The Domestic Orientation of Production and Sales by U.S. Manufacturing Affiliates of Foreign Companies

By William J. Zeile

SINCE THE surge in foreign direct investment in the United States in the late 1980's, much attention has focused on the role of foreign-owned firms in the U.S. economy, particularly in manufacturing.[1] A question that is frequently posed concerns the degree to which U.S. affiliates of foreign companies are integrated into the U.S. economy through their sourcing behavior and value-added activity. A related question is whether U.S. manufacturing affiliates in comparison with domestically owned firms are more oriented toward producing for the U.S. market or for their home-country and other foreign markets.

Data from the benchmark and annual surveys of foreign direct investment in the United States that are conducted by the Bureau of Economic Analysis (BEA) can be used to gauge the domestic content of output by U.S. affiliates of foreign companies.[2] For affiliates in manufacturing,[3] aggregate estimates presented in two previous articles in the SURVEY OF CURRENT BUSINESS show a high share of domestic content in output; in each of the years examined, about 90 percent of the output of these affiliates was accounted for by the affiliates' own value added and by the value of inputs purchased from suppliers located in the United States.[4] In both articles, imports are estimated to have accounted for less than 20 percent of the intermediate inputs purchased by all manufacturing affiliates. In addition, the second article shows that import shares of affiliate purchases of intermediate inputs in 1991 were generally low across more detailed manufacturing industries; however, in a few industries, the import shares were quite high—more than 30 percent—particularly for Japanese-owned affiliates.

An outstanding question from these results is the degree to which the domestic content for affiliates in manufacturing differs from that for domestically owned manufacturers, both in the aggregate and across detailed industries. A related question is the degree to which any observed differences in domestic content at the aggregate level reflect systematic differences in behavior across industries rather than differences in a few specific industries or differences in the types of industries in which affiliates and domestically owned companies are concentrated.

In this article, measures of domestic content for U.S. manufacturing affiliates in 1989 and 1994 are compared with measures of domestic content for domestically owned U.S. parent companies in manufacturing (which in 1994 accounted for more than one-half of the gross output of all domestically owned U.S. companies in manufacturing); the data are from BEA's 1989 and 1994 benchmark surveys of U.S. direct investment abroad.[5] Domestically owned U.S. parent companies are an appropriate comparison group

1. As an indicator of the increased importance of foreign-owned affiliates in U.S. manufacturing, the share of U.S. manufacturing employment that is accounted for by U.S. affiliates of foreign companies increased steadily from 7.6 percent in 1987 to 11.7 percent in 1994 before dipping to 11.4 percent in 1995. The employment shares for 1990–95 are shown in table 12 of "Foreign Direct Investment in the United States: New Investment in 1996 and Affiliate Operations in 1995," SURVEY OF CURRENT BUSINESS 77 (June 1997): 54.

2. In this article, the term "domestic content" refers to the difference between gross output and direct imports of intermediate inputs. This terminology is used for analytical purposes only and does not constitute an official definition.

3. In BEA's data on direct investment, manufacturing excludes petroleum and coal products manufacturing, which is classified under the major industry "petroleum."

4. See Jeffrey H. Lowe, "Gross Product of U.S. Affiliates of Foreign Companies, 1977–87," SURVEY 70 (June 1990): 45–53; and William J. Zeile, "Merchandise Trade of U.S. Affiliates of Foreign Companies," SURVEY 73 (October 1993): 52–65.

In addition, estimates of domestic content for all nonbank U.S. affiliates were presented as supplementary items in two articles in the SURVEY that featured an alternative disaggregation of the U.S. current account based on ownership. See J. Steven Landefeld, Obie G. Whichard, and Jeffrey H. Lowe, "Alternative Frameworks for U.S. International Transactions," SURVEY 73 (December 1993): 50–61; and Obie G. Whichard and Jeffrey H. Lowe, "An Ownership-Based Disaggregation of the U.S. Current Account, 1982–93," SURVEY 75 (October 1995): 52–61.

5. In addition to the two SURVEY articles cited above, the analysis in this article builds on earlier work by the author that will be presented in William J. Zeile, "Imported Inputs and the Domestic Content of Production by Foreign-Owned Manufacturing Affiliates in the United States," in *Geography and Ownership as Bases for Economic Accounting*, ed. Robert E. Baldwin, Robert E. Lipsey, and J. David Richardson (Chicago: University of Chicago Press, forthcoming in 1998).

because of their similarity with U.S. affiliates in terms of size and international orientation. In addition, the data for U.S. parent companies are highly comparable with those for U.S. affiliates because the data for both are collected at the enterprise level and are based on the same concepts and definitions.[6]

Domestic content is analyzed in terms of three related measures that provide information about the inputs used in production: (1) The domestic content of gross output, (2) the value-added share of gross output, and (3) the import share of intermediate inputs. The first measure is the broadest measure of domestic content: It shows the share of a company's gross output (sales plus inventory change) that is accounted for by wages and salaries, profits, and other incomes earned through its production in the United States and by the value of raw materials, components, and other intermediate inputs that are purchased from U.S. suppliers.

The domestic content of output is determined by two decisions that are captured by the second and third measures: The "make or buy" decision and the "import or procure locally" decision. The "make or buy" decision determines the degree of vertical integration in firm production, which is reflected in the share of output accounted for by the firm's own value added. The "import or procure locally" decision, which determines the firm's linkages to domestic suppliers, is captured by the share of imports in its intermediate inputs.[7]

In addition, the market orientation of affiliate output is analyzed in terms of the export share of sales. This measure shows the degree to which affiliates target their output to markets abroad rather than to the U.S. market.

The analysis in this article includes more detailed information than previous SURVEY articles, and it introduces a number of new features. First, each of the four measures for affiliates is compared with the corresponding measure for domestically owned companies in the same industries; the comparisons are made across 32 detailed manufacturing industries. Second, for affiliates in selected industries, data for a fixed panel of affiliates for 1988–94 are used to assess changes in affiliate behavior over time. Third, differences in affiliate domestic content and market orientation by country of ownership are systematically examined through comparisons of averages for the four measures that are adjusted for industry effects.

The overall profile of affiliate operations that emerges from this analysis reveals both similarities and differences between U.S. affiliates and domestically owned manufacturers. For both groups of firms, domestic content accounts for a high share of output. However, the share for affiliates is not quite as high as that for the domestically owned firms; the domestic-content share for affiliates tends to be lower than that for domestically owned companies across the detailed industries, and the difference at the aggregate level increases, rather than decreases, when industry mix is held constant.

The differences in content are attributable to differences in both value-added shares and the sourcing of intermediate inputs. Value added within the firm accounts for less than one-half of the value of output for both affiliates and domestically owned firms, but the value-added share for affiliates is somewhat smaller than the share for the domestically owned firms. Both affiliates and domestically owned firms purchase most of their inputs from domestic suppliers, but the share of imports in intermediate inputs is much higher for affiliates, largely due to their use of inputs purchased from their foreign parent companies and other affiliated foreign suppliers. With respect to market orientation, both U.S. affiliates and domestically owned manufacturers sell most of their output in the United States, but the share of exports in sales is somewhat smaller for affiliates than for the domestically owned firms.

The following are among the specific findings:

- The domestic content of gross output for all manufacturing affiliates is 87 percent, compared with 93 percent for domestically owned manufacturing companies. In most industries, the measure for affiliates is just below that for domestically owned companies.
- The domestic-content share for affiliates tends to be lowest in industries in machinery, transportation equipment, and instruments manufacturing—industries whose intermediate inputs consist mainly of manufactured components rather than commodity-type bulk materials.
- The value-added share of gross output for all manufacturing affiliates is 30 percent, compared with 37 percent for domestically owned manufacturing companies. In most of the 32 manufacturing industries, the value-added

6. See the section "Data used to construct measures" in the appendix.

7. See the discussion of affiliate linkages with host-country suppliers in John H. Dunning, *Multinational Enterprises and the Global Economy* (Wokingham, England: Addison-Wesley, 1993): 446–459.

share for affiliates is more than 20 percent lower than that for domestically owned companies.

- Affiliates rely on imports to a much greater degree than do domestically owned companies. The share of intermediate inputs that are imported is 19 percent for all manufacturing affiliates, compared with 11 percent for domestically owned companies. In about two-thirds of the 32 industries, the import share of intermediate inputs for affiliates is more than twice that for domestically owned companies.
- About two-thirds of the imports by U.S. manufacturing affiliates are obtained from the affiliates' foreign parent companies or other foreign firms with which the parents are associated.
- Production by U.S. manufacturing affiliates is strongly oriented toward the domestic market: The export share of sales for all manufacturing affiliates is only 10 percent, compared with 14 percent for domestically owned companies. The export share for affiliates is lower than that for domestically owned companies in about two-thirds of the 32 industries.
- For affiliates in the electronic components and motor vehicle industries, domestic content has increased over time, reflecting a decrease in the import share of intermediate inputs. In other machinery-type industries, however, the domestic-content and import-share measures for affiliates show no sustained trend. For affiliates in construction machinery, metalworking machinery, and instruments, the export share of sales has increased.
- German-, Swiss-, and Japanese-owned affiliates have the lowest average domestic content in comparison with domestically owned U.S. parent companies in comparable industries. The relatively low domestic content for German- and Swiss-owned affiliates reflects their relatively high reliance on imports for their purchased inputs. For Japanese-owned affiliates, the relatively low domestic content reflects a relatively low share of value added in gross output and a high share of imports in intermediate inputs.
- British-owned affiliates have the highest average domestic content, the highest average value-added share, and the lowest average import share of purchased inputs. The measures for these affiliates are closest to those for domestically owned companies in comparable industries, perhaps reflecting the fact that, compared with investments from other countries, British direct investment in U.S. manufacturing industries tends to be older and has almost exclusively taken the form of acquisitions of existing U.S. companies.
- For most of the investing countries, the average export share of sales for affiliates does not differ significantly from the export share for domestically owned companies. However, Japanese-owned affiliates have a high average share of exports in sales in comparison with domestically owned companies, particularly in such primary resource-intensive industries as lumber and wood products and food and kindred products other than beverages.

The next section of the article discusses the measures of domestic content and market orientation. The article then compares the industry-level estimates of the measures for U.S. affiliates with those for domestically owned manufacturing companies. Next, the article examines changes over time in the measures for a panel of affiliates in selected industries. It then examines differences in affiliate behavior by country of ultimate beneficial owner (UBO).[8] Finally, the article examines differences in the geographic pattern of international purchases and sales of affiliates by country of ownership. An appendix discusses the data used to construct the measures and investigates the extent to which the results are affected by imports unrelated to manufacturing production in the data for affiliates.

Measures of Content and Market Orientation

Data from BEA's benchmark and annual surveys of foreign direct investment in the United States were used to construct three measures that reveal information about the content of output of U.S. manufacturing affiliates: The domestic content of gross output, the value-added share of gross output, and the import share of intermediate inputs.

8. The UBO is that person, proceeding up a U.S. affiliate's ownership chain, beginning with and including the foreign parent, that is not owned more than 50 percent by another person. "Person" is broadly defined to include any individual, corporation, branch, partnership, associated group, association, estate, trust, or other organization and any government (including any corporation, institution, or other entity or instrumentality of a government). The foreign parent is the first foreign person in the affiliate's ownership chain. Unlike the foreign parent, the UBO of an affiliate is identified to ascertain the person that ultimately owns or controls the U.S. affiliate and that, therefore, ultimately derives the benefits from owning or controlling the affiliate.

The domestic content of gross output can be expressed as follows:

(1) Domestic Content of Gross Output
= (Gross Output – Imports) / Gross Output,

where gross output is computed as sales plus the change in end-of-year inventories (table 1).[9] As defined, domestic content for a U.S. affiliate is that portion of its gross output that is accounted for by wages and salaries, profits, and other incomes earned within the affiliates themselves and by the value of raw materials, components, and other inputs purchased from domestic suppliers.

Conceptually, gross output for a firm is equal to its value added, or gross product originating in the firm, plus the value of intermediate inputs purchased from others.[10] Because value added by an affiliate represents production in the country in which the affiliate is located, other things being equal, a higher share of value added in total output implies higher domestic content.[11] This share can be expressed as follows:

(2) Value-Added Share of Gross Output
= Gross Product / Gross Output

For a U.S. affiliate, the value-added share measures the portion of the affiliate's gross output that is accounted for by incomes earned by labor, capital, and other factors of production employed within the firm.

The other component of a firm's gross output is its intermediate inputs. These inputs can be procured either domestically or through imports. Other things being equal, a higher share of imports in intermediate inputs implies lower domestic content. This share can be expressed as follows:

(3) Import Share of Intermediate Inputs
= Imports / Intermediate Inputs
= Imports / (Gross Output – Gross Product),

where intermediate inputs is computed as a residual from the data on affiliates' gross output and gross product.[12] The import share of raw materials, components, and other purchased inputs provides a measure of the affiliates' reliance on imported versus domestically produced goods and services.

9. The data for affiliates are enterprise data that include some output unrelated to manufacturing: In 1994, about 15 percent of the sales by affiliates classified in manufacturing were accounted for by sales associated with secondary activities in other industries, most notably wholesale trade.

10. Intermediate inputs are goods and services that are consumed in production and that are purchased from other U.S. or foreign businesses.

11. However, in terms of the distribution of value added in the form of payments factors to production, some of the value added of an affiliate can be viewed as "foreign" insofar as it includes property income paid to the affiliate's foreign owners.

12. It should be noted that measures (1) and (3) capture direct (or first-round) imports only—they exclude any imports (direct or indirect) that may be embodied in the inputs purchased from domestic distributors or manufacturers. These measures also exclude purchases of services from abroad, because the benchmark and annual data on affiliate imports cover only imports of goods. In addition, it should be understood that the split between the domestic and foreign components in the measures is based on the geographic location of the suppliers of intermediate inputs—that is, whether or not the suppliers are located within the borders of the United States—not on their country of ownership; thus, intermediate inputs that are supplied to a U.S. affiliate by another U.S. affiliate are included in the domestic components.

Table 1.—Construction of Measures of the Domestic Versus Foreign Orientation of Production and Sales for U.S. Affiliates and Domestically Owned U.S. Parent Companies in Manufacturing, 1989 and 1994

Line		U.S. affiliates		U.S. parents	
		1989	1994	1989	1994
		Millions of dollars			
1	Sales	325,307	512,568	1,362,291	1,681,149
2	Inventories, end of current year	47,531	67,610	171,629	179,261
3	Inventories, end of previous year	42,022	62,902	n.a.	n.a.
4	Inventory change (line 2 – line 3) [1]	5,509	4,708	7,086	11,846
5	Gross output (line 1 + line 4)	330,816	517,276	1,369,377	1,692,995
6	Gross product	101,346	153,643	522,726	631,380
7	Intermediate inputs (line 5 – line 6)	229,470	363,633	846,650	1,061,615
8	Imports of goods	38,596	67,576	91,731	120,388
9	Exports of goods	29,355	48,815	158,892	234,221
10	Domestic content (line 5 – line 8) [2]	292,220	449,700	1,277,646	1,572,607
		Percent			
11	Domestic content as a percentage of gross output ((line 10 / line 5) * 100)	88.3	86.9	93.3	92.9
12	Value added as a percentage of gross output ((line 6 / line 5) * 100)	30.6	29.7	38.2	37.3
13	Imports as a percentage of intermediate inputs ((line 8 / line 7) * 100)	16.8	18.7	10.8	11.3
14	Exports as a percentage of sales ((line 9 / line 1) * 100)	9.0	9.5	11.7	13.9

1. For domestically owned U.S. parent companies, the change in inventories in 1993–94 was estimated by applying to the U.S.-parent-company data on inventories in 1994 the percentage by which inventories in the 1993 balance sheet differed from inventories in the 1994 balance sheet for U.S. manufacturing corporations reporting in *Corporation Source Book of Statistics of Income*, Washington, D.C.: Internal Revenue Service, U.S. Department of Treasury. The change in inventories in 1988–89 was similarly estimated using the balance sheet data on inventories for 1988 and 1989 reported in *Statistics of Income*.

2. Includes imported services and any imports that may be embodied in domestic purchases.

n.a. Not available.

The market orientation of affiliates is measured by the export share of sales, which is expressed as follows:[13]

(4) Export Share of Sales = Exports / Sales

This ratio measures the propensity of affiliates to sell their output abroad rather than to customers in the United States.

For this article, the four measures have been constructed for U.S. manufacturing affiliates at the level of 32 detailed manufacturing industries. For comparative purposes, each of these measures has been constructed by industry for a group of domestically owned companies in manufacturing—specifically, domestically owned U.S. parent companies in manufacturing. Domestically owned U.S. parent companies are highly comparable with U.S. affiliates because of their typically large size and their international orientation. In addition, these companies account for a large share of the total output of all domestically owned manufacturing companies—more than one-half of total output in 1994 (see the section "Data used to construct measures" in the appendix). In the rest of this article, the term "domestically owned companies" refers to "domestically owned U.S. parent companies."

13. The data for affiliate exports cover only exports of goods; they exclude exports of services. However, for manufacturing affiliates, exports of services tend to be very small: In 1994, services sold to foreign persons accounted for only 0.3 percent of the total sales of manufacturing affiliates.

Industry-Level Results

In this section, the measures of content and market orientation at the industry level for U.S. affiliates are compared with those for domestically owned companies. The comparisons are made across 32 detailed manufacturing industries for 1989 and 1994.[14]

Content of output

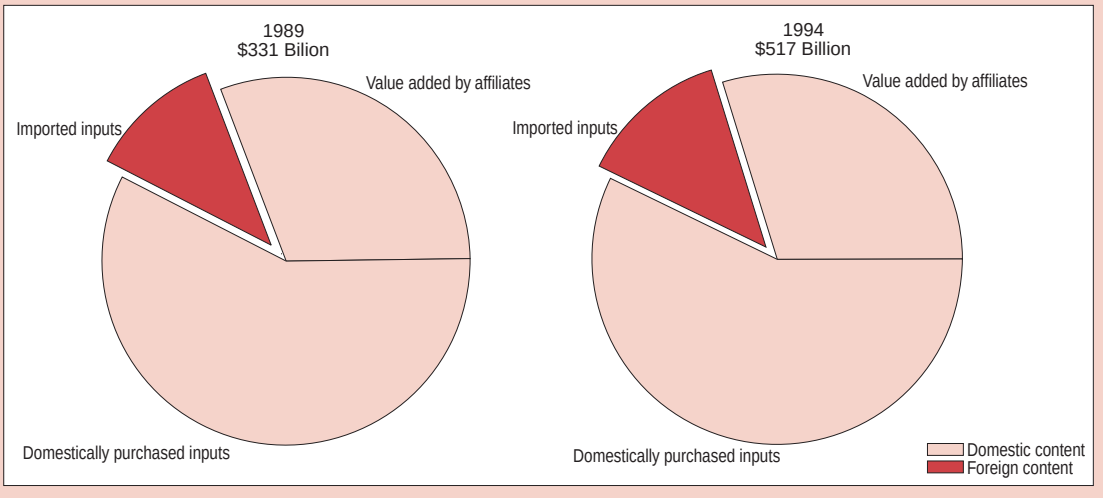
Domestic content.—In the aggregate, U.S. manufacturing affiliates display a high level of domestic content. In 1994, the domestic content of gross output for all manufacturing affiliates was 87 percent, compared with 93 percent for all domestically owned manufacturing companies (table 2). Of the domestic content, one-third represents value added by the affiliates, and two-thirds represents intermediate inputs purchased domestically (chart 1). The shares were similar in 1989.

The difference between the aggregate domestic-content shares for affiliates and the aggregate shares for domestically owned companies is more than accounted for by differences in domestic content within the 32 industries: As shown in the addendum to table 2, the aggregate domestic-content share for affiliates in 1994 would be reduced to 84 percent if the industry composition

14. It should be noted that differences between the measures for 1989 and 1994 may reflect changes in the population of affiliates through new investments or sell-offs as well as changes in the behavior of given affiliates. In addition, differences for individual industries may reflect changes in industry classification.

CHART 1

Content of Gross Output of U.S. Affiliates in Manufacturing



U.S. Department of Commerce, Bureau of Economic Analysis

of output for affiliates was the same as that for domestically owned companies.

By industry, the domestic content of affiliate output in 1989 and 1994 was more than 90 percent in about one-half of the 32 industries, and it was more than 80 percent in over four-fifths of the industries. In both years, the domestic content for affiliates was lower than that for domestically owned companies in all but two industries. However, in about two-thirds of the industries, the domestic-content shares of gross output for affiliates were within 10 percent of those for domestically owned companies.[15]

Both in absolute terms and in relation to the domestically owned companies, the domestic-content shares for affiliates tend to be lowest in "machinery-type" industries, which are defined here as the 12 industries in machinery, transportation equipment, and instruments manufacturing.[16] The intermediate inputs of these industries consist mainly of manufactured components, which may be subject to product differentiation across foreign and domestic suppliers, rather than of commodity-type bulk materials, which in the United States generally can be procured most cheaply from domestic suppliers because of transportation costs. In addition, because manufacturing in these industries involves the assembly of components, their production processes can often be separated into distinct

15. Across the 32 industries, the coefficient of correlation between the domestic-content measures for U.S. affiliates and the domestically owned companies is 0.68 in 1989 and 0.79 in 1994.

16. The 12 industries are construction and mining machinery; metalworking machinery; special industrial machinery; general industrial machinery; computer and office equipment; other industrial machinery and equipment; audio, video, and communications equipment; electronic components and accessories; household appliances and other electrical machinery; motor vehicles and equipment; other transportation equipment; and instruments and related products.

In 1994, these industries accounted for 32 percent of the gross output of all manufacturing affiliates and for 50 percent of the gross output of all domestically owned companies in manufacturing.

Table 2.—Domestic-Content Share of Gross Output for U.S. Affiliates and Domestically Owned U.S. Parent Companies in Manufacturing, by Industry, 1989 and 1994

	Domestic content as a percentage of gross output				Ratio of measure for U.S. affiliates to measure for U.S. parent companies		Addendum: Percent distribution of gross output in 1994	
	U.S. affiliates		U.S. parent companies					
	1989	1994	1989	1994	1989	1994	U.S. affiliates	U.S. parent companies
Manufacturing [1]	**88.3**	**86.9**	**93.3**	**92.9**	**0.95**	**0.94**	**100**	**100**
Beverages	88.4	89.2	99.1	98.6	.89	.90	1	5
Other food and kindred products	95.6	94.2	98.6	98.2	.97	.96	8	9
Textile mill products	85.8	94.5	99.4	98.0	.86	.96	1	1
Apparel and other textile products	91.9	91.4	94.8	94.2	.97	.97	1	1
Lumber and wood products	94.9	94.4	98.7	98.9	.96	.95	(*)	1
Furniture and fixtures	81.3	95.6	97.3	97.9	.84	.98	1	1
Paper and allied products	91.1	92.5	98.0	97.4	.93	.95	2	6
Printing and publishing	98.9	98.7	97.6	98.7	1.01	1.00	4	3
Industrial chemicals and synthetics	91.2	90.5	95.1	94.5	.96	.96	13	5
Drugs	88.8	87.1	97.4	97.0	.91	.90	8	5
Soap, cleaners, and toilet goods	97.6	97.5	95.2	97.0	1.03	1.01	4	2
Other chemicals	91.7	87.4	97.0	98.3	.95	.89	3	2
Rubber products	92.1	82.5	93.9	92.8	.98	.89	2	1
Miscellaneous plastics products	88.9	89.0	98.0	97.6	.91	.91	1	1
Glass products	92.5	90.9	98.7	98.9	.94	.92	1	1
Stone, clay, and concrete products	95.8	95.1	97.9	97.7	.98	.97	3	1
Primary ferrous metals	92.0	89.2	95.8	95.3	.96	.94	4	1
Primary nonferrous metals	82.1	82.4	92.5	93.9	.89	.88	3	2
Fabricated metal products	93.7	90.8	98.3	97.8	.95	.93	5	2
Construction and mining machinery [2]	85.7	71.7	88.5	89.1	.97	.80	2	1
Metalworking machinery [2]	79.5	82.5	92.3	95.7	.86	.86	1	(*)
Special industrial machinery [2]	88.1	82.4	96.1	96.6	.92	.85	1	(*)
General industrial machinery [2]	72.7	86.9	97.4	90.1	.75	.97	2	1
Computer and office equipment [2]	71.2	66.5	86.7	80.4	.82	.83	2	6
Other industrial machinery and equipment [2]	92.2	83.0	93.4	94.2	.99	.88	2	2
Audio, video, and communications equipment [2]	66.5	68.9	93.7	91.4	.71	.75	4	1
Electronic components and accessories [2]	77.3	78.8	87.9	91.2	.88	.86	2	6
Household appliances and other electrical machinery [2]	87.2	82.2	98.0	96.7	.89	.85	6	3
Motor vehicles and equipment [2]	57.3	74.2	81.5	83.9	.70	.88	6	18
Other transportation equipment [2]	82.7	83.8	97.5	96.1	.85	.87	1	7
Instruments and related products [2]	90.0	90.9	95.3	94.3	.94	.96	3	4
Other manufacturing	91.9	91.9	97.2	95.1	.95	.97	2	1
Addendum:								
Manufacturing, standardized for industry mix [3]	82.0	84.0	93.3	92.9	.88	.90	.....	.....

* Less than 0.5 percent.

1. Excludes petroleum and coal products manufacturing, which, in BEA's data on direct investment, is classified under the major industry "petroleum."

2. "Machinery-type" industries.

3. The measures shown in columns 1–4 of this line were derived as weighted averages of the measures for individual industries, using—for both U.S. affiliates and U.S. parent companies—the industry shares in U.S.-parent-company gross output as the weights. For U.S. parents, the measures so derived are identical to those shown in line 1. For U.S. affiliates, they show what the domestic-content shares would have been if the shares for each industry had been as shown, but the industry composition of output had been the same as that for U.S. parents. With industry mix differences thus controlled for, the ratios of the measures for affiliates to the measures for U.S. parents (shown in columns 5 and 6) indicate differences in domestic content attributable to within-industry differences alone.

NOTE.—See the section in the appendix on data used to construct measures.

stages that can be performed in different locations, permitting a greater degree of outsourcing in a firm's production. Finally, the relatively low domestic content in these industries may reflect the existence of some direct investment in final-assembly operations that were put in place in response to potential or actual barriers to the importation of final goods produced by the foreign parent firms.

In 1994, the domestic-content shares for affiliates were less than 75 percent in four industries, all of which are machinery-type industries: Computer and office equipment (67 percent); audio, video, and communications equipment (69 percent); construction and mining machinery (72 percent); and motor vehicles and equipment (74 percent).[17] The relatively low domestic content in these industries reflects their reliance on foreign sources for the affiliates' intermediate inputs; imports accounted for more than 30 percent of affiliate purchases of intermediate inputs in each industry. In the computer and motor vehicle industries, the low domestic-content share also reflects a low share of value added in gross output.

Value-added shares.—In 1994, value added accounted for 30 percent of the gross output of all manufacturing affiliates, compared with a value-added share of 37 percent for domestically owned companies in manufacturing (table 3). The difference in shares at the aggregate level is more than accounted for by differences within the 32 industries: The value-added share for all affiliates would have been 27 percent if the industry

17. A substantial portion of the data for affiliates in motor vehicles and equipment is accounted for by affiliates that produce motor vehicle parts and accessories. In addition, some of the largest affiliates with operations in automobile manufacturing are classified in wholesale trade (where their sales are largest) rather than in manufacturing. In 1994, five affiliates that were classified in motor vehicles wholesale trade had at least one-fourth of their sales in motor vehicles manufacturing; these affiliates were primarily engaged in the distribution of vehicles or parts manufactured by their foreign parents. As might be expected, their domestic-content share of output—60 percent—was significantly below that of the affiliates classified as manufacturers of motor vehicles and equipment.

Table 3.—Value-Added Share of Gross Output for U.S. Affiliates and Domestically Owned U.S. Parent Companies in Manufacturing, by Industry, 1989 and 1994

	Value added as a percentage of gross output				Ratio of measure for U.S. affiliates to measure for U.S. parent companies	
	U.S. affiliates		U.S. parent companies			
	1989	1994	1989	1994	1989	1994
Manufacturing [1]	**30.6**	**29.7**	**38.2**	**37.3**	**0.80**	**0.80**
Beverages	32.0	30.9	45.3	42.4	.71	.73
Other food and kindred products	21.7	23.9	29.2	24.8	.74	.97
Textile mill products	31.8	36.9	38.8	39.8	.82	.93
Apparel and other textile products	28.2	32.6	37.6	38.9	.75	.84
Lumber and wood products	33.5	32.3	32.4	33.5	1.03	.96
Furniture and fixtures	25.4	21.0	40.4	41.2	.63	.51
Paper and allied products	37.2	31.8	42.3	38.0	.88	.84
Printing and publishing	29.9	38.7	41.8	45.8	.72	.84
Industrial chemicals and synthetics	35.6	35.8	43.5	38.5	.82	.93
Drugs	37.9	35.1	54.4	46.0	.70	.76
Soap, cleaners, and toilet goods	23.1	26.0	33.0	36.8	.70	.71
Other chemicals	28.0	25.6	36.8	35.0	.76	.73
Rubber products	33.9	37.3	41.8	44.7	.81	.83
Miscellaneous plastics products	26.6	29.0	34.9	37.2	.76	.78
Glass products	39.6	33.2	51.9	43.9	.76	.76
Stone, clay, and concrete products	33.6	36.0	38.9	31.9	.86	1.13
Primary ferrous metals	27.7	27.5	35.3	35.6	.79	.77
Primary nonferrous metals	24.7	19.7	40.1	30.3	.62	.65
Fabricated metal products	33.2	26.9	33.1	38.9	1.00	.69
Construction and mining machinery [2]	27.4	23.8	34.2	34.5	.80	.69
Metalworking machinery [2]	32.1	31.1	34.1	34.4	.94	.91
Special industrial machinery [2]	33.8	27.0	40.6	39.3	.83	.69
General industrial machinery [2]	32.9	36.9	44.2	45.6	.74	.81
Computer and office equipment [2]	41.6	15.4	45.0	36.0	.93	.43
Other industrial machinery and equipment [2]	28.9	26.6	37.4	33.3	.77	.80
Audio, video, and communications equipment [2]	29.3	24.4	37.4	31.4	.78	.78
Electronic components and accessories [2]	32.9	27.1	43.8	36.3	.75	.75
Household appliances and other electrical machinery [2]	28.9	29.9	41.6	42.1	.69	.71
Motor vehicles and equipment [2]	12.9	18.9	27.5	33.4	.47	.57
Other transportation equipment [2]	26.8	29.0	43.2	44.3	.62	.66
Instruments and related products [2]	37.3	38.9	49.1	49.9	.76	.78
Other manufacturing	39.6	37.2	39.9	43.1	.99	.86
Addendum:						
Manufacturing, standardized for industry mix [3]	28.0	27.0	38.2	37.3	.73	.72

1. See table 2, footnote 1.
2. "Machinery-type" industries.
3. See table 2, footnote 3.

NOTE.—See the section in the appendix on data used to construct measures.

composition of output for affiliates had been the same as that for domestically owned companies.

By industry, the value-added shares of gross output for affiliates were less than 40 percent in all 32 industries and were less than 30 percent in 17 industries. The value-added shares were lowest in computer and office equipment (15 percent), motor vehicles and equipment (19 percent), and primary nonferrous metals (20 percent). The value-added shares for domestically owned companies in these industries were also relatively low.[18]

The value-added shares for affiliates were lower than those for domestically owned companies in 30 industries in 1989 and in 31 industries in 1994; in most industries, the shares for affiliates were at least 20 percent lower than those for domestically owned companies. In both years, the value-added shares for affiliates were more than 30 percent lower than those for domestically owned companies in four industries—furniture and fixtures, primary nonferrous metals, motor vehicles and equipment, and other transportation equipment—indicating that the production operations of affiliates in these industries tend to be much less vertically integrated than the operations of their domestically owned counterparts.

Imported inputs.—Both in the aggregate and across industries, affiliates purchase most of their intermediate inputs from domestic suppliers, but they rely on imports to a much greater degree than do domestically owned companies. In 1994, the import share of intermediate inputs purchased by all manufacturing affiliates was 19 percent, compared with an import share of 11 percent for domestically owned companies in

18. The value-added shares for affiliates and for domestically owned companies tend to be higher or lower in the same industries: Across the 32 industries, the coefficient of correlation between the value-added shares for U.S. affiliates and those for domestically owned companies is 0.69 in 1989 and 0.61 in 1994. For both U.S. affiliates and domestically owned companies, the machinery-type industries are among the industries with the highest and lowest value-added shares.

Table 4.—Import Share of Intermediate Inputs for U.S. Affiliates and Domestically Owned U.S. Parent Companies in Manufacturing, by Industry, 1989 and 1994

	Imports as a percentage of intermediate inputs				Ratio of measure for U.S. affiliates to measure for U.S. parent companies	
	U.S. affiliates		U.S. parent companies			
	1989	1994	1989	1994	1989	1994
Manufacturing [1]	**16.8**	**18.7**	**10.8**	**11.3**	**1.55**	**1.65**
Beverages	17.0	15.6	1.7	2.4	9.92	6.38
Other food and kindred products	5.6	7.6	1.9	2.4	2.93	3.16
Textile mill products	20.8	8.8	1.0	3.4	20.79	2.58
Apparel and other textile products	11.3	12.7	8.4	9.5	1.36	1.33
Lumber and wood products	7.7	8.3	1.9	1.7	3.95	4.92
Furniture and fixtures	25.0	5.6	4.6	3.5	5.47	1.60
Paper and allied products	14.1	11.0	3.6	4.2	3.98	2.59
Printing and publishing	1.5	2.1	4.2	2.4	.37	.90
Industrial chemicals and synthetics	13.6	14.8	8.7	9.0	1.57	1.65
Drugs	18.1	19.9	5.6	5.6	3.22	3.59
Soap, cleaners, and toilet goods	3.1	3.4	7.2	4.7	.44	.71
Other chemicals	11.5	17.0	4.7	2.6	2.46	6.48
Rubber products	11.9	27.9	10.5	13.1	1.13	2.13
Miscellaneous plastics products	15.0	15.5	3.0	3.9	5.00	3.99
Glass products	12.4	13.6	2.8	1.9	4.52	7.19
Stone, clay, and concrete products	6.3	7.7	3.5	3.4	1.83	2.27
Primary ferrous metals	11.1	14.8	6.4	7.2	1.72	2.05
Primary nonferrous metals	23.8	21.9	12.6	8.8	1.89	2.50
Fabricated metal products	9.4	12.5	2.5	3.7	3.72	3.40
Construction and mining machinery [2]	19.7	37.1	17.5	16.6	1.13	2.23
Metalworking machinery [2]	30.2	25.5	11.7	6.6	2.57	3.88
Special industrial machinery [2]	18.0	24.1	6.5	5.6	2.75	4.34
General industrial machinery [2]	40.7	20.7	4.7	18.3	8.70	1.13
Computer and office equipment [2]	49.4	39.6	24.1	30.6	2.05	1.29
Other industrial machinery and equipment [2]	11.0	23.2	10.6	8.7	1.04	2.66
Audio, video, and communications equipment [2]	47.4	41.1	10.0	12.5	4.74	3.30
Electronic components and accessories [2]	33.8	29.1	21.5	13.8	1.57	2.11
Household appliances and other electrical machinery [2]	18.0	25.4	3.3	5.7	5.39	4.43
Motor vehicles and equipment [2]	49.1	31.8	25.5	24.1	1.93	1.32
Other transportation equipment [2]	23.7	22.8	4.4	7.1	5.38	3.23
Instruments and related products [2]	15.9	14.9	9.2	11.4	1.73	1.31
Other manufacturing	13.4	12.9	4.6	8.7	2.90	1.49
Addendum:						
Manufacturing, standardized for industry mix [3]	24.9	20.6	10.8	11.3	2.29	1.82

1. See table 2, footnote 1.
2. "Machinery-type" industries
3. The measures shown in columns 1–4 of this line were derived as weighted averages of the measures for individual industries, using the industry shares in U.S.-parent-company intermediate inputs as the weights. See table 2, footnote 3.

NOTE.—See the section in the appendix on data used to construct measures.

manufacturing (table 4).[19] As with the domestic-content and value-added shares, the difference between the import shares at the aggregate level is more than accounted for by differences within industries: The import share for affiliates would have been 21 percent if the industry composition of output for affiliates had been the same as that for domestically owned companies.

In both 1989 and 1994, the import shares of intermediate inputs were higher for affiliates than for domestically owned companies in all but two industries (printing and publishing and soap, cleaners, and toilet goods). In about two-thirds of the industries, the import shares for affiliates were more than twice as high as those for domestically owned companies. However, in many of these industries, the high ratios reflect very low import shares for domestically owned companies; for example, in the three industries in which the ratios were higher than 6 in 1994—glass products, other chemicals, and beverages—the import shares for domestically owned companies were lower than 3 percent.[20]

For both U.S. affiliates and domestically owned companies, the import shares of intermediate inputs have tended to be highest in machinery-type industries: In 1994, these industries accounted for 9 of the 10 industries with the highest import shares for U.S. affiliates and for 7 of the 10 industries with the highest import shares for domestically owned companies.[21] For affiliates, the import shares were highest in audio, video, and communications equipment (41 percent) and in computer and office equipment (40 percent). For domestically owned companies, the import shares were highest in computer and office equipment (31 percent) and in motor vehicles and equipment (24 percent).

In five machinery-type industries—household appliances and other electrical machinery; special industrial machinery; metalworking machinery; audio, video, and communications equipment; and "other" transportation equipment—the import shares for affiliates in 1994 were more than three times as high as the shares for the domestically owned companies. The relatively high import shares for these affiliates appear to reflect a high reliance on their parent companies for specialized inputs; in each industry, more than two-thirds of the affiliates' imports were from their foreign parents and other members of their foreign parent groups (table 5).[22] In some cases, this reliance may reflect direct invest-

19. As noted before, these estimates understate the import content of intermediate inputs to the extent that imports are embodied in the inputs purchased from domestic suppliers. A rough estimate indicates that the share of imports in inputs purchased from domestic suppliers may be as high as 7 percent for all manufacturing affiliates and as high as 4 percent for all domestically owned companies in manufacturing. This share, which probably represents an upper bound, is based on an estimate of the imports used by all manufacturing establishments computed from data in BEA's 1992 benchmark input-output accounts. Adding the estimated value of imports in domestically supplied intermediate inputs to the data on direct imports, the respective import shares of intermediate inputs for U.S. manufacturing affiliates and domestically owned U.S. parent companies in manufacturing in 1994 are estimated to be 24 percent and 15 percent; their domestic content shares are estimated to be 83 percent and 90 percent.

20. The relatively high import share for affiliates in the beverage industry appears to reflect their secondary operations in wholesale trade: As shown in the appendix, most of the imports by these affiliates are goods for resale without further manufacture by the affiliates.

21. Across the 32 industries, the coefficient of correlation between the import share of intermediate inputs for U.S. affiliates and that for the domestically owned companies is 0.65 in 1989 and 0.74 in 1994.

22. The foreign parent group consists of (1) the foreign parent, (2) any foreign person, proceeding up the foreign parent's ownership chain, that owns more than 50 percent of the person below it, up to and including the ultimate beneficial owner, and (3) any foreign person, proceeding down the ownership chain(s) of each of these members, that is owned more than 50 percent by the person above it.

Table 5.—Intrafirm Imports of U.S. Affiliates as a Percentage of Affiliates' Total Imports and Intermediate Inputs, 1989 and 1994

	Intrafirm imports as a percentage of total imports		Intrafirm imports as a percentage of intermediate inputs	
	1989	1994	1989	1994
Manufacturing [1]	**69.0**	**69.7**	**11.6**	**12.9**
Beverages	54.4	67.5	9.3	10.5
Other food and kindred products	39.9	56.4	2.3	4.3
Textile mill products	55.0	54.8	11.4	4.8
Apparel and other textile products	72.0	52.9	8.2	6.7
Lumber and wood products	27.0	55.2	2.1	4.6
Furniture and fixtures	79.3	50.5	19.9	2.8
Paper and allied products	67.8	65.0	9.6	7.1
Printing and publishing	38.1	48.4	.6	1.0
Industrial chemicals and synthetics	63.1	48.0	8.6	7.1
Drugs	94.5	90.2	17.1	18.0
Soap, cleaners, and toilet goods	44.3	75.8	1.4	2.5
Other chemicals	75.8	93.2	8.7	15.8
Rubber products	57.3	64.6	6.8	18.0
Miscellaneous plastics products	91.9	41.0	13.8	6.3
Glass products	57.7	92.9	7.2	12.7
Stone, clay, and concrete products	37.4	48.4	2.4	3.7
Primary ferrous metals	52.8	51.2	5.8	7.6
Primary nonferrous metals	71.7	76.1	17.0	16.6
Fabricated metal products	59.1	70.1	5.6	8.8
Construction and mining machinery [2]	60.5	73.6	11.9	27.3
Metalworking machinery [2]	89.8	70.5	27.1	18.0
Special industrial machinery [2]	69.3	76.3	12.4	18.4
General industrial machinery [2]	90.6	82.5	36.9	17.1
Computer and office equipment [2]	93.9	42.9	46.3	17.0
Other industrial machinery and equipment [2]	65.0	80.6	7.2	18.7
Audio, video, and communications equipment [2]	52.6	70.7	24.9	29.1
Electronic components and accessories [2]	62.9	56.0	21.3	16.3
Household appliances and other electrical machinery [2]	77.8	67.9	14.0	17.3
Motor vehicles and equipment [2]	95.2	92.3	46.7	29.4
Other transportation equipment [2]	88.5	87.7	21.0	20.0
Instruments and related products [2]	72.9	71.3	11.6	10.6
Other manufacturing	32.1	48.0	4.3	6.2

1. See table 2, footnote 1.
2. "Machinery-type" industries

NOTES.—Intrafirm imports are imports by affiliates from their foreign parent groups (see footnote 22 in the text).
See the section in the appendix on data used to construct measures.

ment in final-assembly operations by the parent companies that may have been in response to potential or actual trade barriers.

Intrafirm imports accounted for about two-thirds of the imports by all manufacturing affiliates in both 1989 and 1994. By industry, the intrafirm shares of affiliate imports have been particularly high in the drug industry and in most of the machinery-type industries. In a number of machinery-type industries, intrafirm imports have accounted for a substantial share—more than 20 percent—of the affiliates' total purchases of intermediate inputs, suggesting that affiliates in these industries may rely extensively on their parent companies (or other foreign firms with which the parents have ownership ties) for customized parts and other inputs subject to product differentiation across firms. In many cases, foreign multinationals with affiliates in these industries may be able to realize economies of scale in the design and production of firm-specific parts and components by concentrating their production in one location rather than trying to produce the parts in each country in which they have affiliates.

Market for output

Production by U.S. manufacturing affiliates is targeted for the U.S. market even more than the production by domestically owned manufacturers. For all manufacturing affiliates combined, exports accounted for only about 10 percent of total sales in 1994, compared with 14 percent of total sales for the domestically owned companies (table 6).[23]

The export shares for affiliates were less than those for domestically owned companies in 20 industries in 1989 and in 22 industries in 1994. The

23. The low export share for affiliates in comparison with that for domestically owned companies in manufacturing does not reflect differences in industry mix: As shown in the addendum to table 6, the aggregate share for affiliates would be 9.4 percent instead of 9.5 percent if the industry composition of output for affiliates was the same as that for domestically owned companies.

Table 6.—Export Share of Sales for U.S. Affiliates and Domestically Owned U.S. Parent Companies in Manufacturing, by Industry, 1989 and 1994

	Exports as a percentage of sales				Ratio of measure for U.S. affiliates to measure for U.S. parent companies	
	U.S. affiliates		U.S. parent companies			
	1989	1994	1989	1994	1989	1994
Manufacturing [1]	**9.0**	**9.5**	**11.7**	**13.9**	**0.77**	**0.68**
Beverages	2.0	4.1	6.1	5.9	.33	.69
Other food and kindred products	3.6	5.2	5.4	8.4	.67	.62
Textile mill products	6.2	7.3	4.4	5.7	1.41	1.28
Apparel and other textile products	4.6	3.6	2.1	2.6	2.22	1.36
Lumber and wood products	B	A	12.9	8.4	(D)	(D)
Furniture and fixtures	A	A	3.2	5.8	(D)	(D)
Paper and allied products	8.8	11.0	7.3	10.0	1.20	1.11
Printing and publishing	1.6	1.6	.7	1.4	2.31	1.14
Industrial chemicals and synthetics	13.4	12.8	12.5	17.9	1.07	.71
Drugs	5.7	7.4	10.3	9.6	.55	.77
Soap, cleaners, and toilet goods	2.3	4.1	3.8	4.4	.60	.93
Other chemicals	10.0	10.8	11.9	12.6	.84	.86
Rubber products	5.6	9.0	7.8	9.2	.72	.98
Miscellaneous plastics products	4.8	5.8	6.5	8.1	.74	.72
Glass products	7.9	5.7	7.2	9.7	1.09	.59
Stone, clay, and concrete products	2.0	2.8	3.9	6.1	.52	.46
Primary ferrous metals	2.8	2.5	3.7	6.9	.75	.37
Primary nonferrous metals	9.6	10.6	10.0	10.9	.96	.97
Fabricated metal products	7.3	7.0	5.8	8.0	1.27	.88
Construction and mining machinery [2]	11.0	18.1	19.1	28.4	.58	.64
Metalworking machinery [2]	8.9	12.0	13.6	8.1	.65	1.47
Special industrial machinery [2]	12.4	17.2	16.6	25.3	.75	.68
General industrial machinery [2]	8.4	9.3	16.3	19.2	.52	.49
Computer and office equipment [2]	21.1	12.1	22.8	25.8	.93	.47
Other industrial machinery and equipment [2]	5.2	11.9	12.7	15.5	.41	.77
Audio, video, and communications equipment [2]	27.7	14.5	11.4	14.0	2.42	1.03
Electronic components and accessories [2]	16.1	15.7	22.5	22.2	.72	.71
Household appliances and other electrical machinery [2]	9.9	16.2	8.5	12.3	1.15	1.31
Motor vehicles and equipment [2]	3.8	6.1	13.8	15.0	.28	.41
Other transportation equipment [2]	19.3	14.3	20.3	25.5	.95	.56
Instruments and related products [2]	13.7	17.5	15.5	16.5	.88	1.06
Other manufacturing	8.8	19.8	6.0	11.0	1.47	1.80
Addendum:						
Manufacturing, standardized for industry mix [3]	9.9	9.4	11.7	13.9	.85	.68

(D) Suppressed to avoid disclosure of data of individual companies.
1. See table 2, footnote 1.
2. "Machinery-type" industries
3. The measures shown in columns 1–4 of this line were derived as weighted averages of the measures for individual industries, using the industry shares in U.S.-parent-company sales as the weights. See table 2, footnote 3.

NOTES.—See the section in the appendix on data used to construct measures.
Size ranges are given in the percentage cells that are suppressed; these ranges are A—0.01 to 19.9; B—20.0 to 39.9; C—40.0 to 59.9; E—60.0 to 79.9; F—80.0 to 100.

lower export propensity of U.S. affiliates suggests that the affiliates operate in the United States to service the U.S. market rather than to exploit any locational advantages associated with production in the United States (such as proximity to U.S. research centers) to service worldwide markets. Foreign multinationals appear to service non-U.S. markets primarily through sales by the parent companies or affiliates located in other countries.

For both U.S. affiliates and the domestically owned companies, the export shares of sales have tended to be highest in machinery-type industries.[24] In most of these industries, the export shares for affiliates were substantially lower than those for the domestically owned companies in both 1989 and 1994; in motor vehicles and equipment, the export share for affiliates was less than one-half as much as the share for the domestically owned companies. However, in audio, video, and communications equipment and in household appliances and other electrical machinery, the export shares for affiliates were higher than those for the domestically owned companies.

In contrast to affiliate imports, which have been dominated by trade with the affiliates' foreign parent groups, affiliate exports have been mainly accounted for by trade with unrelated parties (table 7). In both 1989 and 1994, intrafirm exports accounted for only one-fourth of the total exports of all manufacturing affiliates and for less than one-half of affiliate exports in all but a few industries. In 1994, intrafirm exports accounted for less than 3 percent of total sales and for less than 6 percent of sales for any of the 32 industries.

24. The export shares of sales for U.S. affiliates and domestically owned companies tend to be higher or lower in the same industries: Across the 32 industries, the coefficient of correlation between the export share for U.S. affiliates and that for domestically owned companies is 0.69 in 1989 and 0.75 in 1994.

Table 7.—Intrafirm Exports of U.S. Affiliates as a Percentage of Affiliates' Total Exports and Sales, 1989 and 1994

	Intrafirm exports as a percentage of total exports		Intrafirm exports as a percentage of sales	
	1989	1994	1989	1994
Manufacturing [1]	**25.3**	**28.4**	**3.2**	**2.7**
Beverages	33.3	41.6	1.0	1.7
Other food and kindred products	33.1	35.9	1.5	1.9
Textile mill products	23.2	16.4	2.1	1.2
Apparel and other textile products	90.5	53.8	5.5	1.9
Lumber and wood products	26.7	23.6	(D)	(D)
Furniture and fixtures	94.1	1.2	(D)	(*)
Paper and allied products	45.0	37.2	6.2	4.1
Printing and publishing	20.3	31.2	.5	.5
Industrial chemicals and synthetics	21.8	17.8	4.5	2.3
Drugs	50.4	54.6	4.6	4.0
Soap, cleaners, and toilet goods	15.3	50.7	.4	2.1
Other chemicals	11.9	48.5	1.6	5.3
Rubber products	26.0	21.4	2.2	1.9
Miscellaneous plastics products	42.6	17.2	2.7	1.0
Glass products	14.3	9.0	1.9	.5
Stone, clay, and concrete products	10.0	13.2	.3	.4
Primary ferrous metals	27.3	16.1	1.0	.4
Primary nonferrous metals	42.1	37.4	5.3	4.0
Fabricated metal products	11.5	14.3	1.2	1.0
Construction and mining machinery [2]	11.2	24.7	1.7	4.5
Metalworking machinery [2]	49.2	33.0	6.2	4.0
Special industrial machinery [2]	29.5	14.4	5.5	2.5
General industrial machinery [2]	55.7	26.0	6.7	2.4
Computer and office equipment [2]	23.9	33.5	8.6	4.0
Other industrial machinery and equipment [2]	26.9	24.1	1.9	2.9
Audio, video, and communications equipment [2]	13.6	29.4	5.2	4.3
Electronic components and accessories [2]	38.7	24.4	9.2	3.8
Household appliances and other electrical machinery [2]	39.0	30.0	5.3	4.9
Motor vehicles and equipment [2]	21.0	32.1	.9	2.0
Other transportation equipment [2]	14.1	24.4	3.6	3.5
Instruments and related products [2]	29.0	25.2	6.3	4.4
Other manufacturing	29.6	27.3	4.3	5.4

* Less than 0.05 percent.
(D) Suppressed to avoid disclosure of data of individual companies.
1. See table 2, footnote 1.
2. "Machinery-type" industries.

NOTES.—Intrafirm exports are exports by affiliates to their foreign parent groups. See the section in the appendix on data used to construct measures.

Trends in Content and Market Orientation

This section examines the changes in the domestic content of production and in the market orientation of sales for a panel of U.S. manufacturing affiliates in 1988–94.

In the case of investment in new manufacturing facilities—often referred to as "greenfield" investment—foreign direct investment typically begins with affiliates undertaking final assembly operations that rely heavily on components and parts from the foreign parent or other suppliers abroad. Over time, these affiliates are expected to increase the domestic content of their output through vertical expansion of their production operations, which results in a higher share of value added in gross output, and through increased procurement from domestic suppliers, which results in a lower share of imports in intermediate inputs. In addition, affiliates that were initially set up to service the domestic market begin with a very low export share of sales, but this share is expected to increase with the expanded scale of production operations over time.

For U.S. affiliates, however, the expected pattern of affiliate behavior over time is more ambiguous, because much of the foreign direct investment in U.S. manufacturing industries has been to acquire existing U.S. companies. In some cases, an acquisition may simply represent a change in management and results in no change in domestic content or the international orientation of sales. In other cases, the domestic content of an acquired firm might decrease, as the firm's

operations become more integrated with those of its foreign parent.

To investigate changes in domestic content and market orientation that are isolated from the effects of changes in the population of affiliates, a panel was constructed of affiliates that were classified in the 12 machinery-type industries in 1994 and that existed in each of the years 1987–94 (see the section "Data used to construct measures" in the appendix).[25] Affiliates in the machinery-type industries are of special interest because the shares of both imports in intermediate inputs and exports in sales tend to be the highest in these industries. The affiliates in the panel account for a dominant share—69 percent—of the gross output of all affiliates in machinery-type industries in 1994.

Aggregating the data for affiliates in the panel, the four measures have been computed at the industry level for each of the years 1988–94. The results show little sustained change in affiliate behavior; in most industries, the four measures are either steady or fluctuate without showing a trend (table 8). However, in the few industries in which a sustained trend is shown, the movement is in the direction described in the discussion on greenfield investment.

In two industries—electronic components and motor vehicles—the domestic content of affiliate output trends upward, reflecting, in each industry, a sustained decrease in the import share of the affiliates' intermediate inputs—from more than 50 percent in 1988 to less than 35 percent in 1994 (chart 2). The upward trend in domestic content for affiliates in the motor vehicles industry is consistent with expectations, given that this industry has been characterized by a high degree of greenfield investment in relation to foreign acquisition activity.

In a number of industries, the import shares of intermediate inputs drop sharply between 1988 and 1989, perhaps because of lagged substitution effects in response to the substantial depreciation of the U.S. dollar in international currency markets in 1985–88.[26] After this drop, the import shares fluctuate in most industries but show a high degree of stability in two industries: Metalworking machinery and household appliances and other electrical machinery.

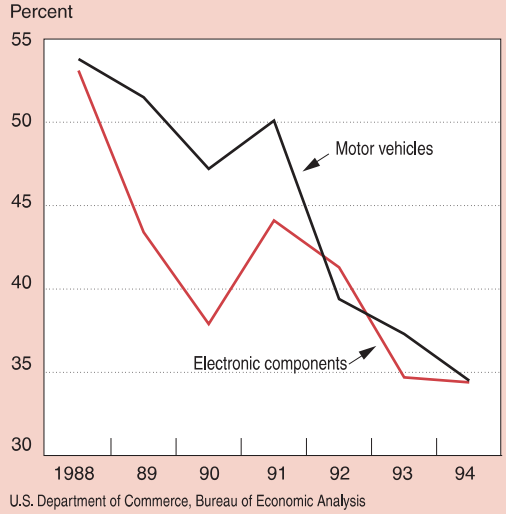
The export shares of affiliate sales trend upward in three industries: Construction machinery, metalworking machinery, and instruments and related products (chart 3). In each of these industries, the export share has more than doubled since 1988, suggesting an expanded orientation toward world markets that reflected locational advantages associated with production in the

25. As noted earlier, differences between years in the measures for the universe of affiliates may reflect not only changes in the behavior of individual affiliates but also changes in the population of affiliates. While working with a panel of affiliates is an important step towards isolating changes in the behavior of economic entities from changes in the population of entities, there may be some problems in drawing inferences based on changes in operating behavior even for the same set of affiliates, because some of these affiliates may have acquired or sold off operating units during this period.

26. In 1985–88, the multilateral trade-weighted value of the U.S. dollar in real terms depreciated 33 percent. See the *Economic Report of the President* (Washington, DC: U.S. Government Printing Office, February 1997): Table B–108.

CHART 2

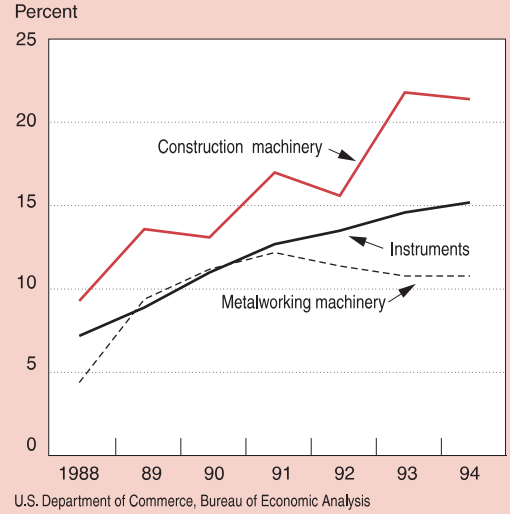
Import Share of Intermediate Inputs: Selected Industries, 1988-94



U.S. Department of Commerce, Bureau of Economic Analysis

CHART 3

Export Share of Sales: Selected Industries, 1988-94



U.S. Department of Commerce, Bureau of Economic Analysis

United States. Particularly in an industry such as instruments, in which the United States is very competitive in world markets, affiliates initially set up to service the U.S. market may turn increasingly to exports as they expand operations.[27]

27. Census Bureau data on trade in goods by product indicate that U.S. exports of professional, scientific, and controlling instruments were about double U.S. imports in each of the years 1988–94.

Comparisons by Country of Ownership

This section examines the differences in the four measures of domestic content and market orientation among affiliates with ultimate beneficial owners in six major investing countries: Canada, France, Germany, Switzerland, the United Kingdom, and Japan. In terms of affiliate value added and gross output, these six countries are the largest investing countries in U.S. manufactur-

Table 8.—Measures for a Panel of U.S. Affiliates in Machinery-Type Industries, 1988–94

	1988	1989	1990	1991	1992	1993	1994
Domestic content as a percentage of gross output:							
Construction and mining machinery	72.8	77.2	77.7	83.2	78.0	76.1	70.3
Metalworking machinery	76.9	81.6	81.1	81.1	80.7	80.5	80.3
Special industrial machinery	85.7	85.6	87.0	84.5	86.4	85.8	84.8
General industrial machinery	83.0	85.1	85.5	86.4	87.7	88.6	86.3
Computer and office equipment	E	C	C	C	C	60.2	75.0
Other industrial machinery and equipment	85.9	85.0	83.2	68.5	83.0	75.7	75.5
Audio, video, and communications, equipment	62.2	65.2	64.8	71.8	67.6	69.0	68.1
Electronic components and accessories	62.7	69.0	71.7	68.9	71.9	74.8	74.5
Household appliances and other electrical machinery	78.7	82.1	80.6	81.5	81.4	79.9	80.3
Motor vehicles and equipment	54.7	55.3	59.7	58.5	67.2	68.9	71.3
Other transportation equipment	70.3	78.6	80.9	82.3	83.0	78.9	76.4
Instruments and related products	87.3	89.1	89.7	91.7	91.7	91.2	90.7
Value added as a percentage of gross output:							
Construction and mining machinery	24.2	23.8	23.9	27.5	26.1	21.6	21.1
Metalworking machinery	30.9	31.5	35.9	34.1	34.7	34.7	33.9
Special industrial machinery	25.9	27.0	25.3	27.8	29.4	30.2	29.2
General industrial machinery	32.8	38.2	38.4	39.7	36.3	37.7	38.7
Computer and office equipment	C	C	C	C	B	21.2	43.6
Other industrial machinery and equipment	21.4	25.6	30.6	24.1	23.5	24.4	25.0
Audio, video, and communications, equipment	23.8	27.3	26.7	24.8	28.1	26.5	24.2
Electronic components and accessories	29.5	28.6	25.3	29.4	31.9	27.2	25.8
Household appliances and other electrical machinery	29.3	28.7	28.5	30.2	29.3	27.5	27.2
Motor vehicles and equipment	15.8	13.1	14.5	17.2	16.9	16.5	17.0
Other transportation equipment	25.3	30.2	32.1	27.3	31.5	28.9	25.5
Instruments and related products	35.0	36.3	36.8	40.1	41.6	40.9	39.6
Imports as a percentage of intermediate inputs:							
Construction and mining machinery	35.9	29.9	29.3	23.2	29.8	30.5	37.6
Metalworking machinery	33.4	26.9	29.5	28.6	29.6	29.9	29.8
Special industrial machinery	19.3	19.7	17.4	21.5	19.3	20.4	21.4
General industrial machinery	25.3	24.0	23.5	22.6	19.3	18.3	22.4
Computer and office equipment	E	F	F	F	E	50.5	44.3
Other industrial machinery and equipment	17.9	20.2	24.2	41.5	22.2	32.1	32.6
Audio, video, and communications, equipment	49.6	47.9	48.0	37.5	45.1	42.2	42.1
Electronic components and accessories	53.1	43.4	37.9	44.1	41.3	34.7	34.4
Household appliances and other electrical machinery	30.1	25.0	27.2	26.6	26.3	27.7	27.1
Motor vehicles and equipment	53.8	51.5	47.2	50.1	39.4	37.3	34.5
Other transportation equipment	39.8	30.7	28.1	24.3	24.9	29.7	31.7
Instruments and related products	19.6	17.2	16.2	13.8	14.2	14.9	15.3
Exports as a percentage of sales:							
Construction and mining machinery	9.3	13.6	13.1	17.0	15.6	21.8	21.4
Metalworking machinery	4.4	9.4	11.2	12.2	11.4	10.8	10.8
Special industrial machinery	16.3	12.6	16.1	19.5	19.2	18.7	14.5
General industrial machinery	3.6	5.8	7.0	6.1	5.3	4.8	8.7
Computer and office equipment	A	B	22.0	21.8	18.5	18.5	21.2
Other industrial machinery and equipment	6.7	6.9	10.3	10.9	10.4	10.1	10.1
Audio, video, and communications, equipment	28.3	27.3	24.6	8.7	9.4	9.1	15.0
Electronic components and accessories	8.3	12.5	16.7	17.8	17.6	14.0	14.1
Household appliances and other electrical machinery	11.6	11.5	15.1	17.4	13.3	20.0	16.1
Motor vehicles and equipment	4.3	3.2	3.6	5.4	8.4	6.0	5.3
Other transportation equipment	13.7	23.0	16.0	13.4	18.4	17.3	15.4
Instruments and related products	7.2	8.9	11.0	12.7	13.5	14.6	15.2
Addendum:							
Multilateral trade-weighted value of the U.S. dollar, adjusted by changes in consumer prices (March 1973 = 100) [1]	88.2	94.4	86.0	86.5	83.4	90.0	88.7

1. *Economic Report of the President* (Washington, DC: U.S. Government Printing Office, February 1997): Table B-108.

NOTES.—Industry-level measures were constructed from data for a fixed panel of affiliates classified in the industry in 1994; the panel consists of affiliates that existed in 1987 and were fully operational in each of the years 1988–94.

Size ranges are given in the percentage cells that are suppressed; these ranges are A—0.01 to 19.9; B—20.0 to 39.9; C—40.0 to 59.9; E—60.0 to 79.9; F—80.0 to 100.

ing; in 1994, the manufacturing affiliates of these countries accounted for about 80 percent of both the value added and the gross output of all U.S. manufacturing affiliates.

Comparisons among the investing countries' affiliates are made in terms of mean values of affiliate-level measures "normalized" by industry; to normalize, each measure for a given affiliate was divided by the corresponding industry-level measure for domestically owned U.S. parent companies in the affiliate's industry.

The mean values for samples of affiliates of each country for 1989 and 1994 are shown in tables 9.1 and 9.2, respectively. The samples of affiliates consist of the affiliates in all the manufacturing industries and the affiliates in two industry subgroups: Machinery-type industries and all the other manufacturing industries.[28]

A mean value of 1 indicates that the measure for affiliates, on average, equals that for the domestically owned companies in comparable industries.[29] For affiliates of each investing country, a *t* test was performed to determine if the mean is significantly different from 1, which would indicate that the measure for affiliates differs systematically from the measure for the domestically owned companies.

Content of output

In 1994, German-, Swiss-, and Japanese-owned affiliates show the lowest average domestic content in relation to domestically owned companies in comparable industries. For German- and Swiss-owned affiliates, the mean value for

28. Each sample consists of all the manufacturing affiliates that had at least $5 million in sales. Smaller affiliates were excluded to prevent the averages from being skewed by the presence of large outliers that may result when the denominator (total output, purchased inputs, or sales) in the measure for an affiliate is very small. The extreme measures for some small affiliates may reflect the start-up or shutdown of affiliate operations in the year for which the measures are constructed.

29. In interpreting the figures in tables 9.1 and 9.2, it should be noted that the all-country averages for the normalized measures are conceptually different from the aggregate ratios shown in tables 2–4 and 6, because in those tables, the numerator of each ratio is the industry-level measure for the affiliates and is constructed by aggregating the data for all the affiliates in the industry. In contrast, the figures in tables 9.1 and 9.2 are unweighted averages (across the sample of affiliates) of the affiliate-level measures relative to the industry-level measures for U.S. parent companies in corresponding industries.

Table 9.1.—Means of Normalized Measures for U.S. Affiliates, by Country of UBO, 1989

[Standard deviations in parentheses]

	All countries	Canada	France	Germany	Switzerland	United Kingdom	Japan	Other countries
Domestic content as a percentage of gross output:								
All industries	0.88 (.27)	0.92 (.19)	0.89 (.21)	0.84 (.21)	0.87 (.19)	0.96 (.15)	0.81 (.45)	0.88 (.21)
Machinery-type industries	.84 (.28)	.97 [a] (.19)	.83 (.27)	.80 (.23)	.82 (.25)	.96 (.18)	.75 (.40)	.83 (.26)
Other industries	.90 (.25)	.91 (.18)	.91 (.17)	.88 (.18)	.91 (.15)	.97 (.12)	.84 (.49)	.90 (.18)
Value added as a percentage of gross output:								
All industries	.72 (.52)	.76 (.38)	.70 (.38)	.72 (.42)	.76 (.36)	.83 (.37)	.66 (.62)	.68 (.68)
Machinery-type industries	.66 (.62)	.78 (.36)	.57 (.35)	.69 (.38)	.81 (.40)	.82 (.37)	.51 (.54)	.57 (1.05)
Other industries	.76 (.45)	.76 (.39)	.75 (.38)	.75 (.44)	.74 (.33)	.84 (.37)	.76 (.66)	.72 (.40)
Imports as a percentage of intermediate inputs:								
All industries	4.43 (9.80)	4.70 (9.47)	5.25 (8.93)	5.04 (7.00)	4.34 (5.42)	2.18 (3.82)	4.66 (15.87)	4.88 (9.25)
Machinery-type industries	3.51 (4.79)	2.00 [a] (3.71)	4.71 (6.29)	4.62 (4.90)	3.82 (3.68)	1.66 (2.31)	3.73 (5.36)	3.99 (5.39)
Other industries	4.98 (11.81)	5.67 (10.66)	5.47 (9.85)	5.39 (8.36)	4.63 (6.20)	2.62 (4.71)	5.33 (20.34)	5.29 (10.55)
Exports as a percentage of total sales:								
All industries	1.18 (3.10)	.77 [a] (1.88)	1.36 [a] (2.34)	.96 [a] (1.57)	.81 [a] (1.20)	.93 [a] (2.22)	1.73 (4.30)	1.30 [a] (4.09)
Machinery-type industries	.73 (.96)	.53 (.77)	1.16 [a] (1.70)	.66 (.82)	.76 [a] (.81)	.78 (1.01)	.64 (.96)	.78 (.85)
Other industries	1.45 (3.83)	.86 [a] (2.14)	1.44 [a] (2.57)	1.21 [a] (1.96)	.84 [a] (1.37)	1.07 [a] (2.88)	2.53 (5.46)	1.55 [a] (4.89)
Addenda: Number of affiliates:								
All industries	1,441	163	99	253	89	220	264	353
Machinery-type industries	543	43	29	115	32	101	111	112
Other industries	898	120	70	138	57	119	153	241

[a] Not statistically different from 1 at the 95-percent confidence level.

NOTES.—To normalize, the measure of content calculated for each affiliate was divided by the corresponding aggregate measure for domestically owned U.S. parent companies classified in the affiliate's industry.

The sample consists of all manufacturing affiliates that existed in both 1988 and 1989 and had at least $5 million in sales in 1989.

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all manufacturing industries is 0.88, indicating that their domestic content averages 12 percent less than that of domestically owned companies in comparable industries (table 9.2). For Japanese-owned affiliates, the domestic content averages 11 percent less than that for domestically owned companies. In machinery-type industries, the domestic content for German-, Swiss-, and Japanese-owned affiliates averages 15–17 percent less than that for domestically owned companies.

The relatively low domestic content for German- and Swiss-owned affiliates reflects a relatively high reliance on foreign sources for their intermediate inputs; the import shares of their purchased inputs average almost four times that of the domestically owned companies.[30] For Japanese-owned affiliates, the relatively low domestic content reflects a relatively low share of value added in gross output (averaging two-thirds of the share for domestically owned companies) as well as a high import share of purchased intermediate inputs. The relatively low value-added share for Japanese-owned affiliates (particularly in machinery-type industries) is consistent with established patterns of organizing production in Japan, where manufacturing companies tend to rely heavily on subcontracting.[31]

The average domestic content of Japanese-owned affiliates is substantially higher in 1994 than in 1989. In 1989, Japanese-owned affiliates show the lowest domestic content among the six investing countries, averaging 81 percent of that of domestically owned companies in all industries and 75 percent of that of domestically owned companies in machinery-type industries (table 9.1). In machinery-type industries, the low domestic content partly reflects a lower share of value added in the total output of Japanese-owned affiliates (averaging only one-half of the share for domestically owned companies). In all industries, the import share of intermedi-

30. As shown in the appendix, the high import share for Swiss-owned affiliates partly reflects substantial imports of goods for resale without further manufacture by the affiliates.

31. See, for example, Masahiko Aoki, "Toward an Economic Model of the Japanese Firm," *Journal of Economic Literature* 28 (March 1990): 1–27.

Table 9.2.—Means of Normalized Measures for U.S. Affiliates, by Country of UBO, 1994

[Standard deviations in parentheses]

	All countries	Canada	France	Germany	Switzerland	United Kingdom	Japan	Other countries
Domestic content as a percentage of gross output:								
All industries	0.91 (.20)	0.93 (.19)	0.91 (.19)	0.88 (.20)	0.88 (.18)	0.96 (.16)	0.89 (.23)	0.90 (.20)
Machinery-type industries	.88 (.24)	.99 [a] (.19)	.90 (.23)	.85 (.20)	.83 (.21)	.97 [a] (.20)	.84 (.26)	.90 (.24)
Other industries	.92 (.18)	.92 (.19)	.92 (.16)	.91 (.18)	.91 (.16)	.96 (.13)	.93 (.19)	.91 (.18)
Value added as a percentage of gross output:								
All industries	.74 (.53)	.75 (.49)	.77 (.62)	.78 (.39)	.83 (.44)	.83 (.44)	.67 (.62)	.71 (.52)
Machinery-type industries	.71 (.57)	.79 (.61)	.65 (.74)	.75 (.39)	.78 (.42)	.82 (.42)	.61 (.74)	.71 (.41)
Other industries	.76 (.50)	.74 (.45)	.83 (.54)	.82 (.39)	.85 (.45)	.84 (.46)	.72 (.52)	.71 (.56)
Imports as a percentage of intermediate inputs:								
All industries	3.20 (5.83)	3.46 (7.36)	3.01 (5.68)	3.86 (6.02)	3.88 (5.29)	2.01 (3.93)	2.98 (5.75)	3.49 (5.98)
Machinery-type industries	2.40 (3.05)	1.44 [a] (2.97)	1.96 (2.90)	3.15 (3.29)	3.40 (3.52)	1.41 [a] (2.34)	2.51 (2.92)	2.36 (3.13)
Other industries	3.68 (6.93)	4.06 (8.13)	3.52 (6.59)	4.51 (7.68)	4.15 (6.05)	2.39 (4.63)	3.31 (7.06)	4.07 (6.94)
Exports as a percentage of total sales:								
All industries	1.04 [a] (2.01)	.99 [a] (1.84)	1.06 [a] (1.39)	.94 [a] (1.46)	.91 [a] (1.19)	.82 (1.43)	1.18 (2.08)	1.09 [a] (2.73)
Machinery-type industries	0.87 (1.03)	0.85 [a] (1.20)	1.02 [a] (1.10)	0.80 (.89)	0.76 (.73)	0.68 (.68)	0.83 (1.04)	1.08 [a] (1.24)
Other industries	1.15 (2.41)	1.03 [a] (2.00)	1.08 [a] (1.51)	1.07 [a] (1.83)	0.99 [a] (1.38)	0.91 [a] (1.74)	1.43 (2.53)	1.10 [a] (3.24)
Addenda: Number of affiliates:								
All industries	2,236	219	157	323	116	272	627	522
Machinery-type industries	836	50	52	155	41	105	256	177
Other industries	1,400	169	105	168	75	167	371	345

[a] Not statistically different from 1 at the 95-percent confidence level.

NOTES.—To normalize, the measure of content calculated for each affiliate was divided by the corresponding aggregate measure for domestically owned U.S. parent companies classified in the affiliate's industry.

The sample consists of all manufacturing affiliates that existed in both 1993 and 1994 and had at least $5 million in sales in 1994.

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ate inputs is much higher in 1989 (averaging more than four times that of domestically owned companies) than in 1994.

In both 1989 and 1994, British-owned affiliates had the highest share of domestic content (in 1994, it averaged 96 percent of that for domestically owned companies), the highest value-added share (83 percent of the share for the domestically owned companies), and the lowest import share of intermediate inputs (but twice that of the domestically owned companies). In 1994, both the domestic content and the import share of purchased inputs for British-owned affiliates in machinery-type industries are barely distinguishable from those for domestically owned companies. This similarity may reflect the fact that British direct investment in U.S. manufacturing industries tends to be older and has almost exclusively been to acquire existing U.S. companies.[32]

Canadian-owned affiliates in machinery-type industries also show a high share of domestic content and a low share of imports in intermediate inputs; in 1994, both measures were similar to those for domestically owned companies.[33] However, for Canadian-owned affiliates in other manufacturing industries, the domestic-content share is relatively low (averaging 92 percent of that for domestically owned companies in 1994) and the import share of intermediate inputs is very high (averaging more than four times that of domestically owned companies). The high import share may be related to the relatively low costs of shipping bulk materials (which serve as intermediate inputs in many of these industries) from Canadian parent companies to their U.S. affiliates due to Canada's proximity to the United States.

Market for output

For most of the major investing countries, the average export shares of sales for affiliates in all industries do not differ significantly from the export shares for the domestically owned companies. Japanese-owned affiliates stand out as having high average export shares of sales in relation to those of domestically owned companies (averaging 18 percent higher in 1994), particularly in industries other than machinery-type industries (43 percent higher), in which the export shares for both the domestically owned companies and affiliates are generally low. Among specific industries, the export shares for Japanese-owned affiliates average more than eight times the aggregate share for domestically owned companies in lumber and wood products and more than three times the aggregate share for the domestically owned companies in other food and kindred products. In other food and kindred products, exports on average account for more than one-fourth of the sales of Japanese-owned affiliates, reflecting very high export shares for affiliates specializing in seafood products, meat products, and preserved fruits and vegetables. The relatively high export activity in these industries suggests that some Japanese investments in the United States are aimed at obtaining access to primary resources in which the United States is relatively abundant (with some processing taking place in the United States in order to reduce transportation and other costs) rather than at increasing sales to the U.S. market.

In machinery-type industries, Japanese-owned affiliates, together with German-, Swiss- and British-owned affiliates, on average, have substantially lower export shares than domestically owned companies, indicating that their production in these industries is much more oriented toward the domestic market.

Geographic Pattern of International Purchases and Sales

This section examines differences in the geographic pattern of international purchases and of sales by manufacturing affiliates in 1992, on the basis of data collected in the 1992 benchmark survey of foreign direct investment in the United States.

Aggregate figures on the geographic origin of intermediate inputs purchased from abroad by U.S. manufacturing affiliates of the six major investing countries show considerable diversity in the reliance on the investing country for imported intermediate inputs. Imports from the ultimate beneficial owner (UBO) country account for almost 90 percent of the imported inputs of Japanese-owned affiliates and for about three-fourths of the imported inputs of German- and Swiss-owned affiliates (table 10). In contrast, imports from the investing country account for only one-third of the inputs imported by

32. Outlays to acquire existing U.S. businesses accounted for 96 percent of the total outlays by British direct investors to acquire or establish U.S. manufacturing enterprises in 1987–92, according to data from BEA's survey of new investment; in comparison, 86 percent of total outlays by Japanese direct investors and 92 percent of total outlays by direct investors from all countries were to acquire existing U.S. businesses.

33. The relatively high domestic content for these Canadian-owned affiliates may also reflect the fact that Canadian direct investment has mainly been to acquire existing U.S. companies: Outlays to acquire existing U.S. businesses accounted for 97 percent of the total outlays by Canadian direct investors in 1987–92.

Table 10.—Geographic Origin of Imports by Manufacturing Affiliates of Selected UBO Countries, 1992

[Percentage of imports from all countries]

Country of origin	Country of UBO					
	Canada	France	Germany	Switzerland	United Kingdom	Japan
All industries						
All countries	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Canada	66.6	12.9	6.4	3.4	7.0	2.1
Europe	11.9	50.9	85.7	87.6	68.6	1.6
France	A	34.3	.9	3.2	4.3	.2
Germany	1.3	2.4	78.6	3.8	2.8	.3
Switzerland	.2	.1	.3	76.3	A	(*)
United Kingdom	4.1	1.5	.9	1.2	39.4	.2
Other	A	12.6	5.0	3.1	A	.9
Latin America and Other Western Hemisphere	12.0	11.8	2.7	3.6	8.3	3.0
Mexico	A	8.7	1.5	A	1.0	2.5
Other	A	3.0	1.2	A	7.3	.5
Africa	A	1.9	(*)	A	2.1	(*)
Middle East	0	0	(*)	0	0	(*)
Asia and Pacific	7.7	22.2	3.4	4.4	13.0	90.8
Japan	A	4.9	2.3	2.5	2.5	86.6
Other	A	17.3	1.1	1.9	10.5	4.2
Unallocated	A	.3	1.7	A	1.0	2.4
Machinery-type industries						
All countries	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Canada	92.1	6.7	1.4	.3	9.2	.5
Europe	1.2	35.1	90.3	92.2	58.2	1.2
France	(*)	24.3	.6	(*)	1.1	A
Germany	A	1.6	85.9	9.1	5.0	.2
Switzerland	0	0	.1	78.1	A	(*)
United Kingdom	A	1.0	A	1.1	44.5	A
Other	.5	8.3	A	3.9	A	.8
Latin America and Other Western Hemisphere	0	A	1.1	A	1.1	3.0
Mexico	0	A	.5	(*)	1.0	3.0
Other	0	A	.6	A	.2	.1
Africa	0	0	(*)	0	0	0
Middle East	0	0	0	0	0	0
Asia and Pacific	A	44.9	3.8	7.0	30.5	92.6
Japan	A	9.6	3.1	1.9	8.0	88.7
Other	A	35.3	.8	5.2	22.5	3.9
Unallocated	A	A	3.4	A	1.0	2.7
Other industries						
All countries	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Canada	59.7	17.6	10.0	4.5	6.5	10.4
Europe	14.7	63.0	82.4	86.0	71.3	4.0
France	A	42.0	1.1	4.3	5.1	A
Germany	A	3.0	73.3	1.9	2.2	1.1
Switzerland	.3	.2	.5	75.7	A	0
United Kingdom	A	1.9	A	1.3	38.1	A
Other	A	15.8	A	2.9	A	.9
Latin America and Other Western Hemisphere	15.2	A	3.9	A	10.2	3.0
Mexico	A	A	2.2	A	1.0	.4
Other	A	A	1.7	A	9.2	2.7
Africa	A	3.4	A	A	2.6	A
Middle East	0	0	A	0	0	A
Asia and Pacific	A	4.9	3.1	3.4	8.4	81.7
Japan	A	1.4	1.8	2.7	1.0	75.7
Other	A	3.5	1.4	.7	7.4	6.0
Unallocated	A	A	.5	1.1	1.1	.6

* Less than 0.05 percent.

NOTE.—Size ranges are given in the percentage cells that are suppressed; these ranges are A—0.01 to 19.9; B—20.0 to 39.9; C—40.0 to 59.9; E—60.0 to 79.9; F—80.0 to 100.

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Table 11.—Geographic Destination of Exports by Manufacturing Affiliates of Selected UBO Countries, 1992

[Percentage of exports to all countries]

Country of destination	Country of UBO					
	Canada	France	Germany	Switzerland	United Kingdom	Japan
All industries						
All countries	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Canada	30.8	23.4	20.6	16.6	16.9	16.4
Europe	27.5	37.3	38.6	46.0	38.2	17.7
France	3.1	21.3	2.0	2.5	3.4	2.1
Germany	3.6	4.8	24.5	4.5	4.9	4.0
Switzerland	A	.6	.4	26.8	.9	.4
United Kingdom	4.4	3.2	2.3	3.5	18.4	4.2
Other	A	7.3	9.4	8.6	10.6	7.0
Latin America and Other Western Hemisphere	13.1	10.8	8.8	9.0	7.7	8.8
Mexico	4.8	6.8	4.8	3.6	3.8	5.9
Other	8.4	4.0	4.1	5.4	3.9	2.9
Africa	.5	.6	.8	4.0	.6	.7
Middle East	.8	.8	.6	2.3	3.5	.4
Asia and Pacific	25.7	21.6	25.8	17.6	24.9	52.1
Japan	10.2	9.5	6.4	3.9	11.0	38.4
Other	15.6	12.1	19.4	13.7	13.8	13.6
Unallocated	1.6	5.6	4.8	4.5	8.1	4.0
Machinery-type industries						
All countries	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Canada	49.8	18.8	18.9	13.8	16.7	17.8
Europe	13.3	37.6	52.6	32.5	43.4	18.1
France	2.8	29.3	4.2	2.1	4.0	1.8
Germany	1.2	1.1	41.7	5.1	7.0	3.4
Switzerland	A	.2	.2	12.3	.1	A
United Kingdom	4.6	2.3	1.9	4.7	24.8	4.8
Other	A	4.8	4.5	8.3	7.5	A
Latin America and Other Western Hemisphere	17.6	14.4	7.4	8.2	7.3	11.1
Mexico	8.0	8.0	4.8	4.7	4.3	7.8
Other	9.6	6.4	2.6	3.5	2.9	3.3
Africa	A	.7	.1	7.9	.7	.9
Middle East	A	.9	.4	A	1.1	.3
Asia and Pacific	17.3	22.8	16.2	29.4	17.5	46.9
Japan	A	10.7	4.4	4.8	5.4	29.4
Other	A	12.1	11.8	24.7	12.1	17.5
Unallocated	1.8	4.8	4.4	A	13.5	4.7
Affiliates in other manufacturing industries						
All countries	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Canada	26.3	26.7	21.4	19.1	17.1	14.4
Europe	30.8	37.1	32.0	58.0	35.4	17.1
France	3.1	15.7	.9	2.9	3.2	2.4
Germany	4.2	7.5	16.3	4.1	3.8	4.7
Switzerland	A	1.0	.5	39.8	1.3	A
United Kingdom	4.3	3.8	2.5	2.4	14.8	3.5
Other	A	9.2	11.7	8.9	12.4	A
Latin America and Other Western Hemisphere	12.1	8.2	9.5	9.7	8.0	5.6
Mexico	4.0	5.8	4.7	2.6	3.5	3.4
Other	8.1	2.3	4.7	7.1	4.5	2.3
Africa	A	.6	1.2	.6	.6	.3
Middle East	A	.7	.7	A	4.9	.5
Asia and Pacific	27.7	20.8	30.3	7.0	29.0	59.1
Japan	A	8.6	7.3	3.1	14.2	50.7
Other	A	12.2	23.0	3.9	4.1	8.4
Unallocated	1.6	6.1	4.9	A	5.1	2.9

NOTE.—Size ranges are given in the percentage cells that are suppressed; these ranges are A—0.01 to 19.9; B—20.0 to 39.9; C—40.0 to 59.9; E—60.0 to 79.9; F—80.0 to 100.
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French- and British-owned affiliates. In machinery-type industries, French- and British-owned affiliates purchase a substantial share of their imported inputs from the developing and newly industrializing countries of East Asia. For affiliates in all six countries, more than 80 percent of the imports from the investing country are intrafirm imports from the affiliates' foreign parent groups.[34]

The destinations of foreign sales by U.S. manufacturing affiliates of the six countries are less geographically concentrated than the origins of affiliate imports. In most cases, exports to the investing country account for 20–30 percent of all affiliate exports (table 11). The investing-country share is largest for Japanese-owned affiliates (38 percent); exports to Japan account for one-half of the exports by Japanese-owned affiliates in industries other than machinery-type industries. In machinery-type industries, the share of exports to the investing country is largest for German-owned affiliates (42 percent).

Appendix

Data used to construct measures

The measures of domestic content and market orientation that are examined in this article are based on BEA's data for U.S. affiliates of foreign companies and U.S. parent companies of foreign affiliates. For analytical purposes, adjustments have been made to these data; hence their presentation in this article differs in a number of ways from the standard presentation in BEA publications.

The data used to construct the measures of content and market orientation for U.S. manufacturing affiliates are from BEA's benchmark and annual surveys of foreign direct investment in the United States. These data are collected at the enterprise level from reports by fully consolidated enterprises. All of the data for an affiliate are assigned to the affiliate's "primary" industry—the industry in which it has the most sales—even though the affiliate may have production and sales in more than one industry. As a result, data for a given manufacturing industry may include some data for secondary activities in other industries.[35]

The data used to construct the four measures for domestically owned U.S. parent companies are from BEA's benchmark surveys of U.S. direct investment abroad for 1989 and 1994. Because some U.S. parent companies are also U.S. affiliates of foreign companies, the data on U.S. parent companies have been adjusted to exclude U.S. parents that are foreign owned. (In 1994, foreign-owned U.S. parents accounted for 12 percent of the gross output of all U.S. parent companies in manufacturing.)

Domestically owned U.S. parent companies in manufacturing are used in the comparisons for four reasons. First, these companies are very similar to U.S. affiliates because of their international orientation and typically large size. Second, both the data for these companies and those for U.S. affiliates are collected at the enterprise level, using the same survey methods and the same procedures for industry classification.[36] Third, the data covering U.S. parent companies provide the only directly collected industry-level data on the imported intermediate inputs used by domestically owned U.S. companies.[37] Fourth, domestically owned U.S. parent companies in manufacturing can be viewed as representative of U.S. manufacturing companies insofar as they account for a large share—more than one-half—of the gross output of all domestically owned U.S. companies in manufacturing.[38]

The industry-level measures for U.S. affiliates and domestically owned U.S. parent companies were constructed for 32 detailed manufacturing

34. However, imports from the investing country do not account for a uniformly large share of the affiliates' imports from their foreign parent groups: Only 56 percent of the intrafirm imports by British-owned affiliates originate in the United Kingdom and only 69 percent of the intrafirm imports by French-owned affiliates originate in France.

35. The data on affiliate sales can be broken down by each industry in which the given affiliate reports sales. In 1994, manufacturing sales accounted for 85 percent of the total sales of affiliates classified in manufacturing; about 7 percent of their sales were accounted for by sales in wholesale trade.

36. Like the data for U.S. manufacturing affiliates, the data for U.S. parent companies classified in manufacturing include some data related to the companies' secondary activities in nonmanufacturing industries: In 1994, nonmanufacturing sales accounted for 15 percent of the total sales of U.S. parent companies in manufacturing.

37. Some researchers have constructed indirect estimates of imported inputs used in U.S. manufacturing industries by combining input-output data with data on imports classified by the industries producing the imported goods. These estimates are based on the assumption that the share of imports in the goods supplied by an industry is identical for all industries using the supplying industry's goods as intermediate inputs.

38. In 1994, domestically owned U.S. parent companies in manufacturing accounted for 56 percent of the gross output of all domestically owned companies in manufacturing. To compute this share, the gross output of U.S. corporations in manufacturing was computed from data in *1994 Corporation Source Book of Statistics of Income* from the Internal Revenue Service (IRS); the gross output of domestically owned U.S. manufacturing companies was derived by subtracting the gross output of U.S. manufacturing affiliates from the gross output of U.S. corporations in manufacturing. (This share may be understated because of potential double-counting in the IRS data due to less than fully consolidated reporting by some U.S. corporations.)

Of the 32 manufacturing industries in table 2, domestically owned U.S. parent companies accounted for more than one-half of the gross output of all domestically owned companies in 17 industries, including 8 of the 12 machinery-type industries. The shares were less than 20 percent in the lumber and wood products, fabricated metal products, and other manufacturing industries. (Because the level of consolidation for company reports to the IRS may differ from that required in BEA's surveys of direct investment, these shares by detailed industry are approximate.)

industries (tables 2–7); this presentation is more detailed than the industry presentation in BEA's standard tables for either U.S. affiliates or U.S. parent companies.[39] Specifically, the industries are disaggregated to represent the production stages or processes in an industry group; for example, lumber and wood products is separated from furniture and fixtures. In addition, more detail is shown for industries that are usually grouped in "other industrial machinery and equipment."

For *industry-level results*, the data used to construct the measures for the manufacturing affiliates in 1994 are restricted to affiliates that also existed in 1993, so that the change-in-inventories component of gross output could be computed from reported data on inventory levels. This group of affiliates accounts for 98 percent of the gross product and sales of manufacturing affiliates in the universe in 1994. Similarly, the data used to construct the measures for affiliates in 1989 are restricted to those for affiliates that also existed in 1988. For domestically owned U.S. parent companies, the change-in-inventories component of total output was estimated (table 1), because data on U.S.-parent-company inventories are collected only in benchmark survey years.

For *changes in behavior over time*, panel data for affiliates classified in machinery-type industries are used in order to isolate changes in affiliate behavior from changes in the population of affiliates. The panel consists of 371 affiliates that were classified in machinery-type industries in 1994 and that existed in each of the years 1987–94.[40] The panel affiliates accounted for only about one-third of the 1,110 affiliates that were classified in machinery-type industries in 1994, but they accounted for 69 percent of the gross output of all affiliates in those industries in 1994; in 9 of the 12 industries, they accounted for more than one-half of the gross output (table 12).[41] The panel data include data for inventories for 1987 and data for each of the items needed to compute the measures of content and market orientation for 1988–94. Aggregating the data for affiliates in the panel, the four measures were computed at the industry level for each of the years 1988–94.

Table 12.—Gross Output of Affiliates in the Panel as a Percentage of Gross Output of All Affiliates in the Industry, Machinery-Type Industries, 1994

Construction and mining machinery	58.6
Metalworking machinery	45.8
Special industrial machinery	56.0
General industrial machinery	85.3
Computer and office equipment	15.4
Other industrial machinery and equipment	43.0
Audio and video, and communications, equipment	92.6
Electronic components and accessories	65.6
Household appliances and other electrical machinery	76.8
Motor vehicles and equipment	72.5
Other transportation equipment	59.2
Instruments and related products	76.4

For *comparisons by country of ownership*, the four measures for 1989 and 1994 were constructed at the affiliate level for affiliates that also existed the previous year (so that the change-in-inventories component of affiliate gross output could be computed). To control for industry-mix effects in the comparisons, the affiliate-level measures were normalized by dividing the measure for each affiliate by the corresponding industry-level measure for domestically owned U.S. parent companies in the affiliate's industry. The comparisons are made in terms of unweighted averages of the normalized measures across samples of affiliates. The samples are restricted to manufacturing affiliates that had at least $5 million in sales in order to prevent the averages from being skewed by the presence of large outliers that may result when the denominator (total output, purchased inputs, or sales) in the measure for an affiliate is very small.

Intended use of imports by U.S. affiliates

The results reported for U.S. affiliates—particularly the import share of their intermediate inputs—may be biased by the inclusion of imports that are unrelated to their manufacturing production. Some affiliates classified in manufacturing may have substantial imports of goods for resale without further manufacture as a result of their secondary operations in wholesale trade.

The degree of this bias can be examined using BEA's data on U.S. affiliate operations in 1994, which provide information on the intended use of affiliate imports. Specifically, the data include the value of that portion of affiliate imports that consists of the goods intended for further processing, assembly, or manufacture by the affiliate (in contrast to goods intended for resale without

39. For examples of the standard level of detail, see tables 19.1 and 19.2 in "Foreign Direct Investment in the United States: New Investment in 1996 and Affiliate Operations in 1995," and tables 17.1 and 17.2 in "U.S. Multinational Companies: Operations in 1995," SURVEY 77 (October 1997). For the most detailed presentation, see table A–1 in *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies, Revised 1994 Estimates* (Washington, DC: U.S. Government Printing Office, June 1997).

40. The panel is based on the industry classification of the affiliates in 1994; however, some of the affiliates that were classified in a given industry in 1994 may have been classified in other industries in other years covered by the panel.

41. However, the affiliates in the panel accounted for only 15 percent of the total output of affiliates in computer and office equipment, so the behavior of the affiliates in the panel may not be generalized to that of all affiliates in this industry.

further manufacture or to capital goods intended as additions to the affiliate's capital stock).[42]

In 1994, imports of goods for further manufacture accounted for 53 percent of the total imports of the affiliates in manufacturing (table 13, column 3). The shares of affiliate imports accounted for by goods intended for further manufacture were less than 50 percent in one-half of the 32 industries and were less than 30 percent in five of them—beverages, rubber products, glass products, household appliances and other electrical equipment, and instruments.

The degree of bias that is introduced by the inclusion of these imports can be assessed by reconstructing the measure for a restricted sample of affiliates for whom goods intended for further manufacture account for at least 50 percent of imports. Table 13 shows the industry-level import-share measures for this restricted sample of affiliates (column 4) in comparison with the measures for all manufacturing affiliates (column 1); the last two columns show the ratios of these measures to the corresponding measure for domestically owned U.S. parent companies.[43]

In most industries, the import shares for the full and restricted samples of affiliates are very similar, both in absolute terms and relative to the measures for the domestically owned companies. In a few industries, however, the import-share measures are substantially lower for affiliates in

42. Data on imports intended for further manufacture have been collected annually beginning with the 1992 benchmark survey. The benchmark-survey data also include separate data on imports of goods for resale without further manufacture and on imports of capital equipment; in 1992, imports for resale accounted for 95 percent of manufacturing affiliates' imports of goods that were not intended for further manufacture.

43. For most of the affiliates in the restricted sample, the shares of imports accounted for by goods intended for further manufacture are much higher than 50 percent. As shown in column 6 of table 13, imports for further manufacture accounted for 88 percent of the total imports of affiliates in the restricted sample; at the industry level, the shares in two-thirds of the 32 industries are more than 90 percent.

Table 13.—Import-Share Measures for Full and Restricted Samples of U.S. Manufacturing Affiliates, by Industry, 1994

	Full sample			Restricted sample [1]			Addenda:	
	Imports as a percentage of intermediate inputs	Imports of goods for further manufacture as a percentage of intermediate inputs	Imports of goods for further manufacture as a percentage of total imports	Imports as a percentage of intermediate inputs	Imports of goods for further manufacture as a percentage of intermediate inputs	Imports of goods for further manufacture as a percentage of total imports	Imports as a percentage of intermediate inputs: Ratio of measure for U.S. affiliates to measure for U.S. parent companies [2]	
							Full sample	Restricted sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Manufacturing [3]	**18.7**	**10.0**	**53.3**	**17.2**	**15.2**	**88.0**	**1.65**	**1.52**
Beverages	15.6	A	A	.2	.2	100.0	6.38	.07
Other food products	7.6	A	C	8.0	7.4	93.3	3.16	3.30
Textile mill products	8.8	4.2	48.5	5.8	5.8	99.0	2.58	1.72
Apparel and other textile products	12.7	9.3	72.9	12.4	10.2	82.4	1.33	1.30
Lumber and wood products	8.3	5.6	67.4	6.3	6.3	100.0	4.92	3.70
Furniture and fixtures	5.6	4.5	80.7	4.9	4.9	100.0	1.60	1.41
Paper and allied products	11.0	7.7	70.3	9.4	8.2	87.2	2.59	2.23
Printing and publishing	2.1	.9	40.6	1.3	1.2	98.6	.90	.53
Industrial chemicals and synthetics	14.8	7.8	52.6	13.0	10.8	83.4	1.65	1.45
Drugs	19.9	10.8	54.5	18.1	15.1	83.2	3.59	3.26
Soap, cleaners, and toilet goods	3.4	1.6	47.6	3.8	3.6	95.8	.71	.80
Other chemicals	17.0	11.4	67.0	22.7	21.9	96.5	6.48	8.66
Rubber products	27.9	5.0	17.8	16.2	14.9	92.2	2.13	1.24
Miscellaneous plastics products	15.5	5.2	33.7	6.5	6.2	95.5	3.99	1.67
Glass products	13.6	3.6	26.4	10.6	10.6	100.0	7.19	5.60
Stone, clay, and concrete products	7.7	3.5	45.2	5.6	4.7	82.8	2.27	1.67
Primary ferrous metals	14.8	8.9	60.1	15.7	15.2	97.1	2.05	2.17
Primary nonferrous metals	21.9	14.0	64.2	23.0	16.3	71.2	2.50	2.62
Fabricated metal products	12.5	4.0	31.9	8.5	6.3	74.4	3.40	2.30
Construction and mining machinery	37.1	19.5	52.7	34.9	26.7	76.5	2.23	2.10
Metalworking machinery	25.5	12.4	48.8	22.2	22.2	100.0	3.88	3.39
Special industrial machinery	24.1	18.0	74.6	27.6	25.8	93.4	4.34	4.98
General industrial machinery	20.7	9.5	46.0	14.7	11.4	78.1	1.13	.80
Computer and office equipment	39.6	22.8	57.6	43.3	33.0	76.3	1.29	1.41
Other industrial machinery and equipment	23.2	10.6	45.9	17.3	16.6	95.9	2.66	1.98
Audio, video, and communications equipment	41.1	29.2	71.1	45.4	44.1	97.1	3.30	3.64
Electronic components and accessories	29.1	11.8	40.6	21.4	21.3	99.2	2.11	1.55
Household appliances and other electrical machinery	25.4	6.2	24.5	11.6	11.5	99.5	4.43	2.02
Motor vehicles and equipment	31.8	23.8	74.7	32.2	29.3	91.1	1.32	1.33
Other transportation equipment	22.8	10.6	46.5	15.2	14.6	95.6	3.23	2.16
Instruments and related products	14.9	4.4	29.2	9.3	8.6	91.8	1.31	.82
Other manufacturing	12.9	9.6	74.5	13.1	10.9	83.6	1.49	1.51

1. Restricted to manufacturing affiliates that had at least $5 million in sales and whose imports, if any, consisted mainly of goods intended for further processing, assembly, or manufacture by the affiliate.

2. Import share for the given sample of affiliates divided by the import share for domestically owned U.S. parent companies shown in table 4.

3. See table 2, footnote 1.

NOTE.—Size ranges are given in the percentage cells that are suppressed; these ranges are A—0.01 to 19.9; B—20.0 to 39.9; C—40.0 to 59.9; E—60.0 to 79.9; F—80.0 to 100.

the restricted sample, indicating that the measures for the full sample are biased by the inclusion of imports that are unrelated to manufacturing production. The bias is particularly pronounced in beverages, rubber products, miscellaneous plastics products, and household appliances.

The restricted sample of affiliates was also used to evaluate the degree to which the comparisons by country of ownership in table 9.2 reflect imports unrelated to manufacturing production. Table 14 presents the mean values of the normalized measures for affiliates of each country based on the restricted sample. For the import-share measure, the means shown in table 14 for the restricted sample are generally lower than the means shown in table 9.2 for the full sample; however the overall pattern across countries is very similar. In both tables, German-owned affiliates have very high import shares, and British-owned affiliates have relatively low shares. The rankings among countries in terms of the import shares are also similar for Canadian- and Japanese-owned affiliates. For French- and Swiss-owned affiliates, however, the average import shares are substantially lower in the restricted sample than in the full sample, indicating that the shares in the full sample are inflated by imports unrelated to their manufacturing production.

Table 14.—Means of Normalized Measures for Restricted Sample of Manufacturing Affiliates, by Country of UBO, 1994

[Standard deviations in parentheses]

	All countries	Canada	France	Germany	Switzerland	United Kingdom	Japan	Other countries
Domestic content as a percentage of gross output:								
All industries	0.93 (.21)	0.95 (.19)	0.92 (.21)	0.89 (.22)	0.91 (.18)	0.99 [a] (.15)	0.91 (.24)	0.93 (.19)
Machinery-type industries	.90 (.24)	1.03 [a] (.12)	.86 (.28)	.85 (.23)	.87 (.21)	1.00 [a] (.20)	.85 (.27)	.93 (.22)
Other industries	.94 (.18)	.92 (.20)	.95 [a] (.16)	.92 (.20)	.93 (.17)	.98 [a] (.12)	.95 (.19)	.94 (.18)
Value added as a percentage of gross output:								
All industries	.73 (.50)	.71 (.51)	.74 (.74)	.77 (.43)	.83 (.51)	.83 (.49)	.68 (.50)	.72 (.47)
Machinery-type industries	.71 (.49)	.80 [a] (.69)	.52 (.84)	.73 (.44)	.80 [a] (.53)	.84 (.44)	.66 (.41)	.70 (.46)
Other industries	.75 (.51)	.69 (.45)	.85 [a] (.66)	.80 (.42)	.84 (.50)	.83 (.52)	.70 (.55)	.72 (.48)
Imports as a percentage of intermediate inputs:								
All industries	2.70 (6.08)	3.12 (8.07)	2.28 (4.26)	3.61 (6.62)	3.10 (5.42)	1.63 (4.05)	2.50 (6.00)	2.84 (6.10)
Machinery-type industries	2.16 (3.02)	.77 [a] (1.29)	2.29 [a] (3.56)	3.14 (3.75)	2.66 (3.06)	1.13 [a] (2.36)	2.27 (2.65)	2.09 (3.20)
Other industries	3.01 (7.24)	3.79 (9.01)	2.27 (4.61)	4.02 (8.35)	3.28 (6.15)	1.92 (4.75)	2.66 (7.49)	3.19 (7.04)
Exports as a percentage of total sales:								
All industries	1.04 [a] (1.96)	1.10 [a] (2.07)	.97 [a] (1.50)	.86 [a] (1.59)	.90 [a] (1.19)	.77 [a] (1.56)	1.25 (2.29)	1.01 [a] (2.03)
Machinery-type industries	.87 (1.13)	.97 [a] (1.33)	1.05 [a] (1.23)	.74 (.90)	.86 [a] (.76)	.61 (.71)	.85 [a] (1.11)	1.09 [a] (1.43)
Other industries	1.13 [a] (2.29)	1.14 [a] (2.23)	.92 [a] (1.63)	.96 [a] (2.01)	.91 [a] (1.33)	.86 [a] (1.89)	1.53 (2.80)	.98 [a] (2.26)
Addenda: Number of affiliates:								
All industries	1,436	159	90	194	62	173	419	339
Machinery-type industries	518	35	31	90	18	64	172	108
Other industries	918	124	59	104	44	109	247	231

[a] Not statistically different from 1 at the 95-percent confidence level.

NOTES.—To normalize, the measure of content calculated for each affiliate was divided by the corresponding aggregate measure for U.S. parent companies classified in the industry of the affiliate.

The sample is restricted to manufacturing affiliates that had at least $5 million in sales and whose imports, if any, consisted mainly of goods intended for further processing, assembly, or manufacture by the affiliate.

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