1966. R&D expenditures by U.S. petroleum parents grew at a 7.4-percent rate, to \$1.0 billion. In contrast, R&D expenditures by mining parents, which were small in both 1966 and 1977, declined at a 1.7-percent rate. The decline was attributable mainly to several large companies that were classified in this industry in 1966, but in primary metals manufacturing in 1977.

R&D expenditures by MOFA's, at \$2.1 billion, grew faster than those of their U.S. parents--12.3 percent as compared with 7.5 percent--over

1966-77. The faster growth for MOFA's was attributable to several factors. First, during the period, inflation rates were higher abroad than in the United States. Second, when the expenditures for 1966 and 1977 were translated from foreign currencies into U.S. dollars, a given unit of foreign currency could be translated into more dollars after the 1971 depreciation of the dollar than before. Third, the 1966 bases for the MOFA data in many industries were small.

By industry of U.S. parent, more than two-thirds of the growth in R&D expenditures by MOFA's was in manufacturing. ^{7/} The remainder was mostly in finance (except banking), insurance, and real estate, "other industries," and petroleum. In trade and mining, growth was rapid, but spending remained small in 1977.

R&D expenditures by MOFA's of manufacturing parents grew at a rate of 10.2 percent per annum, to \$1.6 billion. Among industries, more than four-tenths of the growth was in transportation equipment and most of the remainder was in chemicals, nonelectrical machinery, and "other manufacturing."

In transportation equipment, MOFA spending increased at a 13.7-percent rate. This rapid growth was mostly attributable to MOFA's in France, Germany, and the United Kingdom whose U.S. parents were in automotive manufacturing. Spending by MOFA's in Canada, Australia, and Latin America also grew rapidly.

In chemicals, MOFA's increased their R&D expenditures at a 12.6-percent rate. More than one-third of the growth was in drugs, largely in several EC(9) countries, Canada, and Japan. R&D expenditures in food grew at a 12.5-percent rate from a small base in 1966. In nonelectrical machinery, the growth rate was 11.9 percent. About one-half was accounted for by MOFA's in the EC(9) and "other Asia and Pacific" whose parents manufactured office and computing equipment. In "other manufacturing," expenditures grew at a 9.8-percent rate. The growth, which was mostly in instruments and rubber products, was largely accounted for by MOFA's in Europe and Canada. In metals, MOFA expenditures increased at a 7.2-percent rate, from a small base in 1966. Expenditures in electrical machinery declined at a 3.7-percent rate, partly because a number of affiliates whose U.S. parents were classified in this industry in 1966 were in other industries in 1977, as noted earlier.

Outside manufacturing, R&D expenditures in petroleum grew at a 13.1-percent rate, from a small 1966 base. MOFA's in Canada and EC(9) largely accounted for the growth. Growth in finance (except banking), insurance, and real estate and "other industries" was unusually rapid.

7. Affiliate data in this table are classified by industry of U.S. parent in order to be consistent with the classification of the MNC and parent data in the table.

This rapid growth was partly due to a number of affiliates whose parents were classified in these industries in 1977 but not in 1966, as noted above.

Royalties and License Fees

Royalties and license fees are fees, arising from licensing agreements, that are received by licensors in return for providing licensees with access to a particular technology. The technology transferred may include trademarks, copyrights, patents, know-how (e.g., designs, formulas, industrial processes, and other unpatented private technology), or any combination of the above.

Royalties and license fees are frequently viewed as a measure of technology transfer because they arise from licensing agreements, which facilitate such transfers; however, for the following reasons, they are, at best, an imperfect measure.

First, royalties and license fees do not include all compensation that can arise from licensing agreements. Other compensation may take forms such as cross-licensing, buy-back agreements in which goods produced by licensees are received by licensors at a discount, or sale of material inputs to licensees by licensors. Second, technology can also be transferred through means other than licensing agreements, such as the sale of turnkey plants, joint ventures, product inspection, etc., all of which do not give rise to royalties and license fees.^{8/} Despite these shortcomings, data on royalties and license fees are useful because they constitute one of the few statistical series available on this subject.

Matrix of flows

The 1977 benchmark survey collected most of the data needed to construct a matrix of royalties and license fees of U.S. parents and MOFA's with all transactors.^{9/} As shown in table 8, data are available for transactions between U.S. parents and all affiliated and unaffiliated foreign persons, and between MOFA's and all affiliated and unaffiliated U.S. and foreign persons. No data are available for one component--transactions between U.S. parents and other U.S. persons.

8. For discussion of other limitations, see Mary Frances Teplin, "U.S. International Transactions in Royalties and Fees: Their Relationship to the Transfer of Technology," Survey 53 (December 1973): 14-18.

9. Data on royalties and license fees presented in this article are just one of several components of the account, "fees and royalties with affiliated foreigners," in the U.S. international transactions accounts. The relationship between this component and the account is discussed in the technical notes.

Table 8. -- Net Receipts, Receipts, and Payments of Royalties and License Fees by MOFA's and Their U.S. Parents, 1977, by Transactor

(Millions of dollars; (-) indicates net payments)

Line		Net receipts	Receipts	Payments
1	U.S. parents' receipts/payments.....	n.a.	n.a.	n.a.
2	From or to other U.S. persons.....	n.a.	n.a.	n.a.
3	From or to foreign persons..... ^{1/}	2,808	3,110	^{1/} 302
4	From or to foreign affiliates.....	2,157	2,208	51
5	MOFA's	1,914	1,962	48
6	Other affiliates ^{2/}	243	246	3
7	From or to unaffiliated foreign persons	^{1/} 651	902	^{1/} 251
8	MOFAs' receipts/payments	-2,033	548	2,582
9	From or to U.S. persons.....	-2,045	64	2,108
10	U.S. parents (net=line 5 with opposite sign).....	-1,914	48	1,962
11	Other U.S. persons	-130	16	146
12	From or to foreign persons.....	12	484	473
13	Foreign affiliates, including MINOFA's	-45	189	234
14	Unaffiliated foreign persons	56	295	239

MOFA Majority-owned foreign affiliate.

MINOFA Minority-owned foreign affiliate.

n.a. Not available.

1. These numbers are different from those published in U.S. Direct Investment Abroad, 1977 and the U.S. international transactions accounts due to correction of an error in originally reported data.

2. U.S. parents of MOFA's may also have minority-owned foreign affiliates.

Net receipts (receipts minus payments) of royalties and license fees by U.S. parents from all foreign persons were \$2.8 billion in 1977. They consisted of receipts of \$3.1 billion less payments of \$0.3 billion. More than two-thirds of the receipts were from foreign affiliates, mostly MOFA's, and less than one-third were from unaffiliated foreigners. The payments were mostly to unaffiliated foreign persons; payments to foreign affiliates were very small.

These data indicate that, overall, U.S. parents were net exporters of technology under licensing agreements, and that they tended to favor affiliated over unaffiliated foreigners in licensing. The tendency to favor affiliates probably reflected the parents' desires to maintain control over use of the technology. Control was more assured if agreements were with affiliated foreigners than with unaffiliated foreigners, because the parents' relationship with their affiliates was generally longer and closer. Thus, with affiliates, parents' control over the technology often endured beyond the expiration of the licensing agreement, while with unaffiliated foreigners, it was usually limited to the life of the agreement.

In contrast to their U.S. parents, MOFA's had net payments of royalties and license fees (shown as negative net receipts in table 8 and subsequent tables) of \$2.0 billion worldwide. Net payments to U.S. persons more than accounted for the total; there were small net receipts from all foreign persons.

Of the net payments to U.S. persons, nearly all, \$1.9 billion, were to U.S. parents; net payments to other U.S. persons were only \$0.1 billion. In transactions with foreign persons, small net receipts by MOFA's from unaffiliated foreigners were nearly offset by small net payments to other foreign affiliates of their U.S. parents.

Royalties and license fees of U.S. parents, by industry

In table 9, U.S. parents' net receipts of royalties and license fees from foreigners are classified by industry of parent and crossclassified by transactor. Of the six major industries, manufacturing accounted for nearly all--92 percent--of net receipts by U.S. parents from foreigners. "Other industries" accounted for 4 percent and petroleum for 2 percent.

Within manufacturing, net receipts by U.S. parents were highly concentrated. U.S. parents in nonelectrical machinery accounted for nearly one-half of the total. U.S. parents in this industry, "other manufacturing," and chemicals combined accounted for more than three-fourths.

In nonelectrical machinery, net receipts by U.S. parents were mostly from MOFA's, and a large share of the receipts from MOFA's were by U.S. parents manufacturing office and computing equipment. In "other manufacturing," about three-fourths of net receipts by U.S. parents were from MOFA's, mainly by U.S. parents manufacturing instruments, paper and

Table 9. -- U.S. Parents' Net Receipts of Royalties and License Fees From Foreign Persons, 1977,
Industry of U.S. Parent by Transactor

(Millions of dollars; (-) indicates net payments)

	Net receipts from all foreigners	From foreign affiliates							From unaffiliated foreigners		
		Total	From MOFA's			From other affiliates			Net receipts	Receipts	Payments
			Net receipts	Receipts	Payments	Net receipts	Receipts	Payments			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
All industries.....	<u>1/</u> 2,808	2,157	1,914	1,962	48	243	246	3	<u>1/</u> 651	902	<u>1/</u> 251
Mining.....	4	(*)	(*)	(*)	0	(*)	(*)	0	4	4	(*)
Petroleum.....	70	32	16	16	0	17	17	0	37	62	25
Manufacturing.....	2,581	2,023	1,821	1,866	45	202	205	3	558	772	214
Food and kindred products.....	101	(D)	78	78	(*)	(D)	(D)	0	(D)	33	(D)
Chemicals and allied products.....	378	350	311	319	8	39	39	(*)	29	144	115
Primary and fabricated metals.....	91	31	24	24	(*)	8	8	(*)	60	65	4
Machinery, except electrical.....	1,151	1,036	967	971	4	69	71	2	114	121	7
Electric and electronic equipment...	280	142	(D)	121	(D)	(D)	(D)	(*)	138	150	11
Transportation equipment.....	153	51	34	35	(*)	17	17	0	102	113	11
Other manufacturing.....	426	(D)	(D)	318	(D)	36	36	1	(D)	146	(D)
Trade.....	17	13	(D)	(D)	(*)	(D)	(D)	(*)	4	6	2
Finance (except banking), insurance, and real estate.....	11	8	(D)	(D)	(D)	(D)	(D)	(*)	3	3	(*)
Other industries.....	126	81	(D)	(D)	(D)	(D)	(D)	(*)	45	55	10

MOFA Majority-owned foreign affiliate.

* Less than \$500,000 (+).

D Suppressed to avoid disclosure of data of individual companies.

1. These numbers are different from those published in U.S. Direct Investment Abroad, 1977 and the U.S. international transactions accounts due to correction of an error in originally reported data.

allied products, and textiles and apparel. In chemicals, nearly two-thirds of net receipts by U.S. parents were from MOFA's by U.S. parents manufacturing industrial chemicals and soap, cleaners, and toilet goods. In drugs, large receipts by U.S. parents from MOFA's were partly offset by payments by U.S. parents to unaffiliated foreigners.

Royalties and license fees of U.S. parents, by country

Parent data on royalty and license fee transactions with foreign affiliates, by country of affiliate, are shown in table 10. Transactions with unaffiliated foreign persons are excluded, because such data were not available by country in the benchmark survey.

Of the \$2.2 billion net receipts by U.S. parents from foreign affiliates, more than nine-tenths were from affiliates in developed countries and 7 percent from those in developing countries. The small share from developing countries reflected the smaller amount of technology embodied in goods and services in these markets and a smaller share of the operations of U.S. MNC's in these countries.

Net receipts from developed countries were highly concentrated. Five countries--Germany, France, the United Kingdom, Canada, and Japan--accounted for more than two-thirds of the total, with shares ranging from 17 percent for Germany to 11 percent for Japan. In each country, except Japan, net receipts from MOFA's accounted for most of the receipts. In contrast, a large share--about two-fifths--of net receipts from Japan were from minority-owned foreign affiliates (MINOFA's). A large number of Japanese affiliates were minority owned because, until the early 1970's, the Japanese Government restricted equity participation in Japanese firms by foreigners to less than a majority share. 10/

Most of the net receipts from developing countries were from a few countries in Latin America and "other Asia and Pacific," where economic growth was rapid.

Royalties and license fees of MOFA's, by industry and country

By industry of affiliate, MOFA's in manufacturing accounted for 87 percent of the net payments of royalties and license fees by MOFA's worldwide (table 11). Particularly large were net payments in nonelectrical machinery, chemicals, and "other manufacturing." By area, nearly nine-tenths of the total was payments by MOFA's in developed countries. As shown in column 3 of table 11, most of the net payments arose from transactions with U.S. parents, which were discussed in the last section. This section will focus on transactions with U.S. persons other than U.S. parents and with all foreign persons.

Net payments to "other U.S. persons" were \$0.1 billion. They consisted mostly of payments; receipts were small. The payments were largely by MOFA's in manufacturing and trade in the EC(9) and Canada.

10. See Barker, "A Profile," p. 53.

Table 10.--U.S. Parents' Net Receipts of Royalties and License Fees From Foreign Affiliates, 1977, Country of Affiliate by Transactor

(Millions of dollars)

	Total	From MOFA's			From other affiliates		
		Net receipts	Receipts	Payments	Net receipts	Receipts	Payments
		(1)	(2)	(3)	(4)	(5)	(6)
All countries.....	2,157	1,914	1,962	48	243	246	3
Developed countries.....	1,999	1,790	1,835	45	209	212	3
Canada.....	266	258	(D)	(D)	8	8	(*)
Europe.....	1,419	1,328	1,347	18	90	91	1
European Communities (9).....	1,253	1,178	1,191	13	75	75	(*)
Belgium.....	102	94	94	(*)	9	9	0
Denmark.....	21	19	19	0	2	2	0
France.....	281	242	244	1	38	38	0
Germany.....	338	331	333	2	7	7	(*)
Ireland.....	10	9	9	0	1	1	(*)
Italy.....	124	116	117	1	7	7	(*)
Luxembourg.....	2	2	2	0	(*)	(*)	0
Netherlands.....	107	104	106	2	3	3	0
United Kingdom.....	269	261	266	5	8	8	(*)
Other Europe.....	166	150	156	6	16	16	(*)
Japan.....	226	126	(D)	(D)	99	102	2
Australia, New Zealand, and South Africa.....	89	78	78	1	11	11	(*)
Developing countries.....	158	124	127	3	34	34	(*)
Latin America.....	99	75	78	3	24	24	(*)
South America.....	25	17	17	(*)	9	9	(*)
Argentina.....	7	7	7	(*)	(*)	(*)	0
Brazil.....	5	4	4	(*)	1	1	0
Other.....	14	6	6	0	8	8	(*)
Central America.....	68	(D)	(D)	3	(D)	(D)	(*)
Mexico.....	(D)	(D)	(D)	1	12	12	(*)
Other.....	(D)	(D)	(D)	2	1	1	(*)
Other Western Hemisphere.....	6	(D)	(D)	0	(D)	(D)	(*)
Other Africa.....	4	3	4	(*)	(*)	(*)	0
Middle East.....	10	7	7	0	3	3	0
Other Asia and Pacific.....	45	38	38	(*)	7	7	0
International	0	0	0	0	0	0	0
Addendum: OPEC.....	17	(D)	(D)	0	(D)	(D)	0

MOFA Majority-owned foreign affiliate.

* Less than \$500,000(+),

D Suppressed to avoid disclosure of data of individual companies.

Table 11.--Net Receipts of Royalties and License Fees by MOFA's from U.S. and Foreign Persons, 1977, Industry and Country of Affiliate by Transactor

(Millions of dollars; (-) indicates net payments)

	Net receipts from all persons	From all U.S. persons					From all foreign persons						
		Total	From U.S. parents	From other U.S. persons			Total	From other Net receipts	From all foreign affiliates		From unaffiliated foreigners		
				Net receipts	Receipts	Payments			Net receipts	Receipts	Payments	Net receipts	Receipts
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
Total.....	-2,033	-2,045	-1,914	-131	16	146	12	-45	189	234	56	295	239
By industry:													
Mining.....	-19	-1	-1	(*)	0	(*)	-18	-1	0	1	-17	0	17
Petroleum.....	-112	-18	(D)	(D)	2	(D)	-94	-2	2	4	-92	2	94
Manufacturing.....	-1,770	-1,658	-1,590	-67	13	80	-112	-106	83	189	-6	73	79
Food and kindred products.....	-73	-66	-61	-5	(*)	5	-7	-3	9	12	-5	1	6
Chemicals and allied products.....	-352	-279	-273	-6	5	11	-74	-76	18	94	3	23	21
Primary and fabricated metals.....	-44	-40	-38	-3	(*)	3	-4	-3	1	4	(*)	1	1
Machinery, except electrical.....	-816	-823	-817	-7	(*)	7	8	10	(D)	(D)	-3	7	10
Electric and electronic equipment.....	-118	-125	-119	-6	7	13	8	-8	16	24	15	22	7
Transportation equipment.....	-28	-19	-18	-1	(*)	1	-9	-11	6	16	2	8	6
Other manufacturing.....	-339	-305	-265	-39	(*)	40	-35	-16	(D)	(D)	-19	10	29
Trade.....	-296	-312	-263	-49	(*)	49	16	18	52	34	-2	28	30
Finance (except banking), insurance, and real estate.....	25	2	3	(*)	(*)	(*)	23	22	22	(*)	1	(D)	(D)
Other industries.....	138	-59	(D)	(D)	(*)	(D)	196	24	30	6	173	(D)	(D)
By area:													
Developed countries.....	-1,819	-1,903	-1,790	-113	16	129	84	-41	175	215	125	265	140
Canada.....	-309	-288	-258	-30	1	32	-21	-9	9	18	-12	30	42
Europe.....	-1,302	-1,400	-1,328	-71	14	85	98	-11	163	175	109	193	85
European Communities (9).....	-1,211	-1,246	-1,178	-68	14	82	34	-65	81	146	99	168	69
Belgium.....	-89	-90	-94	3	5	1	2	-6	4	10	8	9	1
Denmark.....	-20	-19	-19	(*)	0	(*)	(*)	(*)	1	1	(*)	(*)	(*)
France.....	-268	-258	-242	-15	(D)	(D)	-10	-22	9	30	12	25	13
Germany.....	-360	-347	-331	-16	(D)	(D)	-13	-36	8	44	23	49	26
Ireland.....	-13	-10	-9	-1	0	1	-3	-2	0	2	-1	0	1
Italy.....	-112	-121	-116	-4	1	5	8	-6	3	9	14	21	7
Luxembourg.....	-3	-4	-2	-3	0	3	1	1	1	0	(*)	(*)	(*)
Netherlands.....	-84	-107	-104	-4	0	4	23	(D)	(D)	27	(D)	(D)	2
United Kingdom.....	-264	-290	-261	-29	(*)	29	26	(D)	(D)	21	(D)	(D)	20
Other Europe.....	-91	-154	-150	-4	(*)	4	63	54	83	29	10	25	15
Japan.....	-116	-127	-126	(*)	(*)	(*)	11	-6	1	8	17	20	3
Australia, New Zealand, and South Africa.....	-92	-89	-78	-11	(*)	11	-3	-15	1	16	12	22	10
Developing countries.....	-213	-142	-124	-18	(*)	18	-71	-3	14	17	-68	30	98
Latin America.....	-79	-87	-75	-11	(*)	11	7	-3	8	10	10	30	20
South America.....	-8	-19	-17	-2	(*)	2	10	-4	2	6	14	19	5
Argentina.....	-9	-7	-7	(*)	(*)	(*)	-2	-1	(*)	1	-1	(*)	1
Brazil.....	2	-6	-4	-2	(*)	2	8	-1	1	2	9	(D)	(D)
Other.....	-2	-6	-6	(*)	(*)	(*)	5	-2	1	3	7	(D)	(D)
Central America.....	-55	(D)	(D)	-6	(*)	6	(D)	2	5	4	(D)	10	(D)
Mexico.....	-37	-33	(D)	(D)	(*)	(D)	-4	-2	1	2	-2	(D)	(D)
Other.....	-18	(D)	(D)	(D)	0	(D)	(D)	3	5	1	(D)	(D)	(*)
Other Western Hemisphere.....	-15	(D)	(D)	-3	0	3	(D)	(*)	0	(*)	(D)	(*)	(D)
Other Africa.....	-5	-5	-3	-1	0	1	(*)	(*)	(*)	(*)	(*)	(*)	(*)
Middle East.....	(D)	-7	-7	(*)	0	(*)	(D)	3	4	1	(D)	0	(D)
Other Asia and Pacific.....	(D)	-43	-38	-5	(*)	5	(D)	-3	2	6	(*)	1	(D)
International.....	-2	(*)	0	(*)	0	(*)	-1	-1	0	1	-1	0	-1
Addendum: OPEC.....	-85	(D)	(D)	-2	0	2	(D)	-3	1	4	(D)	(D)	(D)

MOFA Majority-owned foreign affiliate.

* Less than \$500,000 (±).

D Suppressed to avoid disclosure of data of individual companies.

Transactions between MOFA's and all other foreign persons were nearly in balance, as net receipts of \$0.2 billion by MOFA's in "other industries" were nearly offset by net payments of \$0.1 billion each by MOFA's in manufacturing and petroleum. In "other industries," the net receipts were largely from unaffiliated foreigners to MOFA's located in Europe and Canada. ^{11/} A sizable share of the net payments by MOFA's in manufacturing were by chemical MOFA's located in Europe. The net payments in petroleum were largely to unaffiliated foreigners by MOFA's in the Middle East.

Technical Notes

BEA and NSF data on R&D activities

The U.S. parent data used in this article were obtained from BEA's 1977 benchmark survey, or census, of U.S. direct investment abroad. The data for all U.S. businesses were universe estimates derived from an NSF sample survey. Both surveys used the business enterprise as the reporting unit, and both covered calendar year 1977. The two surveys, however, differed in several important respects.

Company-funded R&D expenditures were defined differently in the two surveys. In accordance with Financial Accounting Standards Board Statement No. 2, "Accounting for R&D Costs," the BEA data for U.S. parents were defined on the basis of for whom the R&D was performed. They included the cost of R&D performed by U.S. parents for their own account and the cost of R&D performed for U.S. parents by others on contract, but excluded the cost of R&D performed by U.S. parents for others on contract. In contrast, the NSF data for all U.S. companies were defined on the basis of who performed the R&D. They included the cost of R&D performed by the companies for their own account and for others on contract, but excluded the cost of R&D performed for the companies by others on contract. For example, if a U.S. company contracted out R&D to its foreign affiliates, such expenditures would have been included in BEA's parent data but excluded in NSF's data for all U.S. businesses.

The number of R&D scientists and engineers employed was also defined differently in the two surveys. In the BEA survey, it was defined as the average number of full-time and part-time R&D employees for the year; in the NSF survey, it was defined as the number of full-time R&D employees, plus the full-time equivalent of part-time R&D employees, on the payroll in January of the year. Partly because part-time employees were each counted as a whole employee in the BEA data, but were converted to a full-time equivalent basis in the NSF data, the BEA data for U.S. parents were higher than the NSF data for all U.S. companies in total and in most industries shown in table 2.

11. Net receipts of royalties and license fees by MOFA's in "other industries" included a substantial amount of fees for leasing film and television tapes. If such fees had instead been excluded from this account, transactions of MOFA's with unaffiliated foreigners would have shifted from net receipts to net payments.

Industry coverage also differed in the two surveys. As noted in table 2, footnote 3, both surveys covered most major industries. However, within finance, banking was excluded in the BEA data, but included in the NSF data. In addition, within "other industries," the BEA data included, but the NSF data excluded, agricultural production and motion pictures.

It should be noted that unlike company-funded R&D expenditures, federally funded R&D expenditures were defined similarly in both the BEA and NSF surveys. They included the cost of R&D performed by companies on contract or subcontract with the Federal Government, but excluded the cost of R&D subcontracted to others. Because the BEA data on federally funded R&D expenditures were defined on the basis of who performed the R&D, but the BEA data on company-funded expenditures were defined on the basis of for whom the R&D was performed, the two expenditure categories for U.S. parents are not additive.

Adjustments to 1966 data to improve comparability with 1977 data

Data collected in BEA's 1966 benchmark survey of U.S. direct investment abroad are not strictly comparable with the 1977 benchmark survey data because of changes in concept and definitions between the two surveys. To improve comparability, the 1966 data were adjusted to be as consistent as possible with the 1977 data.

In the 1966 survey, MOFA's were defined to include foreign affiliates in which U.S. parents had equity ownership of 50 percent or more. However, in the 1977 survey, the definition was revised to include foreign affiliates in which U.S. parents' equity ownership exceeded 50 percent. Thus, as shown in table A, data for foreign affiliates owned exactly 50 percent were removed from the 1966 total.

Table A.--Adjustments to 1966 Data to Improve Comparability With 1977 Data on R&D Expenditures by MOFA's and Their U.S. Parents (Millions of dollars)

	U.S. parents of MOFA's	MOFA's
Published 1966 total-----	(1) 8,386	(2) 590
Less: Data for affiliates owned exactly 50 percent-----	0	12
Less: Data for U.S parents that did not have at least one MOFA---	25	0
Plus: Data for affiliates owned more than 50 percent solely by virtue of combined ownership by more than one U.S. parent-----	0	3
Equals: Adjusted total-----	8,361	580

R&D Research and development.

MOFA Majority-owned foreign affiliate.

Further, the parent data for 1977 included only U.S. parents that had at least one MOFA; in contrast, the 1966 data included, in addition, parents that had only MINOFA's and no MOFA's. Therefore, data for parents that had only MINOFA's were subtracted from the 1966 parent data.

Finally, in 1977, MOFA's were defined as affiliates owned more than 50 percent by all U.S. parents combined. In 1966, in contrast, a single-owner criterion was used in defining a MOFA for purposes of reporting data on R&D expenditures. Thus, the 1966 data for affiliates were adjusted to include data for MOFA's owned more than 50 percent solely by virtue of combined ownership by more than one U.S. parent.

The net effects of these adjustments were small--previously published 1966 data on R&D expenditures were adjusted downward by less than one-half of 1 percent for U.S. parents and by about 2 percent for MOFA's.

Relationship between royalties and license fees and total fees and royalties

Royalties and license fees from foreign affiliates to U.S. parents, which are discussed in this article, constitute just one component of "fees and royalties from affiliated foreigners," which appears in the U.S. international transactions accounts. In addition to this component, total fees and royalties also include: (1) rentals for the use of tangible property, (2) film and television tape rentals, and (3) service charges, which are fees for services rendered--including management, professional, and technical services--and allocated expenses. Amounts for the total and for each component are shown in table B for 1977.

Table B.--Fees and Royalties From Affiliated Foreigners, 1977,
Total and by Component

(Millions of dollars)

Net receipts by U.S. persons	Amount
Total.....	3,883
Royalties and license fees.....	2,173
Rentals for use of tangible property.....	-221
Film and television tape rentals.....	300
Service charges.....	1,631