# Characteristics of Foreign-Owned U.S. M anufacturing Establishments 

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T his article examines the characteristics of
foreign-owned U.S. manufacturing establishments on the basis of newly released data from a joint project of the Bureau of Economic Analysis (bea) and the Bureau of the Census. The data greatly expand the establishment-level information available on the manufacturing operations of U.S. affiliates of foreign companies. ${ }^{1}$ Because the establishment data provide more detailed and more precise information on the industrial composition of affiliates' operations than bea's enterprise data (see the box on page 35), they can significantly enhance and extend the analysis of key questions about foreign direct investment in the United States (fdius), such as whether foreign-owned plants account for significant shares of total U.S. production in specific manufacturing industries and whether the wage rates and productivity of foreign-owned U.S. plants differ from those of U.S.- owned plants.
The new data on foreign-owned manufacturing establishments indicate the following:

- The average plant size, or scale, of foreignowned establishments is much larger than that of U.S.-owned establishments, mostly reflecting the tendency for foreign-owned establishments to be larger than U.S.-owned establishments within specific industries. Less important is the tendency of foreignowned establishments to be concentrated in industries with larger-than-average plant size.
- The capital intensity of foreign-owned establishments is higher than that of U.S.-

[^0]owned establishments, almost entirely re flecting foreign-owned establishments' relatively greater concentration in the industries that are the most capital intensive; the overall effect of within-industry differences is negligible. In many industries, the capital intensity of foreign-owned establishments differs from that of U.S.-owned establishments, but there is no systematic tendency for this difference to be in one direction or the other.

- The hourly wages paid to production workers are higher for foreign-owned establishments than for U.S.-owned establishments. Foreign-owned establishments tend to be in higher wage industries, and their production is more concentrated in large plants, which generally have higher wage rates than small plants. Foreign ownership per se does not appear to influence wage rates.
- The labor productivity of foreign-owned establishments is higher than that of U.S.owned establishments, largely reflecting the tendency for foreign-owned establishments to be concentrated in industries in which


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productivity is high. There are also withinindustry differences in productivity, but they appear to be attributable largely to factors that have frequently been found to influence productivity- namely, plant size, capital intensity, and employee skill level-rather than to foreign ownership per se.

The new data on foreign-owned manufacturing establishments, which cover 1989 and 1990, were released last fall as part of an ongoing effort to augment and improve U.S. Government data on fdius. The data were obtained by linking bea enterprise, or company, data on fdius with more detailed Census Bureau establishment, or plant, data for all U.S. companies. ${ }^{2}$ For the linked establishments (hereafter referred to as "foreignowned establishments"), data from the Census Bureau's annual survey of manufactures (ASm) were then extracted.

[^1]The new data on foreign-owned manufacturing establishments cover most of the asm items, including value added, shipments, employment, total employee compensation, employee benefits, hourly wage rates of production workers, cost of materials and energy used, inventories by stage of fabrication, and expenditures for new plant and equipment. Data are also included on the number of foreign-owned establishments. Totals for 1989 and 1990 for each of these items are shown in table 1. The data are also available by highly detailed industry, by State, and by country of investor. Summary data for 1990 appear in tables 2-13; data by detailed industry for 1990 covering selected items for foreign-owned and all U.S. establishments are shown in table 14, at the end of the article. (The box on page 51 provides information on the availability of the data in full detail for 1989 and 1990.)

The new asm data update and extend the link project's initial results, published in 1992, which were for 1987-a benchmark, or census, year for both bea and the Census Bureau. The 1987 data covered both manufacturing and nonmanufacturing establishments, but presented fewer measures of their operations than are available from the new asm-based series. ${ }^{3}$ Later this year,
3. For summary data for 1987, see "Foreign Direct Investment in the United States: Establishment Data for 1987,' Survey of Current Business

## Establishment and Enterprise Data for U.S. Affiliates Compared

The establishment data presented in this article complement bea's enterprise data for U.S. affiliates. bea's enterprise data are needed for analyzing the overall significance of, and trends in, direct investment and for compiling the U.S. international transactions accounts, the international investment position of the United States, and the U.S. national income and product accounts. The data on positions and transactions between U.S. affiliates and their foreign parents used in compiling the national and international accounts exist only at the enterprise level. Analyses of some topics, such as profits and taxes, are meaningful only at that level. Furthermore, balance sheets and income statements containing the critical, nonduplicative financial and operating data needed for examining these topics exist only at the enterprise level.
The establishment data facilitate analysis of the activities and importance of foreign-owned U.S. companies in specific industries because they provide more detailed and more precise information on the industrial composition of U.S. affiliates' operations than bea's enterprise data. Whereas bea's enterprise data classify each company, however diversified, in a single industry, the establishment data permit each plant or location of a company to be classified separately. Furthermore, the
level of industry classification can be much more detailed for individual establishments than is appropriate for consolidated enterprises, whose operations may span many narrowly defined industries. As a result, foreign-owned establishments can be classified into 459 manufacturing industries, whereas bea's foreign-owned enterprises can be classified into only 55 manufacturing industries.
The establishment data also provide more detailed State- by-industry data than are available from the enterprise data, and the asm data introduced in this article include the first available Statelevel measures of manufacturing production (value added) by foreign-owned firms.

Finally, the establishment-level data for foreign-owned and U.S.-owned companies presented in this article are closely comparable because they are from the same source. In contrast, the enterprise level data for foreignowned U.S. companies collected by bea are frequently not comparable, except at highly aggregated levels, with data for all U.S. companies collected by other Government agencies. Because the other agencies' data are collected for different purposes, they often differ significantly in concept, definitions, consolidation, and industry classification from bea's data for foreign-owned companies.
bea and the Census Bureau will publish asm data for foreign-owned manufacturing establishments for 1991 and for 1988.

This article analyzes the operations of foreignowned manufacturing establishments on the basis of the 1990 asm data. Although the data are for the year 1990, most of the findings probably also apply to more recent years, because both the overall level and the industry and country composition of foreign direct investment in U.S. manufacturing have changed little since then. ${ }^{4}$

72 (October 1992): 44-78. For a slightly expanded version of that article, see Office of the Chief Economist, Economics and Statistics Administration, U.S. Department of Commerce, Foreign Direct Investment in the U nited States: An U pdate (Washington, dc: U.S. Government Printing Office, June 1993). The detailed 1987 data are available in a separate volume (see inside back cover for order information).
4. Although foreign direct investment in manufacturing grew rapidly between 1987 and 1990, data from bea's enterprise surveys indicate that there was little growth in the industry in 1991 and 1992. According to bea's annual survey of fdius, total manufacturing employment of U.S. affiliates in 1991 was almost the same as that in 1990, and changes in the composition of employment among subindustries of manufacturing and among investing countries were small. M oreover, data from bea's latest survey of U.S. businesses acquired or established by foreign direct investors indicatethat in 1992, new investment in manufacturing was at the lowest level in 8 years and was less than one-half that in 1991. In the May 1993 Survey, see "U.S. Affiliates

Table 1.-Data for Foreign-Owned Manufacturing Establishments, 1989 and 1990
[Millions of dollars, except as noted]

|  | 1989 | 1990 |
| :---: | :---: | :---: |
| Number of establishments | 10,458 | 11,934 |
| Value added by manufacture | 161,929.2 | 177,360.7 |
| Value of shipments | 371,911.9 | 417,539.4 |
| Employment and employee compensation: <br> Total employment (number of employees) | 1,815,311 | 2,004,235 |
| Production workers (number) ................ | 1,082,983 | 1,188,140 |
| Other workers (number) | 732,328 | 816,095 |
| Production worker hours (millions of hours) .. | 2,203.2 | 2,411.7 |
| Employee compensation, total | 67,769.1 | 78,128.8 |
| Payroll | 55,562.5 | 63,495.9 |
| Production worker wages | 26,616.4 | 30,304.8 |
| Other workers | 28,946.1 | 33,191.1 |
| Benefits | 12,206.6 | 14,632.9 |
| Legally required | 4,751.2 | 5,591.4 |
| Other | 7,455.4 | 9,041.5 |
| Production worker wages per hour (dollars) | 12.08 | 12.57 |
| Expenditures for new plant and equipment: |  |  |
| Total | 16,070.6 | 19,748.4 |
| Buildings and other structures | 2,799.6 | 3,246.5 |
| Machinery and equipment | 13,271.0 | 16,502.0 |
| Materials: |  |  |
| Cost of materials, total $\qquad$ Of which: | 211,706.8 | 241,548.4 |
| Purchased fuels and electric energy | 8,993.6 | 10,106.3 |
| Fuels | 3,697.4 | 4,238.1 |
| Electric energy ........................................ | 5,296.1 | 5,868.2 |
| Quantity of electric energy used (billion kWh) ......... | 121,950.3 | 135,204.9 |
| Inventories: |  |  |
| End of year, total | 49,926.9 | 55,487.3 |
| Finished products | 20,151.9 | 23,167.3 |
| Work-in-process | 12,954.2 | 13,650.3 |
| Materials, supplies, fuels, etc. .......................... | 16,820.9 | 18,669.7 |
| Beginning of year, total | 47,212.3 | 53,768.3 |
| Finished products .. | 18,701.2 | 21,736.4 |
| Work-in-process | 12,424.6 | 13,635.7 |
| Materials, supplies, fuels, etc. ............................ | 16,077.4 | 18,396.2 |

The remainder of this article consists of two sections and a technical note. The first section provides an overview of the operations of foreign-owned manufacturing establishments by industry, country, and State. The second compares the following key aspects of the operations of foreign-owned establishments with those of U.S.-owned establishments: Plant size, capital intensity, employee compensation, hourly wage rates of production workers, and labor productivity. The technical note describes the statistical decomposition method used in the article to separate industry-mix effects from within-industry differences and discusses how the estimation of data for foreign-owned establishments and the inclusion of residual industries, which cover establishments not elsewhere classified, affect the findings of the article.

## Overview of Operations

In 1990, there were 11,900 foreign-owned manufacturing establishments in the United States. They employed 2 million workers and had shipments of $\$ 418$ billion. Their value added, an approximate measure of production, was $\$ 177$ billion, 13 percent of the value added by all U.S. manufacturing establishments (table 2). ${ }^{5}$

More than one-half of the value added by foreign-owned manufacturing establishments in 1990 was accounted for by four Standard Industrial Classification (sic) two-digit industries: Chemicals and allied products (\$49 billion), food and kindred products (\$20 billion), electronic and other electric equipment (\$17 billion), and industrial machinery and equipment ( $\$ 14$ billion). Production in the chemicals industry alone accounted for more than one-fourth of the value added by foreign-owned manufacturing establishments.
Among sic two-digit industries, the share of total U.S. production accounted for by foreignowned establishments was largest in chemicals (32 percent), followed by stone, clay, and glass products ( 25 percent) and primary metals ( 19 percent). The share was less than 5 percent in four industries: Apparel and other textile products, lumber and wood products, furniture and fixtures, and transportation equipment.

[^2]Within a given two-digit industry, the shares for the component subindustries may vary considerably. In transportation equipment, for example, where foreign-owned establishments' share of value added was just under 5 percent, shares for sic three-digit subindustries ranged from less than 1 percent for "guided missiles, space vehicles, and parts" to 12 percent for railroad equipment. The share for motor vehicles and equipment was 8 percent.
At the sic four-digit level, foreign-owned establishments had operations in 429 of the 459 manufacturing industries. They accounted for less than 5 percent of total industry production in 149 industries and for more than 30 percent in 45 industries (table 3). Of the latter group, 13 industries were in chemicals, 6 in stone, clay, and glass products, and 6 in electronic and other electric equipment.
In nine industries, foreign-owned establishments accounted for more than one-half of total U.S. production. Their shares were highest in three chemicals industries: Inorganic pigments ( 71 percent), biological products except diagnostic ( 69 percent), and noncellulosic organic fibers ( 67 percent) (table 14). Among the industries outside chemicals, the share was highest in hydraulic cement ( 62 percent).

## By country

In 1990, more than 80 percent of the employment, shipments, and value added by all foreign-
owned manufacturing establishments were accounted for by establishments with ultimate beneficial owners (ubo's) in seven countries: Canada, France, Germany, Japan, the Netherlands, Switzerland, and the United Kingdom (table 4). ${ }^{6}$ The establishments of these seven countries accounted for 86 percent of the value added by all foreign-owned manufacturing establishments and for 11 percent of the value added by all U.S. manufacturing establishments.

[^3]Table 3.-Distribution of Manufacturing Industries According to Foreign-Owned Establishments' Share of Value Added, 1990

| Percentage of an industry's value added accounted for by foreign-owned establishments | Number of industries |
| :---: | :---: |
| $0{ }^{1}$ | 30 |
| Less than $5.0^{2}$................................................... | 119 |
| 5.0-9.9 | 89 |
| 10.0-14.9 | 73 |
| 15.0-19.9 | 43 |
| 20.0-24.9 | 33 |
| 25.0-29.9 ............................................................ | 27 |
| 30.0-34.9 | 10 |
| 35.0-39.9 | 13 |
| 40.0-44.9 ............................................................ | 6 |
| 45.0-49.9 ............................................................ | 7 |
| 50.0 or more .......................................................... | 9 |

1. Industries with no foreign-owned establishments.
2. Includes three industries for which value added by foreign-owned establishments was negative in 1990.

NOTE.-The distribution is across the 459 industries defined at the four-digit level of the Standard Industrial Classification.

Table 2.-Selected Data for Foreign-Owned Manufacturing Establishments, by Industry, 1990

| $\begin{gathered} \text { SIC } \\ \text { code } \end{gathered}$ | Industry | Foreign-owned establishments |  |  |  | Foreign-owned establishments as a percentage of all U.S. establishments |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Number of establishments | Number of employees | Millions of dollars |  |  |  |  |
|  |  |  |  | Value added | Shipments | Employment | Value added | Shipments |
|  | Manufacturing ..................................................... | 11,934 | 2,004,235 | 177,360.7 | 417,539.4 | 10.6 | 13.4 | 14.5 |
| 20 | Food and kindred products | 983 | 159,386 | 19,501.2 | 46,842.8 | 10.8 | 13.8 | 12.2 |
| 21 | Tobacco products ......................................................... | 5 |  |  |  | ${ }^{\text {D }}$ ) | ( ${ }^{\text {d }}$ ) | (D) |
| 22 | Textile mill products ...................................................... | 183 | 47,363 | 2,283.1 | 5,693.6 | 7.5 | 8.6 | 8.6 |
| 23 | Apparel and other textile products ................................... | 116 | 23,085 | 850.2 | 1,727.5 | 2.3 | 2.6 | 2.7 |
| 24 | Lumber and wood products ............................................ | 184 | 17,043 | 842.5 | 2,304.0 | 2.5 | 2.9 | 3.1 |
| 25 | Furniture and fixtures .................................................... | 83 |  | ( ${ }^{\text {b }}$ | ${ }^{(\mathrm{D})}$ | (D) | (D) | ${ }^{\text {( }}$ ) |
| 26 | Paper and allied products ............................................. | 328 | 48,644 | 4,709.2 | 11,395.2 | 7.7 | 7.9 | 8.7 |
| 27 | Printing and publishing .................................................. | 834 | 103,983 | 10,408.8 | 16,499.9 | 6.8 | 10.1 | 10.5 |
| 28 | Chemicals and allied products | 1,520 | 242,392 | 48,835.7 | 87,678.9 | 28.4 | 31.9 | 30.4 |
| 29 | Petroleum and coal products | 319 | 25,638 | 4,106.8 | 46,372.6 | 22.9 | 15.1 | 26.9 |
| 30 | Rubber and miscellaneous plastics products ...................... | 658 | 120,951 | 8,757.9 | 17,790.6 | 13.9 | 17.6 | 17.5 |
| 31 | Leather and leather products .......................................... | 29 | 6,362 | 287.3 | 608.1 | 5.4 | 6.3 | 6.2 |
| 32 | Stone, clay, and glass products ....................................... | 1,421 | 105,578 | 8,450.2 | 16,407.5 | 20.7 | 24.8 | 25.9 |
| 33 | Primary metal industries ............................................... | 402 | 119,087 | 10,297.6 | 31,902.9 | 16.7 | 19.3 | 21.8 |
| 34 | Fabricated metal products ............................................. | 593 | 93,300 | 6,350.2 | 13,973.6 | 6.5 | 7.9 | 8.6 |
| 35 | Industrial machinery and equipment ................................ | 945 | 191,440 | 13,561.7 | 31,010.6 | 10.2 | 10.3 | 12.1 |
| 36 | Electronic and other electric equipment ............................ | 760 | 228,237 | 16,703.2 | 34,601.8 | 15.2 | 15.6 | 17.8 |
| 37 | Transportation equipment .............................................. | 274 | 104,147 | 7,170.6 | 28,834.9 | 5.9 | 4.9 | 7.8 |
| 38 | Instruments and related products .................................... | 467 | 121,520 | 9,722.1 | 15,840.7 | 12.8 | 11.9 | 12.8 |
| 39 | Miscellaneous manufacturing industries | 128 | $26,087$ | 1,929.3 | 3,553.2 | 6.8 | 9.6 | 9.6 |
|  | Administrative and auxiliary | 1,702 | 200,064 | n.a. | n.a. | 15.9 | n.a. | n.a. |

[^4]A-0 to 19; B-20 to 99; C-100 to 249; E-250 to 499; F-500 to $999 ;$ G-1,000 to 2.499; H-2,500 to 4,999 ; $-5,000$ to 9,$999 ; \mathrm{J}-10,000$ to 24,$999 ; \mathrm{K}-25,000$ to 49,$999 ; L-50,000$ to 99,999; M-100,000 or more.
SIC Standard Industrial Classification

Among establishments of individual investing countries, British-owned establishments accounted for the largest share of production by foreign-owned manufacturing establishments (23 percent), followed by Canadian-owned establishments ( 15 percent) and Japanese-owned establishments ( 13 percent). The share of total U.S. manufacturing production accounted for by British-owned establishments was 3 percent.

British-owned establishments also accounted for the largest share of production by foreignowned establishments in 10 of the 20 sic two-
digit manufacturing industries. Among these 10 industries, their share of total U.S. manufacturing production was largest in tobacco products, petroleum and coal products, food and kindred products, and instruments and related products (table 5).
Japanese-owned establishments accounted for the largest share of production by foreign-owned establishments in four industries: Primary metals, industrial machinery and equipment, electronic and other electric equipment, and transportation equipment. Their share of total U.S.

Table 4.-Selected Data for Foreign-Owned Manufacturing Establishments, by Country of UBO, 1990

| Country | Number of establishments | Number of employees | Millions of dollars |  | Share of all-countries total (percent) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Value added | Value of shipments | Number of establishments | Number of employees | Value added | Value of shipments |
| All countries .................................................... | 11,934 | 2,004,235 | 177,360.7 | 417,539.4 | 100.0 | 100.0 | 100.0 | 100.0 |
| Canada .................................................................... | 1,538 | 269,362 | 26,869.2 | 58,983.3 | 12.9 | 13.4 | 15.1 | 14.1 |
| Europe ....................................................................... | 8,007 | 1,297,424 | 115,466.1 | 251,039.0 | 67.1 | 64.7 | 65.1 | 60.1 |
| Austria ..................................................................... | 27 | 5,035 | 417.1 | 816.2 | . 2 | . 3 | . 2 | . 2 |
| Belgium ................................................................. | 95 | 14,633 | 1,626.7 | 4,975.5 | . 8 | . 7 | . 9 | 1.2 |
| Denmark ................................................................. | 39 | 7,159 | 377.4 | 916.6 | . 3 | . 4 | . 2 | . 2 |
| Finland ................................................................ | 123 | 18,112 | 1,194.5 | 2,891.2 | 1.0 | . 9 | . 7 | . 7 |
| France ................................................................... | 1,217 | 178,324 | 15,390.3 | 36,168.0 | 10.2 | 8.9 | 8.7 | 8.7 |
| Germany | 1,045 | 229,007 | 20,442.5 | 40,568.9 | 8.8 | 11.4 | 11.5 | 9.7 |
| Ireland | 243 | 26,534 | 2,090.1 | 5,227.6 | 2.0 | 1.3 | 1.2 | 1.3 |
| Italy . | 141 | 17,307 | 1,260.1 | 3,755.4 | 1.2 | . 9 | . 7 | . 9 |
| Liechtenstein ......................................................... | 9 | 917 | 50.9 | 120.7 | . 1 | (*) | (*) | (*) |
| Luxembourg ............................................................. | 25 | 5,003 | 307.2 | 664.3 | . 2 | . 2 | . 2 | . 2 |
| Netherlands .............................................................. | 618 | 123,424 | 11,648.1 | 34,800.9 | 5.2 | 6.2 | 6.6 | 8.3 |
| Norway | 53 | 5,771 | 463.9 | 933.8 | . 4 | . 3 | . 3 | . 2 |
| Spain ..................................................................... | 20 | 399 | 26.5 | 65.7 | . 2 | (*) | (*) | (*) |
| Sweden ................................................................. | 347 | 73,818 | 4,969.9 | 10,760.5 | 2.9 | 3.7 | 2.8 | 2.6 |
| Switzerland | 697 | 133,934 | 14,829.4 | 27,440.4 | 5.8 | 6.7 | 8.4 | 6.6 |
| United Kingdom | 3,291 | 456,618 | 40,325.9 | 80,610.2 | 27.6 | 22.8 | 22.7 | 19.3 |
| Other | 17 | 1,429 | 45.5 | 323.0 | . 1 | . 1 | (*) | . 1 |
| Latin America and Other Western Hemisphere ............... | 238 | 56,017 | 4,624.6 | 14,068.4 | 2.0 | 2.8 | 2.6 | 3.4 |
| South and Central America | 143 | 38,737 | 3,614.5 | 11,999.7 | 1.2 | ${ }_{(*)}^{1.9}$ | 2.0 | 2.9 |
| Brazil <br> Mexico | 9 64 | 358 J | 22.9 | 77.3 | .1 <br> . | . ${ }_{\text {(*) }}$ (1.2 | ( ${ }^{\text {( })}$ | ( ${ }^{\text {( })}$ |
| Mexico $\qquad$ <br> Panama $\qquad$ | 64 35 | J | (D) | (D) | .5 .3 | .5-1.2 | (D) | (D) |
| Venezuela ....................................................................................................... | 31 | 6,684 | 1,123.1 | 7,532.0 | . 3 | . 3 | . 6 | 1.8 |
| Other .................................................................. | 4 | 174 | 15.5 | 27.4 | 0 | (*) | (*) | (*) |
| Other Western Hemisphere ........................................ | 95 | 17,280 | 1,010.1 | 2,068.7 | . 8 | . 9 | . 6 | . 5 |
| Africa ...................................................................... | 46 | 6,869 | 475.1 | 1,374.4 | . 4 | . 3 | . 3 | . 3 |
| Middle East | 67 | 1 | ( ${ }^{\text {) }}$ | ( ${ }^{\text {) }}$ | . 6 | .2-. 5 | (D) | ( ${ }^{\text {D }}$ ) |
| Asia and Pacific ....................................................... | 2,005 | 362,948 | 29,384.5 | 83,833.6 | 16.8 | 18.1 | 16.6 | 20.1 |
| Australia | 497 | 36,448 | 3,785.0 | 10,446.8 | 4.2 | 1.8 | 2.1 | 2.5 |
| Hong Kong .............................................................. | 3 | C | $\left.{ }^{(\mathrm{D}}\right)$ | ( ${ }^{\text {D }}$ ) | (*) | (*) | ( ${ }^{\text {d }}$ | ${ }^{\text {( }}$ ) |
| Japan .................................................................... | 1,356 | 291,415 | 22,814.6 | 65,760.0 | 11.4 | 14.5 | 12.9 | 15.7 |
| Korea, Republic of .................................................... | 20 | 3,988 | 253.8 | 1,145.0 | . 2 | . 2 | . 1 | . 3 |
| Malaysia ............................................................................ | 1 |  |  |  | (*) | (*) | (D) | ( ${ }^{\text {d }}$ |
| New Zealand ............................................................ | 51 | 17,489 | 1,352.6 | 3,549.5 | . 4 | . 9 | . 8 | (P) |
| Philippines ............................................................... | 13 | H |  |  | . 1 | .1-. 2 | ( ${ }^{\text {( }}$ | ( ${ }^{\text {D }}$ |
| Singapore ................................................................ | 8 | 1,184 | 106.1 | 283.2 | . 1 | . 1 | . 1 | . 1 |
| Taiwan ................................................................... | 37 | 5,840 | 501.1 | 1,327.6 | . 3 | . 3 | . 3 | . 3 |
| Other ...................................................................... | 19 | G | (D) | (D) | . 2 | 0-. 1 | (D) | ( ${ }^{\text {D }}$ |
| United States .............................................................. | 33 | H | (D) | (D) | . 3 | . 2 | (D) | ( ${ }^{\text {D }}$ |
| Addenda: ${ }^{\text {a }}$ |  |  |  |  |  |  |  |  |
| European Communities (12) ${ }^{1}$ $\qquad$ <br> OPEC ${ }^{2}$ <br> OPEC | 6,735 77 | L | ( ${ }_{\text {(D) }}^{\text {D }}$ ) | $(\mathrm{D}$ (D) | 56.4 .6 | $2.5-5.0$ $.5-1.2$ | (D) | (D) |

D Suppressed to avoid disclosure of data of individual companies.

* Less than 0.05 percent.

1. The European Communities (12) comprises Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom.
2. OPEC is the Organization of Petroleum Exporting Countries. Through 1992, its members were Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, were Algeria, Ecuador, Gabon, Indonesia,
the United Arab Emirates, and Venezuela.
NOTES.-The columns for number of establishments and for number of employees cover both
manufacturing production was largest in primary metals and in electronic and other electric equipment.
Table 6 presents, for each of the seven major investing countries, ratios of the country's share of U.S. value added in each sic two-digit industry to the country's share of value added in manufacturing as a whole. These ratios can be interpreted as indexes of relative intensity of investment by a country, taking into account both the size of the industry and the overall level of manufacturing production by the country's U.S. establishments.

Because these ratios allow for variations in both industry size and production levels, the ratios, unlike simple distributions of value added, can be compared across countries as well as among industries. A value greater than 1.0 indicates that production by the investing country's establishments was more intense in the given industry than in manufacturing as a whole. For example, Japanese-owned establishments accounted for 1.7 percent of total U.S. manufacturing production but for 3.5 percent of U.S. production in rubber products; thus, the value of the index for

Table 5.-Value Added in Manufacturing Industries by All U.S. Establishments and by Foreign-Owned Establishments of Major Investing Countries, 1990

| $\begin{aligned} & \text { SIC } \\ & \text { code } \end{aligned}$ | Industry | All U.S. establishments | Foreign-owned establishments by country of UBO |  |  |  |  |  |  |  |  | U.S.-owned establishments |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | All countries | Canada | France | Germany | Netherlands | Switzerland | United Kingdom | Japan | Other countries |  |
|  |  | Millions of dollars |  |  |  |  |  |  |  |  |  |  |
|  | Manufacturing | 1,326,361.7 | 177,360.7 | 26,869.2 | 15,390.3 | 20,442.5 | 11,648.1 | 14,829.4 | 40,325.9 | 22,814.6 | 25,040.8 | 1,149,001.0 |
| 20 | Food and kindred products .......................................... | 140,972.8 | 19,501.2 | 2,108.1 | 1,175.4 | 445.6 | 2,949.6 | 3,913.7 | 5,821.8 | 786.0 | 2,301.0 | $121,471.6$ |
| 21 | Tobacco products .................................................................. | 22,561.3 | ${ }^{(\mathrm{D})}$ | 0 5076 | ${ }^{0}$ | (D) | 0 | 0 | (D) | 0 | ${ }_{289}$ |  |
| 22 | Textile mill products | 26,541.6 | 2,283.1 | 507.6 | 195.2 | 264.9 | 37.7 | 48.1 | 693.1 | 246.9 | 289.8 | 24,258.5 |
| 23 | Apparel and other textile products | 33,034.0 | 850.2 | $\left({ }^{\text {D }}\right.$ ) | $\left({ }^{\text {D }}\right.$ ) | 129.4 | $\left({ }^{\text {D }}\right.$ ) | 0 | 186.8 | $\left({ }^{\text {D }}\right.$ ) | $\left({ }^{\text {D }}\right.$ ) | 32,183.8 |
| 24 | Lumber and wood products .......................................... | 28,597.2 | 842.5 | (D) | 18.0 | 62.0 | (D) | (D) | 281.2 | 76.1 | (D) | 27,754.7 |
| 25 | Furniture and fixtures ................................................... | 21,644.7 | ( ${ }^{\text {( })}$ | (D) | ( ${ }^{\text {d }}$ ) | ( ${ }^{\text {d }}$ ) | (D) | (D) | ( ${ }^{\text {D }}$ ) | ${ }^{\text {D }}$ ) | ( ${ }^{\text {D }}$ ) | ( ${ }^{\text {) }}$ |
| 26 | Paper and allied products | 59,823.3 | 4,709.2 | 749.8 | 129.7 | 119.1 | (D) | 68.7 | 885.9 | 477.4 | (D) | 55,114.1 |
| 27 | Printing and publishing .... | 103,179.0 | 10,408.8 | 3,143.4 | 465.6 | 1,248.1 | (D) | ${ }^{(\mathrm{D})}$ | 2,856.1 | 386.4 | 1,670.8 | 92,770.2 |
| 28 | Chemicals and allied products | 153,032.4 | 48,835.7 | (D) | 2,944.8 | 9,316.9 | 5,034.2 | 6,477.8 | 8,760.1 | 2,438.7 | ( ${ }^{\text {D }}$ ) | 104,196.7 |
| 29 | Petroleum and coal products ...................................... | 27,214.1 | 4,106.8 | 1,032.1 | ${ }^{(\mathrm{D})}$ | ( ${ }^{\text {D }}$ ) | ( ${ }^{\text {D }}$ ) | ( ${ }^{\text {D }}$ ) | 1,952.4 | ( ${ }^{\text {D }}$ ) | (D) | 23,107.3 |
| 30 | Rubber and miscellaneous plastics products ................... | 49,889.0 | 8,757.9 | 996.1 | 2,153.6 | 1,124.9 | 465.5 | 117.8 | 1,731.5 | 1,722.4 | 446.1 | 41,131.1 |
| 31 | Leather and leather products ........................................ | 4,586.6 | 287.3 | $\left({ }^{\text {D }}\right.$ ) | ${ }^{\text {D }}$ ) | 0 | ( ${ }^{\text {D }}$ ) | ${ }^{\text {D }}$ ) | $\left.{ }^{(\mathrm{D}}\right)$ | 0 | ${ }^{\text {( })}$ | 4,299.3 |
| 32 | Stone, clay, and glass products ..................................... | 34,140.2 | 8,450.2 | 154.5 | 2,256.9 | 610.6 | 174.1 | 515.2 | 1,747.3 | 774.7 | 2,216.8 | 25,690.0 |
| 33 | Primary metal industries .............................................. | 53,366.6 | 10,297.6 | 1,522.7 | 1,342.3 | 655.5 | 62.9 | 378.2 | 956.9 | 3,874.2 | 1,505.0 | 43,069.0 |
| 34 | Fabricated metal products ............................................ | 79,951.9 | 6,350.2 | 877.0 | ${ }^{\text {D }}$ ) | 685.9 | $(\mathrm{D})$ | 231.0 | 1,917.2 | 426.4 | 962.3 | 73,601.7 |
| 35 | Industrial machinery and equipment ............................... | 132,165.8 | 13,561.7 | 501.8 | 799.3 | 1,739.4 | 187.9 | 689.8 | 2,612.0 | 2,947.5 | 4,084.0 | 118,604.1 |
| 36 | Electronic and other electric equipment ........................... | 106,983.9 | 16,703.2 | 2,399.1 | 901.9 | 2,273.6 | ${ }^{\text {D }}$ ) | 714.8 | 2,549.6 | 4,333.1 | ${ }^{\text {D }}$ ) | 90,280.7 |
| 37 | Transportation equipment | 146,916.3 | 7,170.6 | 801.0 | 723.5 | , 330.2 | 26.9 | ${ }^{(\mathrm{D}}$ ) | 1,131.1 | 3,183.2 | (D) | 139,745.7 |
| 39 | Instruments and related products ................................................................. | 81,665.6 | 9,722.1 | 1,355.6 | 390.6 | 1,271.3 | (D) | 1,068.3 | 3,314.9 | 780.1 | (D) | 71,943.5 |
|  | Miscellaneous manufacturing industries ............................ | 20,095.6 | 1,929.3 | 64.6 | 279.6 | (D) |  |  | 612.4 | 235.1 |  | 18,166.3 |
|  |  | Percent of all U.S. establishments |  |  |  |  |  |  |  |  |  |  |
|  | Manufacturing ................................................... | 100.0 | 13.4 | 2.0 | 1.2 | 1.5 | 0.9 | 1.1 | 3.0 | 1.7 | 1.9 | 86.6 |
| 20 | Food and kindred products ........................................... | 100.0 | 13.8 | 1.5 | . 8 | . 3 | 2.1 | 2.8 | 4.1 | . 6 | 1.6 | 86.2 |
| 21 | Tobacco products ...................................................... | 100.0 | $\left.{ }^{(\mathrm{D}}\right)$ | 0 | 0 | ${ }^{(\mathrm{D})}$ | 0 | 0 | (D) | 0 | 0 | (D) |
| 22 | Textile mill products .................................................... | 100.0 | 8.6 | 1.9 | . 7 | 1.0 | . 1 | . 2 | 2.6 | . 9 | 1.1 | 91.4 |
| 23 | Apparel and other textile products ................................. | 100.0 | 2.6 | ( ${ }^{\text {D }}$ ) | $(\mathrm{D})$ | . 4 | $\left({ }^{\text {D }}\right.$ ) | 0 | . 6 | ( ${ }^{\text {D }}$ | $\left({ }^{\text {D }}\right.$ ) | 97.4 |
| 24 | Lumber and wood products .......................................... | 100.0 | 2.9 | (D) | (D) 1 | . 2 | (D) | ( ${ }^{\text {D }}$ ) | 1.0 | . 3 | (D) | 97.1 |
| 25 | Furniture and fixtures ....................................................................................... | 100.0 | $\left.{ }^{(\mathrm{D}}\right)$ | (D) | ${ }^{\text {D }}$ ) | $\left.{ }^{( }\right)$ | (D) | (D) | ${ }^{(\mathrm{D})}$ | $\left.{ }^{( }\right)$ | (D) | (D) |
| 26 | Paper and allied products | 100.0 | 7.9 | 1.3 | . 2 | . 2 | (D) | (D) 1 | 1.5 | . 8 | (D) | 92.1 |
| 27 | Printing and publishing | 100.0 | 10.1 | 3.0 | . 5 | 1.2 | (D) | ${ }^{(\mathrm{D})}$ | 2.8 | .4 | 1.6 | 89.9 |
| 28 | Chemicals and allied products ...................................... | 100.0 | 31.9 | ( ${ }^{\text {D }}$ | 1.9 | 6.1 | 3.3 | 4.2 | 5.7 | 1.6 | ${ }^{\text {( }}$ ) | 68.1 |
| 29 | Petroleum and coal products ........................................ | 100.0 | 15.1 | 3.8 | ${ }^{\text {( }}$ ) | (D) | (D) | ( ${ }^{\text {) }}$ | 7.2 | ${ }^{(\mathrm{D})}$ | (D) | 84.9 |
| 30 | Rubber and miscellaneous plastics products ................... | 100.0 | 17.6 | 2.0 | 4.3 | 2.3 | ( 9 | . 2 | 3.5 | 3.5 | . 9 | 82.4 |
| 31 | Leather and leather products ....................................... | 100.0 | 6.3 | (D) | ${ }^{(\mathrm{D})}$ | 0 | $\left.{ }^{( }\right)$ | ${ }^{(\mathrm{D})}$ | (D) | 0 | (D) | 93.7 |
| 32 | Stone, clay, and glass products .................................... | 100.0 | 24.8 | . 5 | 6.6 | 1.8 | . 5 | 1.5 | 5.1 | 2.3 | 6.5 | 75.2 |
| 33 | Primary metal industries .............................................. | 100.0 | 19.3 | 2.9 | 2.5 | 1.2 | . 1 | . 7 | 1.8 | 7.3 | 2.8 | 80.7 |
| 34 | Fabricated metal products ............................................ | 100.0 | 7.9 | 1.1 | (D) | . 9 | (D) | . 3 | 2.4 | . 5 | 1.2 | 92.1 |
| 35 | Industrial machinery and equipment ............................... | 100.0 | 10.3 | . 4 | . 6 | 1.3 | . 1 | . 5 | 2.0 | 2.2 | 3.1 | 89.7 |
| 36 | Electronic and other electric equipment | 100.0 | 15.6 | 2.2 | . 8 | 2.1 | ${ }^{( }{ }^{\text {D }}$ ) |  | 2.4 | 4.1 | ( ${ }^{\text {D }}$ ) | 84.4 |
| 37 | Transportation equipment | 100.0 | 4.9 | . 5 | . 5 | . 2 | (*) | ${ }^{(\mathrm{D})}$ | . 8 | 2.2 | (D) | 95.1 |
| 38 | Instruments and related products .................................. | 100.0 | 11.9 | 1.7 | . 5 | 1.6 | (D) | 1.3 | 4.1 | 1.0 | (D) | 88.1 |
| 39 | Miscellaneous manufacturing industries ............................ | 100.0 | 9.6 | . 3 | 1.4 | (D) | (D) | (D) | 3.0 | 1.2 | 2.9 | 90.4 |
|  | Addendum: <br> Total number of industries in which the UBO country's establishments have the highest share of value added amoung investing countries $\qquad$ | .................. | ................. | 2 | 3 | 0 | 0 | 0 | 10 | 4 | 1 | .................. |

[^5]Japanese-owned establishments in rubber products was 2.0 , indicating a relatively high intensity of investment in the industry.

In the table, France stands out because of the relatively high intensity of its investment in stone, clay, and glass products: In 1990, French-owned establishments' share of U.S. production in this industry was nearly six times as large as their share in total manufacturing. France also shows relatively intense investment in the rubber products industry, where Frenchowned establishments' share of production was nearly four times as large as their share in total manufacturing.
Japan shows relatively intense investment in the primary metals industry; Japanese-owned establishments' share of production in this industry was more than four times as large as that in total manufacturing. In contrast, their share of production in transportation equipment was only slightly higher than their share in total manufacturing.

Germany shows relatively intense investment in chemicals, as do Switzerland and the Netherlands. The establishments of each of these three countries had shares of production in chemicals that were nearly four times as large as their shares in total manufacturing.

## By State

The States with the largest production by foreignowned manufacturing establishments were California, Texas, New Jersey, N orth Carolina, Ohio,
and New York (table 7). These six States accounted for 41 percent of the total production by foreign-owned manufacturing establishments in the U nited States. By two-digit industry, California accounted for a particularly large share of the production in electronic and other electric equipment (23 percent), and New York accounted for a very large share in printing and publishing (26 percent) (table 8). Texas, New Jersey, and North Carolina together accounted for nearly 40 percent of the production by foreign-owned establishments in chemicals, and Ohio accounted for nearly 20 percent in transportation equipment.
Among two-digit industries, chemicals accounted for the largest share of production by foreign-owned manufacturing establishments in 20 States, and food products accounted for the largest share in 11 States. The chemicals industry accounted for more than one-half of foreignowned production in five States: Delaware, West Virginia, New Jersey, Texas, and Virginia.
The States in which foreign-owned establishments accounted for the largest share of manufacturing production were Delaware ( 37 percent), W est Virginia ( 36 percent), N ew Jersey ( 24 percent), Georgia (19 percent), South Carolina (19 percent), and North Carolina (19 percent). In several of these States, foreign-owned establishments accounted for very large shares of chemicals production-74 percent in Delaware, 56 percent in W est Virginia, 47 percent in New Jersey, and 60 percent in North Carolina (table 9). In North Carolina, foreign-owned establishments also accounted for large shares of production

Table 6.-Index of Relative Intensity of Production in Manufacturing for All Foreign-Owned Establishments and for Establishments of Major Investing Countries, 1990

| $\begin{gathered} \text { SIC } \\ \text { code } \end{gathered}$ | Industry | All countries | Canada | France | Germany | Netherlands | Switzerland | United Kingdom | Japan | Other countries |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Manufacturing ..................................................... | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 20 | Food and kindred products | 1.034 | . 738 | . 719 | . 205 | 2.382 | 2.483 | 1.358 | . 324 | . 865 |
| 21 | Tobacco products ......................................................... | ${ }^{\text {D }}$ ) | 0 | 0 | (D) |  |  | (D) | 0 |  |
| 22 | Textile mill products ................................................ | . 643 | . 944 | . 634 | . 648 | . 162 | . 162 | . 859 | . 541 | . 578 |
| 23 | Apparel and other textile products ................................... | . 192 | (D) | $\left({ }^{\text {( })}\right.$ | . 254 | (D) |  | . 186 | ( ${ }^{\text {( }}$ |  |
| 24 | Lumber and wood products .............................................. | . 220 | (D) | ${ }^{\text {( }} .054$ | . 141 | (D) | (D) | . 323 | . 155 | (D) |
| 25 | Furniture and fixtures ......... | ( ${ }^{\text {d }}$ | (D) | ( ${ }^{\text {D }}$ | ( ${ }^{\text {d }}$ | (D) | (D) | ( ${ }^{\text {D }}$ ) | ( ${ }^{\text {) }}$ | (D) |
| 26 | Paper and allied products | . 589 | . 619 | . 187 | . 129 | (D) | . 103 | 487 | . 464 | ( ${ }^{\text {( }}$ |
| 27 | Printing and publishing | . 754 | 1.504 | . 389 | . 785 | (D) | ${ }^{(D)}$ | . 910 | . 218 | . 858 |
| 28 | Chemicals and allied products | 2.386 | ( ${ }^{\text {d }}$ | 1.658 | 3.950 | 3.746 | 3.786 | 1.883 | . 926 | $\left({ }^{\text {D }}\right.$ ) |
| 29 | Petroleum and coal products | 1.129 | 1.872 | ( ${ }^{\text {D }}$ ) | ( ${ }^{\text {D }}$ | $\left({ }^{\text {D }}\right.$ ) | $\left({ }^{\text {D }}\right.$ ) | 2.360 | $\left({ }^{\text {D }}\right.$ ) | ( ${ }^{\text {( })}$ |
| 30 | Rubber and miscellaneous plastics products ..................... | 1.313 | . 986 | 3.720 | 1.463 | 1.062 | . 211 | 1.142 | 2.007 | . 474 |
| 31 | Leather and leather products ..... | . 468 | ( ${ }^{\text {( })}$ | ${ }^{(D)}$ |  | ${ }^{\text {D }}$ ) | ${ }^{(D)}$ |  | 0 |  |
| 32 | Stone, clay, and glass products | 1.851 | . 223 | 5.697 | 1.160 | . 581 | 1.350 | 1.683 | 1.319 | 3.439 |
| 33 | Primary metal industries .. | 1.443 | 1.408 | 2.168 | . 797 | . 134 | . 634 | . 590 | 4.220 | 1.494 |
| 34 | Fabricated metal products ............................................ | . 594 | . 541 | ${ }^{\text {D }}$ ) | . 557 | ( ${ }^{\text {( })}$ | . 258 | . 789 | . 310 | . 638 |
| 35 | Industrial machinery and equipment | . 767 | . 187 | . 521 | . 854 | . 162 | . 467 | . 650 | 1.297 | 1.637 |
| 36 | Electronic and other electric equipment | 1.168 | 1.107 | . 727 | 1.379 | ${ }^{\text {D }}$ ) | . 598 | . 784 | 2.355 | ${ }^{\text {( })}$ |
| 37 | Transportation equipment .............................................. | . 365 | . 269 | . 424 | . 146 | . 021 | ${ }^{(D)}$ | . 253 | 1.260 | (D) |
| 38 | Instruments and related products .................................... | . 890 | . 819 | . 412 | 1.010 | ( ${ }^{\text {d }}$ ) | 1.170 | 1.335 | . 555 |  |
| 39 | Miscellaneous manufacturing industries ............................ | . 718 | . 159 | 1.199 | (D) | (D) | ${ }^{\text {( }}$ ) | 1.002 | . 680 | 1.522 |

[^6]index is similar in form to the export index of revealed comparative advantage introduced in Bela Balassa, "Trade Liberalization and 'Revealed' Comparative Advantage," Manchester School 33 May 1965): 99-123.
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in both the electronics and the instruments industries (40 percent in each). In South Carolina, foreign-owned establishments accounted for more than 50 percent of the State's production in the rubber products industry.

## Comparison of Foreign-0 wned and U.S.-O wned Establishments

This section compares the operations of foreignowned manufacturing establishments with those
of U.S.-owned ones in terms of plant size (or scale), capital intensity, compensation per employee, production-worker wage rates, and labor productivity.? The section also examines whether differences between the hourly wage rates of production workers in foreign-owned and U.S.owned establishments reflect differences in their
7. The analysis in this section is based on data for operating establishments only. Data for administrative and auxiliary establishments are not available by detailed industry for either foreign-owned or all U.S. establishments.

Table 7.-Selected Data for Foreign-Owned Manufacturing Establishments, by State, 1990

| State | Foreign-owned establishments |  |  |  | Foreign-owned establishments as a percentage of all U.S. establishments |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Number of establishments | Number of employees | Millions of dollars |  |  |  |  |
|  |  |  | Value added | Shipments | Number of employees | Value added | Shipments |
| Total ............................................................. | 11,934 | 2,004,235 | 177,360.7 | 417,539.4 | 10.6 | 13.4 | 14.5 |
| Alabama | 185 | 33,678 | 3,019.5 | 6,661.1 | 9.2 | 14.1 | 13.7 |
| Alaska | 24 | 3,092 | 182.8 | 658.6 | 22.7 | 13.1 | 17.9 |
| Arizona | 115 | 10,998 | 747.2 | 2,002.9 | 6.1 | 6.3 | 8.8 |
| Arkansas | 106 | 17,881 | 1,225.5 | 3,262.6 | 8.2 | 9.8 | 10.7 |
| California .............................................................. | 1,361 | 205,024 | 18,533.9 | 42,051.9 | 9.7 | 12.4 | 14.3 |
| Colorado | 119 | 10,964 | 1,019.5 | 2,342.8 | 6.1 | 7.4 | 8.5 |
| Connecticut ........................................................... | 194 | 34,571 | 2,650.5 | 4,407.9 | 10.0 | 11.1 | 11.0 |
| Delaware | 69 | 30,386 | 1,658.0 | 4,339.9 | 46.2 | 36.7 | 33.6 |
| District of Columbia | 13 | 215 | 17.4 | 37.4 | 1.5 | 1.1 | 1.7 |
| Florida .................................................................. | 504 | 44,688 | 3,091.7 | 7,342.6 | 9.0 | 10.4 | 12.1 |
| Georgia | 491 | 70,347 | 6,926.8 | 13,730.2 | 12.5 | 19.2 | 16.3 |
| Hawaii | 30 | 2,087 | 275.7 | 1,218.0 | 10.1 | 17.7 | 29.0 |
| Idaho .......................................................................................... | 25 | 3,414 | 269.4 | 509.8 | 5.6 | 6.9 | 5.6 |
| Illinois ................................................................ | 649 | 110,468 | 8,684.1 | 25,260.4 | 11.0 | 12.3 | 16.1 |
| Indiana .................................................................. | 317 | 86,378 | 7,683.9 | 16,766.2 | 14.0 | 17.1 | 17.0 |
| Iowa .................................................................. | 106 | 22,359 | 1,863.0 | 3,631.8 | 9.7 | 9.6 | 7.9 |
| Kansas | 89 | 13,547 | 1,144.2 | 2,902.8 | 7.1 | 8.8 | 8.0 |
| Kentucky .............................................................. | 184 | 42,508 | 3,790.1 | 10,006.8 | 15.2 | 16.0 | 18.6 |
| Louisiana .............................................................. | 127 | 17,136 | 4,179.7 | 18,892.9 | 10.0 | 18.5 | 28.7 |
| Maine .................................................................. | 59 | 7,384 | 554.9 | 1,406.8 | 7.2 | 9.4 | 11.3 |
| Maryland .............................................................. | 196 | 27,941 | 2,232.4 | 4,859.0 | 13.2 | 14.2 | 15.8 |
| Massachusetts ..................................................... | 313 | 57,078 | 4,900.7 | 8,828.3 | 10.8 | 14.0 | 13.8 |
| Michigan ................................................................ | 396 | 70,914 | 5,300.0 | 14,368.9 | 7.8 | 8.2 | 9.4 |
| Minnesota ............................................................ | 174 | 31,983 | 1,813.5 | 4,009.6 | 8.1 | 7.0 | 7.3 |
| Mississippi ................................................................. | 110 | 13,706 | 1,109.5 | 2,582.0 | 5.9 | 8.7 | 8.5 |
| Missouri | 268 | 36,928 | 3,635.1 | 7,388.7 | 8.7 | 12.0 | 11.0 |
| Montana | 15 | 943 | 77.3 | 794.4 | 4.7 | 6.5 | 19.7 |
| Nebraska | 54 | 8,022 | 956.7 | 1,960.4 | 8.1 | 12.8 | 9.6 |
| Nevada | 27 | 1,501 | 123.6 | 244.7 | 5.9 | 8.4 | 8.4 |
| New Hampshire ....................................................... | 91 | 11,915 | 690.1 | 1,375.0 | 12.9 | 12.4 | 14.1 |
| New Jersey | 590 | 98,905 | 11,023.0 | 19,989.2 | 15.8 | 24.4 | 22.8 |
| New Mexico .......................................................... | 34 | 2,640 | 183.6 | 369.7 | 6.6 | 8.2 | 6.7 |
| New York ......................................................... | 650 | 104,499 | 9,528.6 | 18,845.2 | 9.1 | 11.1 | 12.2 |
| North Carolina ....................................................... | 483 | 110,447 | 10,682.9 | 21,147.8 | 13.3 | 18.5 | 18.2 |
| North Dakota . | 7 | F | ${ }^{\text {( })}$ | ( ${ }^{\text {D }}$ ) | ( ${ }^{\text {D }}$ | ${ }^{(5)}$ | ( ${ }^{\text {) }}$ |
| Ohio | 644 | 118,364 | 9,888.5 | 26,449.0 | 10.9 | 12.3 | 14.9 |
| Oklahoma ............................................................. | 103 | 15,842 | 1,339.5 | 4,256.8 | 9.5 | 11.3 | 15.2 |
| Oregon | 119 | 15,269 | 1,071.7 | 3,313.9 | 7.1 | 8.1 | 10.7 |
| Pennsylvania ......................................................... | 667 | 119,688 | 9,511.1 | 20,216.7 | 11.9 | 14.8 | 14.8 |
| Rhode Island ......................................................... | 51 | 6,628 | 390.4 | 909.7 | 6.6 | 7.6 | 9.3 |
| South Carolina ....................................................... | 229 | 59,626 | 3,996.1 | 9,724.6 | 16.2 | 19.0 | 20.8 |
| South Dakota ............................................................ | 21 | 2,947 | 141.6 | 338.2 | 9.9 | 8.7 | 7.5 |
| Tennessee ........................................................... | 308 | 72,779 | 5,252.6 | 14,102.1 | 14.4 | 17.4 | 20.9 |
| Texas ................................................................... | 783 | 101,890 | 12,849.7 | 35,184.0 | 10.8 | 15.4 | 16.7 |
| Utah .................................................................... | 51 | 7,049 | 588.7 | 1,302.2 | 6.9 | 9.6 | 9.3 |
| Vermont | 26 | 3,657 | 224.7 | 490.1 | 8.3 | 7.0 | 8.8 |
| Virginia ................................................................. | 242 | 47,873 | 4,555.3 | 8,465.5 | 11.3 | 14.0 | 13.9 |
| Washington ............................................................ | 197 | 22,979 | 1,867.1 | 5,454.6 | 6.3 | 7.5 | 8.1 |
| West Virginia ........................................................ | 61 | 18,047 | 2,291.7 | 4,489.5 | 22.0 | 36.1 | 34.7 |
| Wisconsin ............................................................. | 249 | 46,016 | 3,551.0 | 8,520.9 | 8.4 | 9.6 | 10.3 |
| Wyoming .................................................................... | 8 | C | (D) | (D) | ( ${ }^{\text {D }}$ | (D) | (D) |

[^7]Table 8.-Value Added by Foreign-Owned Manufacturing Establishments, State by Selected Industry, 1990
[Millions of dollars]

| State | Total | Selected industries |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Food and kindred products | $\begin{aligned} & \text { Textile } \\ & \text { mill } \\ & \text { products } \end{aligned}$ | Paper and allied products | Printing and publishing | Chemicals and allied products | Petroleum and coal products | Rubber and miscellaneous plastics products | Stone, clay, and glass products | Primary metal industries | Fabricated metal products | Industrial machinery and equipment | Electronic and other electric equipment | Transportation equipment | Instruments and related products |
| SIC code |  | 20 | 22 | 26 | 27 | 28 | 29 | 30 | 32 | 33 | 34 | 35 | 36 | 37 | 38 |
| Total ................. | 177,360.7 | 19,501.2 | 2,283.1 | 4,709.2 | 10,408.8 | 48,835.7 | 4,106.8 | 8,757.9 | 8,450.2 | 10,297.6 | 6,350.2 | 13,561.7 | 16,703.2 | 7,170.6 | 9,722.1 |
| Alabama ... | 3,019.5 | (D) | 103.1 | 348.4 | 18.6 | 896.6 | (D) | 634.0 | 183.4 | (D) | (D) | 96.1 | 248.3 | D) | D) |
| Alaska ............................. | 182.8 | (D) | 0 | (D) | 0 | (D) | 0 | 0 | 0 | 0 | (D) | 0 | 0 | 0 | ( |
| Arizona ....................... | 747.2 | 43.2 | 0 | 0 | ( ${ }^{\text {D }}$ ) | 20.6 | 0 | 52.7 | 159.0 | 147.6 | 68.1 | 107.2 | ( ${ }^{\text {D }}$ | ( ${ }^{\text {d }}$ ) | ( ${ }^{\text {D }}$ ) |
| Arkansas .. | 1,225.5 | 170.1 | 0 | 36.1 | (D) | 81.8 | $\left({ }^{\text {D }}\right.$ ) | ( ${ }^{\text {d }}$ ) | 48.7 | 56.7 | 149.7 | 214.8 | 214.5 | 54.6 | (D) |
| California ................... | 18,533.9 | 2,471.0 | (D) | 344.6 | 936.4 | 3,430.1 | (D) | 376.5 | 1,008.0 | 475.7 | 608.6 | 1,880.0 | 3,920.9 | 880.1 | 1,936.5 |
| Colorado .................... | 1,019.5 | 210.3 | 0 | (D) | 140.5 | 107.8 | (D) | (D) | 85.1 | (D) | (D) | 100.6 | 64.1 | 0 | 57.1 |
| Connecticut .................. | 2,650.5 | 163.2 | 32.3 | 15.8 | 141.4 | 973.5 | 10.6 | 18.8 | 80.2 | 207.4 | 122.7 | 206.6 | 102.0 | ${ }^{\text {D }}$ ) | 248.0 |
| Delaware .................. | 1,658.0 | $\left({ }^{\text {D }}\right.$ ) | 0 | 0 | 0 | 1,316.3 | $\left({ }^{\text {D }}\right.$ ) | $\left({ }^{\text {D }}\right.$ ) | $\left({ }^{\text {D }}\right.$ ) | $\left({ }^{\text {D }}\right.$ ) | ${ }^{\text {D }}$ ) | $\left({ }^{\text {D }}\right.$ ) | 0 | 0 | ( ${ }^{\text {D }}$ ) |
| District of Columbia .... | 17.4 | 0 | 0 | 0 | (D) | 0 | 0 | (D) | (D) | 0 | 0 | 0 | 0 | 0 | 0 |
| Florida ......................... | 3,091.7 | 645.4 | 0 | (D) | 164.5 | 225.5 | (D) | 72.0 | 400.2 | 84.3 | 78.8 | 300.4 | 497.4 | 147.3 | 128.7 |
| Georgia ..................... | 6,926.8 | 550.3 | (D) | 355.5 | 144.0 | 1,026.2 | (D) | 145.6 | 407.3 | 208.1 | 111.8 | 241.2 | 823.1 | 10.1 | 262.7 |
| Hawaii ....................... | 275.7 | ( ${ }^{\text {D }}$ ) | 0 | ( ${ }^{\text {D }}$ ) | ${ }^{\text {( }) ~}$ | (D) | ( ${ }^{\text {D }}$ ) | (D) | (D) | ( ${ }^{\text {D }}$ ) | 0 | 0 | 0 | ( ${ }^{\text {d }}$ ) | 0 |
| Idaho ......................... | 269.4 | 125.4 | 0 | 0 | (D) | 6.3 | 0 | 0 | (D) | 0 | 0 | (D) | ( ${ }^{\text {) }}$ ) | 0 | 0 |
| Illinois ......................... | 8,684.1 | 1,435.7 | 0 | 220.8 | 801.2 | 1,660.1 | 149.7 | 645.5 | 327.5 | 572.8 | 310.4 | 880.2 | 790.5 | ( ${ }^{\text {) }}$ | 489.1 |
| Indiana ...................... | 7,683.9 | 1,025.4 | $\left({ }^{\text {D }}\right.$ ) | ( ${ }^{\text {D }}$ ) | 330.3 | 893.5 | 3.6 | 534.8 | ( ${ }^{\text {D }}$ ) | 1,758.2 | 335.8 | 780.9 | 634.5 | 224.8 | 654.7 |
| lowa ........ | 1,863.0 | 360.3 | 0 | 42.2 | 125.9 | 209.7 | (D) | 371.9 | 76.0 | (D) | (D) | 254.0 | (D) | (D) | (D) |
| Kansas ...................... | 1,144.2 | 195.6 | 0 | ( ${ }^{\text {D }}$ ) | 172.6 | 128.3 | (D) | ( ${ }^{\text {D }}$ ) | 124.6 | (D) | 13.3 | 87.9 | (D) | (D) | (D) |
| Kentucky .................... | 3,790.1 | 527.9 | $\left({ }^{\text {D }}\right.$ ) | (D) | 95.3 | 739.1 | (D) | (D) | 168.8 | 814.6 | 146.0 | 189.1 | 85.4 | (D) | 0 |
| Louisiana ................... | 4,179.7 | 261.2 | (D) | ${ }^{\text {( }}$ ) | (D) | 1,855.7 | (D) | 10.7 | 38.3 | 0 | ${ }^{( }{ }^{\text {D }}$ ) | ${ }^{(D)}$ | (D) | (D) | 0 |
| Maine ........................ | 554.9 | 95.8 | 0 | 265.6 | (D) | ( ${ }^{\text {D }}$ | (D) | 43.7 | (D) | (D) | 12.2 | 23.8 | (D) | (D) | 0 |
| Maryland .................... | 2,232.4 | 460.3 | (D) | (D) | 220.0 | 570.2 | ( ${ }^{\text {D }}$ ) | 89.6 | 183.1 | (D) | 44.8 | 99.1 | 195.4 | (D) | 117.8 |
| Massachusetts ............ | 4,900.7 | 218.3 | 111.9 | 141.1 | 501.6 | 446.5 | (D) | 151.1 | (D) | 201.0 | 276.5 | 827.5 | 530.2 | 78.0 | 504.8 |
| Michigan .................... | 5,300.0 | 550.5 | 0 | 83.6 | 255.7 | 837.1 | ( ${ }^{\text {D }}$ ) | 261.8 | 231.1 | 690.9 | 368.9 | 649.1 | 292.1 | 713.5 | 206.9 |
| Minnesota .................. | 1,813.5 | 421.1 | $\left({ }^{\text {D }}\right.$ ) | ( ${ }^{\text {D }}$ ) | 179.1 | 91.5 | (D) | 86.7 | 70.7 | (D) | (D) | 213.7 | 266.1 | ( ${ }^{\text {D }}$ ) | 101.2 |
| Mississippi .................. | 1,109.5 | 39.4 | 0 | (D) | ( ${ }^{\text {) }}$ | 363.7 | (D) | 115.4 | 95.7 | 35.0 | 133.4 | ( ${ }^{\text {D }}$ | ( ${ }^{\text {D }}$ | (D) | 42.7 |
| Missouri ...... | 3,635.1 | 900.9 | (D) | 102.5 | 81.9 | 1,108.7 | (D) | 63.3 | 187.3 | 307.2 | 200.8 | 161.3 | 149.5 | (D) | 129.6 |
| Montana .................... | 77.3 | ( ${ }^{\text {D }}$ ) | 0 | 0 | 0 | (D) | (D) | $\left({ }^{\text {D }}\right.$ ) | ${ }^{\text {( })}$ | $\left({ }^{\text {D }}\right.$ ) | $\left({ }^{\text {D }}\right.$ ) | 0 | 0 | 0 | 0 |
| Nebraska ................... | 956.7 | 363.8 | 0 | 0 | ( ${ }^{\text {D }}$ ) | 401.1 | (D) | (D) | (D) | (D) | (D) | ( ${ }^{\text {D }}$ ) | ( ${ }^{\text {D }}$ ) | ${ }^{\text {D }}$ ) | (D) |
| Nevada ..................... | 123.6 | 43.3 | 0 | ${ }^{(5)}$ | 0 | (D) | 0 | (D) | 32.6 | 19.5 | 0 | 0 | 0 | 0 | (D) |
| New Hampshire ........... | 690.1 | 35.7 | (D) | 40.1 | 46.7 | (D) | (D) | 96.7 | 27.9 | (D) | (D) | 209.8 | 64.5 | 0 | 76.9 |
| New Jersey ................ | 11,023.0 | 1,156.4 | ( ${ }^{\text {D }}$ ) | 177.1 | 419.8 | 6,726.3 | 76.6 | 209.6 | 232.3 | 255.2 | 178.3 | 340.5 | 357.5 | 33.8 | 787.7 |
| New Mexico ................. | 183.6 |  | 0 | 0 | ( ${ }^{\text {D }}$ ) |  | $\left({ }^{\text {D }}\right.$ ) | (D) | 18.4 | 0 | 0 | (D) | ( ${ }^{\text {) }}$ | 0 | ( ${ }^{\text {b }}$ |
| New York ................... | 9,528.6 | 1,069.9 | 52.9 | 182.0 | 2,707.7 | 1,813.4 | (D) | 495.7 | 293.1 | 373.8 | 332.1 | 595.3 | 798.2 | 136.2 | 441.2 |
| North Carolina ............ | 10,682.9 | 290.1 | 489.5 | 141.4 | 160.2 | 4,886.5 | (D) | 562.4 | 295.7 | 160.9 | 235.7 | 525.6 | 1,894.0 | 191.3 | 528.2 |
| North Dakota ............... | (D) | ( ${ }^{\text {) }}$ | 0 | 0 | ( ${ }^{\text {D }}$ |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ${ }^{\text {D }}$ ) | 0 |
| Ohio .......................... | 9,888.5 | 1,148.6 | (D) | 229.1 | 395.3 | 1,609.1 | (D) | 541.0 | 479.2 | 1,035.5 | 491.1 | 617.0 | 619.0 | 1,338.6 | 535.4 |
| Oklahoma .................. | 1,339.5 | 89.0 | 0 | ( ${ }^{\text {D }}$ | 47.6 | 195.5 | (D) | 430.0 | 123.6 | (D) | 102.3 | 87.4 | (D) | ( ${ }^{\text {D }}$ | 61.1 |
| Oregon ...................... | 1,071.7 | 169.8 | ( ${ }^{\text {D }}$ ) | (D) | (D) | 117.5 | (D) | 10.7 | 36.4 | 84.7 | ${ }^{(\mathrm{D})}$ | 203.6 | 168.7 | (D) | ( ${ }^{\text {d }}$ ) |
| Pennsylvania .............. | 9,511.1 | 1,065.3 | 95.7 | 388.4 | 794.3 | 1,505.4 | (D) | 214.4 | 511.8 | 526.7 | 510.7 | 971.0 | 765.4 | 628.4 | 868.5 |
| Rhode Island ............... | 390.4 | (D) | (D) | 0 | 45.5 | ( ${ }^{\text {D }}$ | (D) | 38.4 | (D) | (D) | 15.9 | 21.7 | 46.8 | 0 | 83.5 |
| South Carolina ............ | 3,996.1 | 273.7 | 328.7 | (D) | 37.5 | 1,017.6 | (D) | 771.1 | 174.3 | (D) | 85.8 | 558.6 | 389.1 | (D) | (D) |
| South Dakota .............. | 141.6 | 73.7 | 0 | 0 | (D) |  | 0 | (D) | ${ }^{(\mathrm{D}}$ ) | 0 | (D) | 32.1 | ( ${ }^{\text {) }}$ ) | 0 | 0 |
| Tennessee .................. | 5,252.6 | 228.0 | 155.0 | 88.5 | 144.3 | 1,585.5 | (D) | 375.2 | 227.7 | 213.6 | 267.4 | 551.9 | 392.7 | 564.2 | 188.2 |
| Texas ........................ | 12,849.7 | 509.1 | 0 | 40.0 | 303.0 | 7,594.0 | 458.5 | 315.0 | 625.4 | 505.3 | 330.6 | 477.2 | 1,114.6 | 84.3 | 381.9 |
| Utah .......................... | 588.7 | 25.1 | ( ${ }^{\text {D }}$ | 0 | ${ }^{\text {D }}$ ) | 20.2 | 0 | 0 | 24.1 | ( ${ }^{\text {D }}$ | ${ }^{(D)}$ | ( ${ }^{\text {D }}$ ) | 32.6 | ${ }^{\text {D }}$ ) | $\left({ }^{\text {D }}\right.$ ) |
| Vermont ..................... | 224.7 | (D) | 0 | (D) | (D) | 38.8 | 0 | (D) | (D) | (D) | 0 | 30.4 | (D) | (D) | 0 |
| Virginia ............................ | 4,555.3 | 281.1 | ( ${ }^{\text {D }}$ ) | (D) | 173.0 | 2,361.0 | 0 | 304.8 | 192.5 | (D) | 33.0 | 295.8 | 282.2 | 201.0 | 80.3 |
| Washington ................ | 1,867.1 | 406.1 | (D) | 250.1 | 31.9 | 134.3 | ( ${ }^{\text {D }}$ | 47.6 | 153.7 | 71.3 | ( ${ }^{\text {( })}$ | 23.8 | 177.2 | ( ${ }^{\text {D }}$ ) | ${ }^{\text {( }}$ ) |
| West Virginia .............. | 2,291.7 |  | 0 | (D) | (D) | 1,435.2 | ( ${ }^{\text {D }}$ ) | (D) | 84.9 | 485.6 | 109.8 | (D) | (D) | 0 | (D) |
| Wisconsin .................. | 3,551.0 | 1,038.2 | $\left({ }^{\text {D }}\right.$ ) | 379.1 | 262.0 | 243.5 | 0 | 165.5 | (D) | 136.3 | 166.4 | 579.0 | 236.1 | ${ }^{\text {D }}$ ) | 221.6 |
| Wyoming ..................... | (D) | ( ${ }^{\text {D }}$ ) | 0 | 0 | 0 | ( ${ }^{\text {) }}$ | 0 | (D) | (D) | 0 | 0 | 0 | 0 | 0 | 0 |

D Suppressed to avoid disclosure of data of individual companies.
NOTE.-Administrative and auxiliary establishments are excluded.
SIC Standard Industrial Classification

Table 9.-Value Added by Foreign-Owned Manufacturing Establishments as a Percentage of That by All U.S. Manufacturing Establishments, State by Selected Industry, 1990

| StateSIC code | Total | Selected industries |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Food and kindred products | $\begin{gathered} \text { Textile } \\ \text { mill } \\ \text { products } \end{gathered}$ | Paper and allied products | $\begin{aligned} & \text { Printing } \\ & \text { and } \\ & \text { publishing } \end{aligned}$ | Chemicals and allied products | Petroleum and coal products | Rubber and miscellaneous plastics products | Stone, clay, and glass products | Primary metal industries | Fabricated metal products | Industrial machinery and equipment | Electronic and other electric equipment | Transportation equipment | Instruments and related products |
|  |  | 20 | 22 | 26 | 27 | 28 | 29 | 30 | 32 | 33 | 34 | 35 | 36 | 37 | 38 |
| Total | 13.4 | 13.8 | 8.6 | 7.9 | 10.1 | 31.9 | 15.1 | 17.6 | 24.8 | 19.3 | 7.9 | 10.3 | 15.6 | 4.9 | 11.9 |
| Alabama ... | 14.1 | (D) | 6.5 | 11.0 | 2.7 | 43.6 | (D) | 52.5 | 39.4 | (D) | (D) | 7.2 | 26.1 | (D) | (D) |
| Alaska .................................... | 13.1 | (D) | 0 | (D) | 0 | (D) | 0 | 0 | 0 | 0 | (D) | 0 | 0 | 0 | 0 |
| Arizona ...... | 6.3 | 5.9 | 0 | 0 | (D) | 3.9 | 0 | 23.5 | 45.3 | 22.1 | 19.0 | 13.3 | (D) | (D) | (D) |
| Arkansas | 9.8 | 7.0 | 0 | 2.2 | (D) | 11.3 | (D) | (D) | 20.8 | 13.0 | 14.3 | 23.2 | 21.1 | 10.2 | (D) |
| California | 12.4 | 13.5 | ( ${ }^{\text {d }}$ | 11.5 | 7.9 | 49.8 | (D) | 8.2 | 27.2 | 23.5 | 7.9 | 10.1 | 21.6 | 3.8 | 12.9 |
| Colorado ......... | 7.4 | 8.1 | 0 | (D) | 9.5 | 41.4 | (D) | ( ${ }^{\text {d }}$ | 23.0 | (D) | (D) | 6.3 | 7.0 | 0 | 2.4 |
| Connecticut | 11.1 | 18.5 | 14.6 | 1.4 | 8.8 | 41.7 | (D) | 3.6 | 25.3 | 26.4 | 5.2 | 7.3 | 5.8 | $\left({ }^{\text {D }}\right.$ ) | 11.8 |
| Delaware ... | 36.7 | ${ }^{(D)}$ | 0 | 0 | 0 | 74.4 | (D) | ( ${ }^{\text {D }}$ ) | ${ }^{\text {D }}$ ) | ${ }^{\text {D }}$ ) | ${ }^{\text {D }}$ ) | $\left({ }^{\text {D }}\right.$ ) | 0 | 0 | ${ }^{\text {D }}$ ) |
| District of Columbia ................. | 1.1 | 0 | 0 | 0 | (D) | 0 | n.a. | (D) | (D) | 0 | 0 | 0 | 0 | 0 | 0 |
| Florida .................................. | 10.4 | 14.6 | 0 | $\left({ }^{\text {D }}\right.$ ) | 4.8 | 8.8 | ( ${ }^{\text {D }}$ | 8.0 | 35.2 | 31.5 | 5.8 | 19.6 | 11.1 | 6.3 | 4.4 |
| Georgia ................................. | 19.2 | 12.3 | $\left({ }^{\text {D }}\right.$ ) | 10.1 | 8.2 | 34.9 | ( ${ }^{\text {D }}$ ) | 13.0 | 37.4 | 17.4 | 10.9 | 16.0 | 32.8 | 0.2 | 41.1 |
| Hawaii .................................... | 17.7 | ${ }^{\text {D }}$ ) | 0 | ${ }^{\text {D }}$ ) | ( ${ }^{\text {d }}$ ) | ( ${ }^{\text {d }}$ | (D) | ${ }^{\text {D }}$ ) | (D) | ${ }^{(D)}$ | 0 | 0 | 0 | ${ }^{(D)}$ | 0 |
| Idaho ...... | 6.9 | 13.4 | 0 | 0 | (D) | 1.2 | 0 | 0 | (D) | 0 | 0 | ${ }^{(D)}$ | (D) | 0 | 0 |
| Illinois .................................... | 12.3 | 14.2 | 0 | 8.3 | 11.0 | 20.4 | 15.2 | 18.3 | 25.0 | 17.2 | 5.1 | 8.4 | 11.4 | ( ${ }^{\text {d }}$ | 20.1 |
| Indiana .................................. | 17.1 | 28.7 | $\left({ }^{\text {D }}\right.$ ) | $\left({ }^{\text {( })}\right.$ | 16.2 | 13.5 | 0.6 | 22.9 | $\left({ }^{\text {D }}\right.$ ) | 28.3 | 10.9 | 19.7 | 19.7 | 3.5 | 36.8 |
| lowa .......... | 9.6 | 7.2 | 0 | 10.5 | 10.0 | 10.5 | (D) | 43.7 | 21.4 | (D) | (D) | 6.4 | (D) | (D) | (D) |
| Kansas .......................................... | 8.8 | 9.5 | 0 | ( ${ }^{\text {D }}$ ) | 9.4 | 9.1 | (D) | ( ${ }^{\text {D }}$ ) | 30.9 | (D) | 3.7 | 6.7 | (D) | (D) | (D) |
| Kentucky | 16.0 | 27.8 | $\left({ }^{\text {D }}\right.$ ) | (D) | 6.4 | 29.2 | (D) | (D) | 28.7 | 57.8 | 13.6 | 8.4 | 4.8 | (D) | 0 |
| Louisiana ................................ | 18.5 | 14.7 | (D) | (D) | ( ${ }^{\text {D }}$ ) | 19.8 | (D) | 5.1 | 17.4 | 0 | (D) | (D) | ( ${ }^{\text {D }}$ ) | (D) | 0 |
| Maine .................................... | 9.4 | 25.9 | 0 | 14.8 | (D) | ( ${ }^{\text {( })}$ | (D) | 18.6 | ( ${ }^{\text {( })}$ | ${ }^{(D)}$ | 6.2 | 10.5 | (D) | (D) | 0 |
| Maryland ....... | 14.2 | 19.9 | (D) | ( ${ }^{\text {d }}$ | 12.1 | 28.3 | ( ${ }^{\text {D }}$ | 20.1 | 45.1 | (D) | 7.1 | 10.6 | 27.3 | (D) | 5.5 |
| Massachusetts ........................ | 14.0 | 13.0 | 15.2 | 9.9 | 13.6 | 29.4 | (D) | 9.9 | $\left({ }^{\text {D }}\right.$ ) | 22.5 | 12.5 | 16.0 | 10.5 | 4.6 | 8.7 |
| Michigan ................................................. | 8.2 | 10.6 | 0 | 4.8 | 8.9 | 17.5 | (D) | 9.4 | 17.8 | 24.7 | 5.8 | 8.4 | 22.1 | 3.3 | 15.2 |
| Minnesota .............................. | 7.0 | 11.4 | $\left({ }^{\text {D }}\right.$ ) | $\left({ }^{\text {D }}\right.$ ) | 6.3 | 9.0 | (D) | 10.6 | 8.0 | ${ }^{\text {D }}$ ) | ${ }^{(D)}$ | 4.8 | 15.0 | ( ${ }^{\text {D }}$ ) | 4.8 |
| Mississippi ............................. | 8.7 | 3.5 | 0 | (D) | $\left({ }^{\text {( })}\right.$ | 35.6 | (D) | 18.1 | 30.6 | 9.6 | 20.6 | $\left({ }^{\text {D }}\right.$ ) | $\left({ }^{\text {D }}\right.$ ) | (D) | 44.7 |
| Missouri | 12.0 | 19.3 | ( ${ }^{\text {d }}$ | 9.5 | 3.6 | 25.5 | ( ${ }^{\text {D }}$ ) | 7.8 | 25.1 | 36.1 | 9.0 | 9.9 | 8.2 | (D) | 18.1 |
| Montana ................................ | 6.5 | ( ${ }^{\text {d }}$ | 0 | 0 | 0 | ( ${ }^{\text {( }}$ ) | (D) | (D) | (D) | (D) | (D) | 0 | 0 | 0 | 0 |
| Nebraska ........................................ | 12.8 | 13.6 | 0 | 0 | (D) | 72.3 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| Nevada .................................. | 8.4 | 27.9 | 0 | (D) | 0 | (D) | 0 | (D) | 24.4 | 22.3 | 0 | 0 | 0 | 0 | (D) |
| New Hampshire ....................... | 12.4 | 9.7 | ( ${ }^{\text {( }}$ ) | 10.6 | 8.4 | (D) | (D) | 27.2 | 20.5 | (D) | ( ${ }^{\text {) }}$ | 24.3 | 10.2 | 0 | 8.3 |
| New Jersey ............................ | 24.4 | 25.2 | ${ }^{(D)}$ | 11.5 | 9.4 | 46.7 | 10.4 | 12.6 | 19.2 | 23.8 | 7.7 | 13.2 | 12.5 | 4.6 | 22.3 |
| New Mexico ............................ | 8.2 | (D) | 0 | 0 | (D) | ( ${ }^{\text {d }}$ | (D) | (D) | 16.0 | 0 | 0 | (D) | ( ${ }^{\text {d }}$ | 0 | ( ${ }^{\text {) }}$ |
| New York ............................... | 11.1 | 17.5 | 7.0 | 8.1 | 16.3 | 24.5 | (D) | 25.7 | 19.3 | 20.7 | 9.6 | 7.5 | 10.6 | 2.8 | 3.1 |
| North Carolina ......................... | 18.5 | 8.8 | 6.6 | 6.7 | 11.6 | 59.2 | (D) | 23.8 | 21.0 | 22.5 | 14.1 | 11.6 | 41.1 | 14.9 | 45.7 |
| North Dakota .......................... | $\left({ }^{\text {( }}\right.$ ) | $\left({ }^{\text {D }}\right.$ ) | 0 | 0 | $\left({ }^{\text {D }}\right.$ ) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ( ${ }^{\text {( }}$ | 0 |
| Ohio ................................ | 12.3 | 16.4 | ( ${ }^{\text {D }}$ | 10.0 | 9.4 | 21.6 | (D) | 12.6 | 16.1 | 14.5 | 5.8 | 6.4 | 10.5 | 9.2 | 28.5 |
| Oklahoma ............................... | 11.3 | 9.6 | 0 | (D) | 7.7 | 42.7 | (D) | 37.2 | 18.3 | ( ${ }^{\text {d }}$ | 10.3 | 4.4 | (D) | (D) | 10.7 |
| Oregon .................................. | 8.1 | 9.3 | (D) | (D) | (D) | 37.5 | (D) | 3.7 | 14.9 | 10.0 | (D) | 15.9 | 20.2 | (D) | (D) |
| Pennsylvania ........................... | 14.8 | 14.1 | 11.2 | 12.2 | 13.5 | 21.0 | (D) | 9.9 | 18.0 | 9.4 | 9.9 | 16.4 | 15.8 | 16.8 | 30.6 |
| Rhode Island ........................... | 7.6 | $\left({ }^{\text {( }}\right.$ ) | $\left({ }^{\text {( })}\right.$ | 0 | 13.4 | $\left({ }^{\text {D }}\right.$ ) | (D) | 16.6 | $\left({ }^{\text {( })}\right.$ | (D) | 2.5 | 8.1 | 11.3 | 0 | 15.0 |
| South Carolina ........................ | 19.0 | 31.2 | 9.1 | ( ${ }^{\text {d }}$ | 7.1 | 22.3 | ( ${ }^{\text {D }}$ | 52.0 | 23.7 | (D) | 8.8 | 27.0 | 32.6 | (D) | ( ${ }^{\text {D }}$ |
| South Dakota ........................... | 8.7 | 17.6 | 0 | 0 | (D) | ( ${ }^{\text {D }}$ ) | 0 | ( ${ }^{\text {D }}$ ) | ( ${ }^{\text {D }}$ ) | 0 | (D) | 10.7 | (D) | 0 | 0 |
| Tennessee ............................... | 17.4 | 6.0 | 18.3 | 5.4 | 7.5 | 31.0 | (D) | 22.4 | 27.4 | 17.8 | 15.2 | 22.6 | 21.7 | 29.3 | 26.2 |
| Texas ......................................................... | 15.4 | 6.2 | 0 | 1.8 | 7.5 | 36.9 | 5.3 | 11.2 | 30.4 | 23.6 | 8.8 | 7.4 | 14.4 | 1.4 | 9.0 |
| Utah ..................................... | 9.6 | 4.2 | $\left({ }^{\text {D }}\right.$ ) | 0 | ${ }^{\text {D }}$ ) | 9.1 | 0 | 0 | 14.9 | ${ }^{\text {D }}$ ) | ${ }^{\text {D }}$ ) | ${ }^{\text {D }}$ ) | 10.5 | ${ }^{(D)}$ | $\left.{ }^{( }\right)$ |
| Vermont ................................. | 7.0 | (D) | 0 | (D) | (D) | (D) | 0 | (D) | (D) | (D) | 0 | 15.4 | (D) | (D) | 0 |
| Virginia .................................. | 14.0 | 10.0 | (D) | (D) | 8.0 | 54.3 | 0 | 23.3 | 28.0 | (D) | 3.5 | 20.3 | 17.3 | 6.6 | 4.8 |
| Washington ............................ | 7.5 | 18.2 | (D) | 13.6 | 3.0 | 8.8 | $\left({ }^{\text {D }}\right.$ ) | 12.3 | 29.2 | 6.1 | ( ${ }^{\text {D }}$ ) | 1.7 | 31.1 | ${ }^{(D)}$ | ( ${ }^{\text {D }}$ ) |
| West Virginia ............................. | 36.1 | 0 | 0 | (D) | (D) | 55.9 | (D) | (D) | 19.1 | 42.1 | 30.7 | ( ${ }^{\text {d }}$ | ( ${ }^{\text {d }}$ | 0 | (D) |
| Wisconsin .............................. | 9.6 | 21.3 | ${ }^{\text {D }}$ ) | 7.8 | 10.5 | 15.1 | 0 | 12.5 | $\left({ }^{\text {D }}\right.$ ) | 11.3 | 5.3 | 8.0 | 8.0 | (D) | 11.4 |
| Wyoming ................................ | (D) | ( ${ }^{\text {d }}$ | n.a. | n.a. | 0 | (D) | 0 | ( ${ }^{\text {( }}$ ) | ( ${ }^{\text {( }}$ | 0 | 0 | 0 | 0 | 0 | 0 |

[^8][^9]plant scale and capital intensity or whether they can be attributed to foreign ownership per se. Finally, it examines whether differences between the productivity of foreign-owned and U.S.owned establishments reflect differences in their plant scale, capital intensity, or employee skill levels or whether they can be attributed to foreign ownership per se.

## Plant scale

For total manufacturing, average plant scale (measured as value added per establishment) of foreign-owned establishments was much larger than that of U.S.-owned establishments- \$17.3 million, compared with $\$ 3.2$ million, or a difference of $\$ 14.1$ million. ${ }^{8}$ A statistical decomposition of the difference indicated that 60 percent of it was attributable to a tendency in some industries for the plant scale of foreign-owned establishments to be larger than that of U.S.owned establishments, while only 27 percent was attributable to a tendency for foreign-owned establishments to be concentrated in industries with above-average plant scale. ${ }^{9}$ (The method used to decompose the difference in plant scale is described in the technical note.)

The importance of the within-industry differences can be seen by examining the distribution of industries on the basis of the relative plant scale of foreign-owned and U.S.-owned establishments. As the following tabulation indicates, the average plant scale of foreign-owned establishments was more than 10 percent larger than that of U.S.-owned establishments in 277 of the 312 industries with 6 or more foreign-owned establishments (hereafter referred to as "the 312 industries"). In 98 of these 277 industries, plant scale of foreign-owned establishments was more than four times as large. M oreover, there were only 20 industries in which the average plant scale of foreign-owned establishments was more

[^10]than to percent smaller than that of U.S.-owned establishments. ${ }^{10}$

| Plant scale of foreign-owned establishments relative to that of U.S.-owned establishments | Number of industries |
| :---: | :---: |
| All industries | 312 |
| At least 30 percent smaller | 8 |
| Between 10 and 30 percent smaller | 12 |
| Within to percent smaller or larger | 15 |
| Between 10 and 30 percent larger. | 12 |
| At least 30 percent larger. | 265 |

Plant scale of foreign-owned establishments may be larger, on average, than that of U.S.owned establishments at least partly because the income and other benefits that normally accrue to large plants may be sought out to offset the inherent disadvantages foreign investors tend to face when investing in the United States and when subsequently operating their U.S. businesses. Foreign investors may be unfamiliar with the language and the general business environment in the United States, and their investments must, at least to some extent, be managed from a distance. Many of the added costs a foreign investor incurs when making a new U.S. investment and subsequently operating a business here tend to be fixed, and foreign investors may tend to concentrate their investments in relatively large establishments as a means of spreading these costs over a larger volume of output. In some cases, such a strategy may also benefit foreign direct investors by simplifying the organizational structure, reducing the number of units that must be managed, and lowering the number of local business environments to which they must become acclimated.
Most industries with direct investment have both large foreign-owned and large U.S.-owned plants. However, in many of these industries, there are substantial numbers of small U.S.owned plants but relatively few small foreignowned plants. This pattern can be seen in "motor vehicles and car bodies" manufacturing (sic 3711), which includes both car and truck manufacturing. In 1990, the average plant scale of foreign-owned establishments in the industry was over 60 percent larger than that of U.S.owned establishments. Of the 406 plants in the industry, 385 were U.S. owned and 21 were foreign owned. Both groups had a number of large plants: 52 of the U.S.-owned plants and 11

[^11]of the foreign-owned plants had at least 1,000 employees. However, there were many small U.S.-owned plants but few small foreign-owned plants in the industry: Over threefourths of the U.S.-owned plants, but less than one-fifth of the foreign-owned plants, had fewer than 100 employees.

## Capital intensity

For total manufacturing, capital intensity (indirectly measured as the non-employeecompensation share of value added) was higher for foreign-owned establishments than for U.S.owned establishments- 61 percent, compared with 55 percent. ${ }^{11}$ Virtually all of this difference was attributable to industry-mix effects; within-industry differences were negligible. ${ }^{12}$
Although the capital intensity of foreign-owned establishments was not systematically higher or lower than that of U.S.-owned establishments within specific industries, ${ }^{13}$ in a large number of industries, as the following tabulation indicates, the capital intensity of foreign-owned establishments differed substantially from that of U.S.- owned establishments. On the one hand, the capital intensity of foreign-owned establishments was more than 10 percent higher than that of U.S.- owned establishments in 98 of the 312 industries. On the other hand, it was more than 10 percent lower in 85 industries.

| Capital intensity of foreign-owned establishments relative to that of U.S.-owned establishments | Number of industries |
| :---: | :---: |
| All industries | 312 |
| At least 30 percent lower | 26 |
| Between 10 and 30 percent lower. | 59 |
| Within to percent lower or higher | 129 |
| Between 10 and 30 percent higher | 67 |
| At least 30 percent higher ..... | 31 |

## Compensation per employee

For total manufacturing, compensation per employee of foreign-owned establishments was $\$ 5,300$ higher than that of U.S.-owned establish-ments- $\$ 38,300$, compared with $\$ 33,000$. About 60 percent of this difference was attributable

[^12]to industry-mix effects, and 30 percent to within-industry differences. ${ }^{14}$

Although industry-mix effects dominate, with-in-industry differences are nonetheless significant. The positive contribution of these differences can be seen from the following tabulation. It shows that compensation per employee of foreign-owned establishments was more than 10 percent higher than that of U.S.-owned establishments in 131 of the 312 industries, whereas it was more than 10 percent lower in only 28 industries. ${ }^{15}$

| Compensation per employee of foreign-owned establishments relative to that of U.S.-owned establishments | Number of industries |
| :---: | :---: |
| All industries | 312 |
| At least 30 percent lower | 3 |
| Between 10 and 30 percent lower. | 25 |
| Within 10 percent lower or higher | 153 |
| Between 10 and 30 percent higher | 107 |
| At least 30 percent higher | 24 |

Compensation per employee may have been higher for foreign-owned establishments than for other establishments in the same industry because the occupational mix was weighted more heavily toward relatively high-skilled occupations, perhaps reflecting the use of different technologies. ${ }^{16}$ In addition, foreign-owned establishments may have paid higher wage rates at a given skill level than U.S.-owned establishments because, for example, they have a greater tendency to be located in high-wage areas.

[^13]Table 10.-Relative Plant Scale and Capital Intensity: Averages for Industries Grouped by the Wage Rates of Foreign-Owned Establishments Relative to Those of U.S.-Owned Establishments, 1990

| Range of relative wage rates (percent) ${ }^{1}$ | $\begin{array}{\|c\|} \text { Number } \\ \text { of } \\ \text { industries } \end{array}$ | Percent |  |
| :---: | :---: | :---: | :---: |
|  |  | Relative plant scale ${ }^{2}$ | Relative capital intensity ${ }^{3}$ |
| All industries | 312 | 376 | 102 |
| At least 30 percent lower .................................. | 2 | 118 | 147 |
| Between 10 and 30 percent lower ...................... | 41 | 226 | 95 |
| Within 10 percent lower or higher ..................... | 156 | 336 | 102 |
| Between 10 and 30 percent higher .................... | 88 | 448 | 104 |
| At least 30 percent higher .................................. | 25 | 634 | 103 |
| Addendum: |  |  |  |
| Coefficient of correlation between the measure in the column and the relative wage rate ratio for the 312 industries $\qquad$ |  | .336* | . 0348 |

*Statistically significant at the 1-percent confidence level.

1. Relative wage rates are foreign-owned establishments' wage rates divided by U.S.-owned establishments' wage rates times 100 .
2. Relative plant scale is foreign-owned establishments' value added per establishment divided by the corresponding measure for U.S.-owned establishments times 100. This column shows the unweighted averages of the relative scale measure for industries in the groups defined by the relative wage rates shown in the stub.
3. Relative capital intensity is foreign-owned establishments' non-employee-compensation share of value added divided by the corresponding measure for U.S.-owned establishments times 100 . This column shows the unweighted averages of the relative capital intensity measure for industries in the groups defined by the relative wage rates shown in the stub.

## Production-worker wage rates

In examining differences in employee compensation between foreign-owned and U.S.-owned establishments, differences in occupational mix can be partly controlled for by comparing the wages of production workers only. Restricting the comparison in this way eliminates variations in the ratio of production workers to other workers as a source of differences in rates of pay; in addition, production workers probably constitute a more homogeneous group than other workers, who may represent a wide variety of occupational groups (for example, sales and clerical as well as professional and managerial employees).
For total manufacturing, the average hourly wage rate (excluding benefits) of production workers was $\$ 12.57$ for foreign-owned establishments and $\$ 11.04$ for U.S.-owned establishments, a difference of $\$ 1.53$. About 70 percent of this difference was attributable to industry-

Table 11.-Production Worker Hourly Wage Rates for Foreign-Owned and U.S.-Owned Establishments, Selected Industries in Which Wage Rates of Foreign-Owned Establishments Were Relatively Low or High, 1990

| $\underset{\text { SIC }}{\text { SIC }}$ | Industry | Wages per hour (dollars) |  | Relative wage rate (percent) ${ }^{1}$ | Addendum: Relative plant scale (percent) ${ }^{2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Foreign-owned establishments | U.S.-owned establishments |  |  |
|  | Industries in which foreign-owned establishments had relatively low hourly wage rates: |  |  |  |  |
| 3647 | Vehicular lighting equipment ......................................................... | 10.38 | 15.85 | 65 | 109 |
| 3694 | Engine electrical equipment | 8.30 | 11.86 | 70 | 127 |
| 3721 | Aircraft ............................................................................................. | 12.07 | 17.17 | 70 | 26 |
| 2711 | Newspapers | 8.93 | 12.52 | 71 | 96 |
| 3714 | Motor vehicle parts and accessories .................................................... | 11.60 | 16.14 | 72 | 148 |
| 3624 | Carbon and graphite products ............................................................. | 10.53 | 14.27 | 74 | 113 |
| 3592 | Carburetors, pistons, rings, valves ....................................................... | 11.56 | 14.83 | 78 | 170 |
| 2431 | Millwork .......................................................................................... | 7.96 | 9.92 | 80 | 385 |
| 3711 | Motor vehicles and car bodies ............................................................. | 16.74 | 20.84 | 80 | 161 |
| 3661 | Telephone and telegraph apparatus ..................................................... | 12.07 | 14.93 | 81 | 297 |
| 3663 | Radio and television communications equipment .................................... | 9.94 | 12.10 | 82 | 175 |
| 2095 | Roasted coffee ................................................................................... | 10.76 | 13.01 | 83 | 162 |
| 2631 | Paperboard mills ............................................................................... | 14.03 | 16.88 | 83 | 76 |
| 2296 | Tire cord and fabrics ......................................................................... | 8.43 | 10.12 | 83 | 39 |
| 3255 | Clay refractories ................................................................................ | 10.70 | 12.77 | 84 | 225 |
| 3531 | Construction machinery ...................................................................... | 12.88 | 15.26 | 84 | 219 |
| 3951 | Pens and mechanical pencils ............................................................. | 8.32 | 9.86 | 84 | 222 |
|  | Industries in which foreign-owned establishments had relatively high hourly wage rates: |  |  |  |  |
| 3532 | Mining machinery ...................................................................................... | 13.05 | 10.39 | 126 | 360 |
| 2064 | Candy and other confectionery products ...................................................... | 12.00 | 9.54 | 126 | 357 |
| 3251 | Brick and structural clay tile ................................................................ | 10.40 | 8.22 | 127 | 165 |
| 3082 | Unsupported plastics profile shapes ..................................................... | 11.87 | 9.36 | 127 | 439 |
| 2851 | Paints and allied products .................................................................. | 14.35 | 11.27 | 127 | 416 |
| 3398 | Metal heat treating ............................................................................ | 13.73 | 10.75 | 128 | 431 |
| 2045 | Prepared flour mixes and doughs ........................................................ | 13.48 | 10.55 | 128 | 503 |
| 2836 | Biological products except diagnostic .................................................... | 10.21 | 7.98 | 128 | 1,026 |
| 2325 | Men's and boys' trousers and slacks ...................................................... | 8.27 | 6.39 | 130 | 120 |
| 3651 | Household audio and video equipment .................................................. | 10.40 | 7.97 | 130 | 1,474 |
| 2833 | Medicinals and botanicals ...................................................................... | 21.43 | 16.41 | 131 | 98 |
| 3087 | Custom compound purchased resins ....................................................... | 12.24 | 9.31 | 131 | 187 |
| 2085 | Distilled and blended liquors ............................................................... | 15.89 | 11.92 | 133 | 187 |
| 3295 | Minerals, ground or treated ................................................................. | 13.59 | 10.16 | 134 | 324 |
| 3965 | Fasteners, buttons, needles, and pins ................................................... | 9.63 | 7.15 | 135 | 831 |
| 2816 | Inorganic pigments | 17.01 | 12.54 | 136 | 703 |
| 3291 | Abrasive products | 14.84 | 10.70 | 139 | 817 |
| 3645 | Residential lighting fixtures ................................................................. | 10.49 | 7.51 | 140 | 606 |
| 3596 | Scales and balances, except laboratory ....................................................... | 11.25 | 7.87 | 143 | 686 |
| 3088 | Plastics plumbing fixtures ....................................................................... | 13.10 | 7.53 | 174 | 1,032 |

1. Hourly wage rate for foreign-owned establishments divided by hourly wage rate for U.S.owned establishments times 100.
2. Value added per establishment for foreign-owned establishments divided by value added per establishment for U.S.-owned establishments times 100.

NOTE.-The list of industries in this table excludes industries for which the data for foreignowned establishments are suppressed. It also excludes residual industries, which cover establish ments not elsewhere classified.
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mix effects, and 20 percent was attributable to within-industry differences. ${ }^{17}$

Although industry-mix effects dominate, the first two columns of table 10 show that withinindustry differences are nonetheless significant. Hourly wages of production workers were more than 10 percent higher in foreign-owned establishments than in U.S.-owned establishments in 113 of the 312 industries, whereas they were at least 10 percent lower in only 43 industries. ${ }^{18}$

Data for selected industries in which the wage rates of foreign-owned establishments differed substantially from those of U.S.- owned establishments are shown in table 11. Five of the industries in which wage rates of foreign-owned establishments were substantially lower than those of U.S.-owned establishments are motor-vehicle related: Vehicular lighting equipment; engine electrical equipment; motor vehicle parts and accessories; carburetors, pistons, rings, and valves; and motor vehicles and car bodies. The lower wage rates in these industries may have resulted because many of the foreign-owned establishments were established recently- within the last decade - and thus have a workforce with less accumulated job tenure than is typical of U.S.owned establishments. They may also reflect lower rates of unionization among foreign-owned establishments and differences in plant location.

Plant scale-The within-industry differences in wage rates partly reflect differences in plant scale. Across the 312 industries, the ratio of the wage rates of foreign-owned establishments to those of U.S.-owned establishments is significantly correlated with the ratio of their average plant scales. In table 10, the relative plant-scale ratio for foreign- and U.S.-owned establishments increases steadily as the ratio of their wage rates increases: The average ratio is 118 percent for the 2 industries in which the wage rates are at least 30 percent lower for foreign-owned establishments than for U.S.-owned establishments, and it is 634 percent for the 25 industries in which the wage rates are at least 30 percent higher for foreign-owned establishments. This pattern is consistent with other research that shows that

[^14]production-worker wages tend to be higher at larger plants. ${ }^{19}$

This pattern is further illustrated in table 11. Average plant scale of foreign-owned establishments was more than three times higher than that of U.S.-owned establishments in 15 of the 20 industries in which wage rates of foreignowned establishments were substantially higher than those of U.S.-owned establishments. In contrast, it was more than three times that of U.S.-owned establishments in only 1 of the 17 industries in which wage rates of foreignowned establishments were substantially lower than those of U.S.-owned establishments; in 4 of the 17 industries, average plant scale of foreignowned establishments was smaller than that of U.S.-owned establishments.

Capital intensity.- Differences between the hourly wage rates of foreign-owned and U.S.-owned establishments were not associated with differences in their capital intensity. In table 10, no discernable relationship between the relative wage and capital-intensity measures is evident. Furthermore, a statistical test indicated that the relative wage and capital-intensity measures were not significantly correlated.

Effect of foreign-ownership.-Differences between the hourly wage rates of foreign-owned and U.S.owned establishments do not appear to be the result of foreign ownership per se. A regression that controlled for the effects of plant scale and capital intensity on wage rates and that incorporated a variable for foreign ownership indicated that there is no statistically significant relationship between foreign ownership and wage rates. ${ }^{20}$

[^15]where $W$ is hourly wages, $S C$ is plant scale, $C I$ is capital intensity, and FDMY is a dummy variable for foreign ownership. The t -statistics for the independent variables, which appear in parentheses, indicate that the coefficient of the scale variable was significant at the 1 -percent confidence level and that the coefficients of both the capital intensity variable and the foreign-ownership dummy variable were insignificant.

## Labor productivity

For total manufacturing, labor productivity (measured as value added per productionworker hour) of foreign-owned establishments was significantly higher than that of U.S.-owned establishments- \$74 per hour, compared with $\$ 52$ per hour. ${ }^{21}$ About 7o percent of the difference was attributable to industry-mix effects, and 20 percent to within-industry differences. ${ }^{22}$

Examination of the distribution of industries on the basis of the relative productivity of foreign- and U.S.-owned establishments confirms that, although industry-mix effects dominate, within-industry differences are nonetheless im-
21. Productivity can be measured in a variety of ways; the measure used here-value added per production-worker hour-is a commonly used measure of labor productivity and can be easily calculated from the data. Studies of productivity sometimes use total output (shipments plus inventory change) instead of value added in the numerator. However, when total output is used as a measure of production, the inputs to which output is related typically include not only labor employed within the establishment but also capital and the inputs that the establishment purchases from others (for example, materials or business services); data on some of these inputs are not available from the asm. Furthermore, in attempting to determine whether foreignowned establishments differ from U.S.-owned establishments, value added may be the preferred measure because it reflects only the production by the establishments themselves, whereas total output reflects, in addition to the establishments' own production, the value of inputs purchased from others.
22. The remaining difference was attributable to the interaction of the industry-mix effects and within-industry differences. The decomposition was performed for the 312 industries. For these industries, value added per production-worker hour was $\$ 75$ for foreign-owned establishments and $\$ 55$ for U.S.-owned establishments.

Table 12.-Relative Plant Scale, Capital Intensity, and Employee Skill Level: Averages for Industries Grouped by the Productivity of Foreign-Owned Establishments Relative to That of U.S.-Owned Establishments, 1990

| Range of relative productivity (percent) ${ }^{1}$ | $\left\|\begin{array}{c} \text { Number } \\ \text { of } \\ \text { industries } \end{array}\right\|$ | Percent |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Relative plant scale ${ }^{2}$ | Relative capital intensity ${ }^{3}$ | Relative employee skill level ${ }^{4}$ |
| All industries ................................... | 312 | 376 | 102 | 109 |
| At least 30 percent lower | 18 | 136 | 58 | 103 |
| Between 10 and 30 percent lower ....... | 52 | 208 | 85 | 98 |
| Within 10 percent lower or higher ........ | 89 | 288 | 96 | 106 |
| Between 10 and 30 percent higher ...... | 61 | 373 | 108 | 111 |
| At least 30 percent higher .................. | 92 | 604 | 121 | 118 |
| Addendum: |  |  |  |  |
| Coefficient of correlation between the measure in the column and the relative productivity ratio for the 312 industries |  | .50* | .64* | .39* |

[^16]1. Relative productivity is foreign-owned establishments' value added per production worker hour divided by the corresponding measure for U.S.-owned establishments times 100 .
2. Relative plant scale is foreign-owned establishments' value added per establishment divided by the corresponding measure for U.S.-owned establishments times 100. This column shows the unweighted averages of the relative scale measure for industries in the groups defined by the relative productivity measure shown in the stub.
3. Relative capital intensity is foreign-owned establishments' non-employee-compensation share of value added divided by the corresponding measure for U.S.-owned establishments times 100. This column shows the unweighted averages of the relative capital intensity measure for industries in the groups defined by the relative productivity measure shown in the stub.
4. Relative employee skill level is foreign-owned establishments' compensation per employee divided by the corresponding measure for U.S.-owned establishments times 100. This column shows the unweighted averages of the relative employee skill level measure for industries in the groups defined by the relative productivity measure shown in the stub.
portant. In a significant number of industries, the productivity of foreign-owned establishments was higher than that of U.S.-owned establishments: It was more than 10 percent higher in 153 of the 312 industries (table 12). In considerably fewer industries, the productivity of foreignowned establishments was relatively low: It was at least 10 percent lower in only 70 industries. ${ }^{23}$ In 89 industries, foreign-owned establishments' productivity was roughly equal to (within 1o percent of) that of U.S.-owned establishments.
Studies of productivity frequently indicate that plant scale, capital intensity, and employee skill level strongly influence productivity. The following discussion examines the extent to which these conventional factors explain the differences between the productivity of foreign-owned and U.S.-owned establishments.

Plant scale--Differences between the productivity of foreign-owned and U.S.-owned establishments were highly correlated across industries with differences in plant scale (table 12). This pattern can be seen by comparing the industries in which foreign-owned establishments' productivity was relatively low with the industries in which it was relatively high. In the 18 "lower productivity" industries, the average plant scale of foreign-owned establishments was only about 36 percent larger than that of U.S.-owned establishments. In contrast, in the 92 "higher productivity" industries, the average plant scale of foreign-owned establishments was more than six times that of U.S.-owned establishments.
This pattern is further illustrated in table 13, which shows selected lower and higher productivity industries. In 7 of the 11 lower productivity industries, the average plant scale of foreignowned establishments was smaller than that of U.S.-owned establishments. In contrast, in all but 2 of the 23 higher productivity industries, the average plant scale of foreign-owned establishments was at least twice as large as that of U.S.-owned establishments.

Capital intensity.-As discussed earlier, even though the capital intensity of foreign-owned establishments was not systematically higher or lower than that of U.S.-owned establishments within individual industries, the differences in the capital intensity of the two groups of establishments were sizable in a large number

[^17]of industries. As table 12 indicates, these differences are highly correlated with differences in productivity. Like the case of plant scale, as the productivity of foreign-owned establishments increases in relation to that of U.S.- owned establishments, the relative capital intensity of foreign-owned establishments also increases. The correlation between capital intensity and productivity reflects the tendency for additional capital to allow increased production when combined with a given amount of labor.

The correlation between differences in productivity and differences in capital intensity of foreign-owned and U.S.-owned establishments is particularly evident when the capital intensities of the two groups of establishments in lower and higher productivity industries are compared. In the lower productivity industries, the average capital intensity of foreign-owned establishments was only 58 percent of that of U.S.-owned
establishments. In contrast, in the higher productivity industries, the average capital intensity of foreign-owned establishments exceeded that of U.S.-owned establishments by 21 percent. The data shown in table 13 for selected lower and higher productivity industries further illustrate this pattern. In all of the lower productivity industries, foreign-owned establishments were less capital intensive than U.S.- owned establishments, whereas in all but one of the higher productivity industries, foreign-owned establishments were more capital intensive.

Employee skill level.—Differences in productivity of foreign-owned and U.S.-owned establishments were correlated with differences in the skill level of their employees (measured as compensation per employee); however, the correlation was not as high as the correlation for plant scale and

Table 13.-Productivity, Plant Scale, Capital Intensity, and Employee Skill Level of Foreign-Owned and U.S.-Owned Establishments, Selected Industries in Which the Productivity of Foreign-Owned Establishments Was Relatively Low or High, 1990

| $\begin{aligned} & \text { SIC } \\ & \text { code } \end{aligned}$ | Industry | Foreign-owned establishments |  |  |  | U.S.-owned establishments |  |  |  | Foreign-owned establishments relative to U.S.-owned establishments (percent) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Plant |  |  |  | Plant |  |  |  |  |  |  |
|  |  | Productivity (dollars) ${ }^{1}$ | scale (millions of dollars) ${ }^{2}$ | Capital intensity (percent) $^{3}$ | Employee skill level (dollars) ${ }^{4}$ | Productivity (dollars) ${ }^{1}$ | $\begin{aligned} & \text { scale } \\ & \text { (millions } \\ & \text { of } \\ & \text { dollars) }{ }^{2} \end{aligned}$ | Capital intensity (percent) $^{3}$ | Employee skill level (dollars) ${ }^{4}$ | Productivity | Plant scale | Capital intensity | Employee skill level |
|  | Industries in which foreign-owned establishments had relatively low productivity: |  |  |  |  |  |  |  |  |  |  |  |  |
| 2296 | Tire cord and fabrics .......................................... | 20.1 | 13.4 | 28 | 23,786 | 66.2 | 34.3 | 73 | 28,535 | 30 | 39 | 38 | 83 |
| 3721 | Aircraft ................. | 30.8 | 30.5 | 12 | 43,176 | 76.8 | 115.6 | 31 | 48,834 | 40 | 26 | 41 | 88 |
| 3844 | X-ray apparatus and tubes | 56.3 | 15.6 | 36 | 45,010 | 119.8 | 18.7 | 67 | 44,245 | 47 | 83 | 53 | 102 |
| 2911 | Petroleum refining | 123.8 | 61.0 | 67 | 56,727 | 248.2 | 69.5 | 85 | 55,053 | 50 | 88 | 79 | 103 |
| 3295 | Minerals, ground or treated | 37.8 | 6.6 | 28 | 49,584 | 75.0 | 2.0 | 75 | 26,492 | 50 | 324 | 37 | 187 |
| 2833 | Medicinals and botanicals .................................... | 105.6 | 10.4 | 61 | 48,543 | 200.4 | 10.6 | 81 | 46,583 | 53 | 98 | 76 | 104 |
| 3724 | Aircraft engines and engine parts. | 43.7 | 10.9 | 33 | 41,474 | 82.7 | 27.9 | 50 | 47,121 | 53 | 39 | 66 | 88 |
| 3692 | Primary batteries, dry and wet | 28.8 | 7.2 | 31 | 26,222 | 51.4 | 9.8 | 61 | 30,728 | 56 | 73 | 52 | 85 |
| 3711 | Motor vehicles and car bodies ......................... | 62.0 | 151.6 | 52 | 47,037 | 104.3 | 94.3 | 66 | 60,373 | 59 | 161 | 80 | 78 |
| 3643 | Current-carrying wiring devices .............................. | 29.1 | 10.8 | 31 | 30,621 | 43.7 | 6.2 | 53 | 28,840 | 67 | 173 | 60 | 106 |
| 3524 | Lawn and garden equipment ................................. | 43.8 | 48.6 | 65 | 24,195 | 63.7 | 9.7 | 67 | 29,451 | 69 | 502 | 96 | 82 |
|  | Industries in which foreign-owned establishments had relatively high productivity: |  |  |  |  |  |  |  |  |  |  |  |  |
| 3555 | Printing trades machinery ..................................... | 92.2 | 23.8 | 68 | 34,815 | 59.5 | 3.3 | 36 | 41,234 | 155 | 722 | 188 | 84 |
| 2033 | Canned fruits and vegetables | 82.7 | 35.5 | 79 | 27,591 | 52.3 | 9.1 | 70 | 26,491 | 158 | 389 | 113 | 104 |
| 3291 | Abrasive products ........... | 85.0 | 28.0 | 58 | 48,695 | 53.1 | 3.4 | 54 | 34,351 | 160 | 817 | 107 | 142 |
| 3563 | Air and gas compressors | 104.0 | 17.0 | 55 | 45,572 | 62.9 | 7.3 | 44 | 39,642 | 165 | 234 | 125 | 115 |
| 2096 | Potato chips and similar snacks ........................... | 114.0 | 32.1 | 76 | 36,432 | 66.0 | 8.0 | 69 | 26,683 | 173 | 400 | 110 | 137 |
| 3594 | Fluid power pumps and motors ............................. | 86.9 | 15.1 | 56 | 40,044 | 49.4 | 5.6 | 37 | 39,663 | 176 | 269 | 149 | 101 |
| 3567 | Industrial furnaces and ovens ................................ | 66.8 | 4.4 | 46 | 39,474 | 37.0 | 2.4 | 30 | 32,519 | 180 | 181 | 153 | 121 |
| 2035 | Pickles, sauces, and salad dressings ..................... | 163.0 | 35.7 | 86 | 35,742 | 89.7 | 7.4 | 79 | 28,091 | 182 | 483 | 109 | 127 |
| 2041 | Flour and other grain mill products ........................ | 107.6 | 17.8 | 76 | 42,475 | 57.5 | 3.0 | 62 | 35,627 | 187 | 585 | 123 | 119 |
| 2834 | Pharmaceutical preparations ................................. | 417.4 | 153.6 | 78 | 54,215 | 220.7 | 33.7 | 80 | 43,629 | 189 | 456 | 98 | 124 |
| 3873 | Watches, clocks, watchcases, and parts .................. | 75.5 | 17.6 | 69 | 30,140 | 38.9 | 2.8 | 55 | 28,879 | 194 | 625 | 125 | 104 |
| 3398 | Metal heat treating .............................................. | 74.4 | 7.8 | 54 | 40,478 | 38.0 | 1.8 | 46 | 33,270 | 196 | 431 | 118 | 122 |
| 2034 | Dehydrated fruits, vegetables, soups ...................... | 84.1 | 33.5 | 78 | 30,788 | 42.0 | 6.2 | 59 | 27,299 | 200 | 542 | 132 | 113 |
| 2241 | Narrow fabric mills .............................................. | 42.0 | 12.9 | 68 | 25,025 | 20.9 | 2.3 | 42 | 21,377 | 201 | 562 | 161 | 117 |
| 2836 | Biological products except diagnostic ..................... | 129.2 | 23.3 | 66 | 37,209 | 64.3 | 2.3 | 55 | 36,677 | 201 | 1,026 | 120 | 101 |
| 2032 | Canned specialties .............................................. | 161.2 | 30.5 | 86 | 31,089 | 80.1 | 15.7 | 77 | 30,766 | 201 | 194 | 112 | 101 |
| 2045 | Prepared flour mixes and doughs .......................... | 144.0 | 37.0 | 84 | 36,583 | 68.5 | 7.4 | 68 | 31,615 | 210 | 503 | 123 | 116 |
| 2731 | Book publishing ................................................. | 689.4 | 34.4 | 80 | 36,563 | 291.4 | 3.8 | 73 | 37,424 | 237 | 912 | 110 | 98 |
| 3088 | Plastics plumbing fixtures .................................... | 88.6 | 22.8 | 73 | 35,482 | 35.1 | 2.2 | 52 | 23,809 | 252 | 1,032 | 140 | 149 |
| 3821 | Laboratory apparatus and furniture ........................ | 134.0 | 25.6 | 55 | 45,506 | 52.8 | 3.7 | 43 | 34,375 | 254 | 692 | 128 | 132 |
| 3743 | Railroad equipment ............................................. | 112.6 | 25.1 | 62 | 37,331 | 41.4 | 9.2 | 34 | 39,208 | 272 | 274 | 182 | 95 |
| 2816 | Inorganic pigments .............................................. | 257.2 | 54.8 | 84 | 49,606 | 93.9 | 7.8 | 71 | 39,586 | 274 | 703 | 119 | 125 |
| 2411 | Logging ............................................................. | 87.1 | 8.0 | 80 | 33,712 | 31.5 | . 3 | 51 | 24,895 | 276 | 2,352 | 156 | 135 |

[^18]of U.S.-owned establishments and that (1) had at least six foreign-owned establishments, (2) were not suppressed for foreign-owned establishments, and (3) were not residual industries (see "Technical Note" in the article). The industries with relatively high productivity for foreign-owned establishments shown in this table are the industries in which the productivity of foreign-owned establishments was a least 50 percent higher than that of U.S.-owned establishments and that (1) had at least six foreign-owned establishments, (2) were not suppressed for foreign-owned establishments, and (3) were not residual industries (see "Technical Note").

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for capital intensity. ${ }^{24}$ In the lower productivity industries, the employee skill level of foreignowned and U.S.-owned establishments was about the same, whereas in the higher productivity industries, the employee skill level of foreignowned establishments was 18 percent higher than that of U.S.-owned establishments. Table 13 further illustrates the relationship between productivity and employee skill level. In 10 of the 11 lower productivity industries, the employee skill level of foreign-owned establishments was roughly equal to, or lower than, that of U.S.owned establishments. In contrast, in 15 of the 23 higher productivity industries, the employee skill level of foreign-owned establishments was substantially higher than that of U.S.-owned establishments.

Combined effects. - The prior discussion showed that, when taken separately, differences in the plant scale, capital intensity, and employee skill level of foreign-owned and U.S.-owned establishments are each associated with differences in productivity. To determine whether a particular factor still independently contributes to the differences in productivity once the influence of each of the other factors is taken into account, the measures of relative plant scale, capital intensity, and employee skill level were included as independent variables in a multiple regression equation in which the relative productivity measure was the dependent variable. In addition to testing for the independent contribution of each of the three factors, the regression also provides an indication of their combined importance. The results confirmed that, even after allowing for the influence of the other measures, the relative plant scale, capital intensity, and employee skill level measures were each significantly correlated with the differences in productivity. ${ }^{25}$ Furthermore, over 60 percent of the variation in the relative

[^19]productivity measure could be accounted for by the combined variation in these three factors.

Effect of foreign ownership.-One additional statistical check was made to test directly whether foreign ownership per se was associated with higher productivity levels. This check involved estimating a multiple regression equation that controlled for the effects on productivity levels of plant scale, capital intensity, and employee skill level and that included a variable for foreign ownership. The test indicated that there was no correlation between productivity and foreign ownership per se. ${ }^{26}$ Thus, any influence of foreign ownership on productivity appears to be mainly indirect: The plant scale, capital intensity, and employee skill level of foreignowned establishments differ from those of U.S.owned establishments, and it is largely because of these differences that the productivity for foreign-owned establishments is higher.

## Technical Note

This note describes the statistical decomposition method used in the article and discusses how the findings of the article are affected by the estimation of data for foreign-owned establishments and by the inclusion in the sic of residual industries, which cover establishments not elsewhere classified.

## Statistical decomposition

The differences between foreign-owned and U.S.owned establishments in average plant scale, capital intensity, compensation per employee, wages per production-worker hour, and productivity were decomposed statistically into industry-mix,
26. A linear regression was estimated in which there were 624 observations (there were separate observations for foreign-owned and U.S.-owned establishments for each of the 312 industries). This estimation yielded the following:

$$
\begin{aligned}
P R & =-133.81+\underset{(1.83)}{.19 S C}+\underset{(19.95)}{219.10 C I}+\underset{(10.99)}{.0024 E S}-\underset{(-.04)}{.15 F D M Y} \\
R^{2} & =.54 \\
F & =188.41
\end{aligned}
$$

[^20]within-industry, and interaction effects. The decomposition for a given measure begins with expressing the measure as a weighted average of values for individual industries. For plant scale, for example, average plant scale (value added per establishment) may be expressed as a weighted average of the average plant scales in individual industries, with the weight for any given industry being the industry's share in the total number of establishments. Thus, the average plant scale for U.S.-owned establishments can be expressed as
$$
p=\sum_{i=1}^{312} s_{i} p_{i},
$$
and the average plant scale of foreign-owned establishments can be expressed as
$$
p^{a}=\sum_{i=1}^{312} s_{i}^{a} p_{i}^{a},
$$
where $p$ is average plant scale (value added per establishment) for the 312 industries (see footnote 9 ), $p_{i}$ is plant scale for industry $i$, and $s_{i}$ is the share of the $i$ th industry in the total number of establishments for the 312 industries. (Variables with the superscript $a$ denote data for foreign-owned establishments, and variables without a superscript denote data for U.S.--owned establishments.) The difference between average plant scales of the two groups of establishments can then be decomposed algebraically as
\[

$$
\begin{aligned}
p^{a}-p= & \sum_{i=1}^{312} p_{i}\left(s_{i}^{a}-s_{i}\right)+\sum_{i=1}^{312} s_{i}\left(p_{i}^{a}-p_{i}\right)+ \\
& \sum_{i=1}^{312}\left(p_{i}^{a}-p_{i}\right)\left(s_{i}^{a}-s_{i}\right)
\end{aligned}
$$
\]

The first term on the right side of the equation measures the effects of differences in industry mix; it is the difference in plant scale that would have resulted if, in each industry, plant scale were the same for foreign-owned establishments as for U.S.-owned establishments but if the differences in the distribution of the establishments by industry were as observed. The second term on the right side measures the effects of within-industry differences in plant scale; it is the difference in plant scale that would have resulted if foreignowned establishments had the same distribution by industry as U.S.-owned establishments but if the differences in plant scale that existed in each industry were as observed. The third term reflects the interaction between these two effects.

A decomposition similar to this one was carried out for each of the other measures discussed in the article.

## Estimation of nonsample establishments

Data were estimated for foreign-owned establishments that were not selected for the 1990 asm, which covered only a sample of all manufacturing establishments. For manufacturing as a whole, 17 percent of the shipments of foreign-owned establishments was estimated in 1990. Data for the nonsample foreign-owned establishments were estimated using industry-average relationships between employment and payroll, on the one hand, and the other items covered by the asm, on the other. (Employment and payroll for all foreign-owned establishments were obtained from the Census Bureau's Standard Statistical Establishment List.) Because industry-average relationships were used as the basis for estimation, actual differences between foreign-owned and U.S.-owned establishments may not be the same as those observed in the data; in particular, both the total and the within-industry differences may be larger. To check this possibility, the productivity of foreign-owned and U.S.-owned establishments was compared using data only for those foreign-owned establishments that were reported in the asm. This comparison indicated that both the total productivity difference and the within-industry difference are larger when only these data are used than when both the reported and estimated data are used. However, the significance of this result is difficult to assess because the foreign-owned establishments included in the asm sample were much larger, on average, than the nonsample establishments, and, as discussed

## Data Availability

This article presents summary data for foreignowned U.S. manufacturing establishments. Publications presenting more detailed data for 1989 and 1990 are available from the Superintendent of Documents (see inside back cover for order information). The data are also available on diskettes at a cost of $\$ 20$ each. For the 1989 data, specify bea Accession Number 50-93-40-789, and for the 1990 data, Accession Number 50-93-40-790. Send your order, along with a check or money order payable to "Bureau of Economic Analysis," to Public Information Office Order Desk, be-53, Bureau of Economic Analysis, U.S. Department of Commerce, W ashington, DC 20230. To place an order using MasterCard or visa, call (202) 606-9827. For further information about the link project, call (202) 606-9893.
in the previous section, productivity tends to be higher in larger establishments.

## Residual industries

The sic includes some three and four-digit industries that cover establishments not elsewhere classified. (An sic code with the digit " 9 " appearing as the third or fourth digit usually designates such an industry.) These residual industries usually do not consist of homogeneous activity groups. For example, sic 3699 ("Electrical machinery, equipment, and supplies, not elsewhere classified") includes, among other things, establishments that manufacture electric Christmas tree lights and establishments that manufacture particle accelerators. Because of this heterogeneity, the activities of foreign-owned and U.S.-owned establishments that are classified in such industries may differ significantly. These differences could, in turn, cause the withinindustry differences that were observed in the data to be larger than if comparisons had been based only on industries in which activities were
more homogeneous. To determine whether this was the case, the residual industries were excluded from the data, and the comparisons of the hourly wage rate and the productivity of foreign-owned and U.S.-owned establishments were repeated. Two different checks were made: In the first, only the 15 three-digit residual industries were excluded; in the second, both the threeand four-digit residual industries (a total of 53 industries) were excluded. In both the hourly wage rate and the productivity comparisons, excluding the residual industries had little effect on the results. Specifically, both the overall differences between foreign-owned and U.S.-owned establishments and the relative importance of the industry-mix effects and within-industry differences were nearly the same as those reported in the article. In addition, the distributions of foreign-owned and U.S.-owned establishments in terms of relative hourly wage rates and productivity were little changed from those discussed in the article.
Table 14 follows. nefl

Table 14.-Employment, Value Added by Manufacture, and Value of Shipments of Foreign-Owned and All U.S. Establishments, by Detailed Industry, 1990


Table 14.-Employment, Value Added by Manufacture, and Value of Shipments of Foreign-Owned and All U.S. Establishments, by Detailed Industry, 1990-Continued

| $\begin{array}{ll} \mathrm{SIC} \\ \text { code } \end{array}$ | Industry | Foreign-owned establishments |  |  | All U.S. establishments |  |  | Foreign-owned establishments as a percentage of all U.S. establishments |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Number of employees | Thousands of dollars |  | Number of employees ${ }^{1}$ | Thousands of dollars |  |  |  |  |
|  |  |  | Value added by manufacture | Value of shipments |  | Value added by manufacture ${ }^{1}$ | Value of shipments ${ }^{2}$ | Employment | Value added by manufacture |  |
| 2221 | Broadwoven fabric mills, manmade fiber and silk | 10,405 | 538,937 | 1,076,324 | 85,300 | 3,619,300 | 8,577,900 | 12.2 | 14.9 | 12.5 |
| 223 | Broadwoven fabric mills, wool ............................................... | 357 | 23,336 | 41,728 | 15,700 | 674,600 | 1,798,300 | 2.3 | 3.5 | 2.3 |
| 2231 | Broadwoven fabric mills, wool ............................................. | 357 | 23,336 | 41,728 | 15,700 | 674,600 | 1,798,300 | 2.3 | 3.5 | 2.3 |
| 224 |  | 983 | 77,334 | 107,476 | 17,000 | 671,400 | 1,259,700 | 5.8 | 11.5 | 8.5 |
| 2241 |  | 983 | 77,334 | 107,476 | 17,000 | 671,400 | 1,259,700 | 5.8 | 11.5 | 8.5 |
| 225 | Knitting mills ........................................................................ | 8,331 | 290,206 | 701,556 | 197,900 | 6,791,100 | 14,596,500 | 4.2 | 4.3 | 4.8 |
| 2251 | Women's hosiery, except socks ............................................................................ |  |  |  | 23,400 | 911,200 | 1,620,700 | (D) | (D) | ( ${ }^{\text {d }}$ ) |
| 2252 | Hosiery, nec ................................................................. | G | (D) | (D) | 38,600 | 1,062,000 | 2,277,900 | (D) | (D) | (D) |
| 2253 | Knit outerwear mills ...... | 1,378 | 35,918 | 67,356 | 63,600 | 1,783,200 | 3,456,400 | 2.2 | 2.0 | 1.9 |
| 2254 | Knit underwear mills ........................................................... |  | ( ${ }^{\text {P }}$ | ( ${ }^{\text {D }}$ | 15,400 | 596,500 | 1,105,000 | (D) | ${ }^{(\mathrm{D})}$ | (D) |
| 2257 | Weft knit fabric mills | 842 | 32,153 | 102,668 | 30,700 | 1,370,000 | 3,588,700 | 2.7 | 2.3 | 2.9 |
| 2258 | Lace and warp knit fabric mills .............................................. | G | (D) | (D) | 22,300 | 931,600 | 2,298,300 | (D) | (D) | (D) |
| 2259 | Knitting mills, nec ................................................................... | 0 | 0 | 0 | 3,900 | 136,500 | 249,300 | 0 | 0 | 0 |
| 226 | Textile finishing, except wool .............................................................. | H | (D) | (D) | 49,400 | 2,365,700 | 6,303,800 | (D) | ${ }^{(1)}$ | ${ }^{\text {( })}$ |
| 2261 | Finishing plants, cotton .......... | 1,341 | 59,665 | 113,369 | 14,900 | 812,300 | 1,594,800 | 9.0 | 7.3 | 7.1 |
| 2262 | Finishing plants, manmade ..................................................... |  | ${ }^{(\mathrm{D})}$ | 189 (D) | 22,300 | 1,109,700 | 3,400,900 | (D) | (D) | ${ }^{(\mathrm{D})}$ |
| 2269 | Finishing plants, nec ....................................................... | 1,489 | 74,144 | 189,153 | 12,200 | 443,600 | 1,308,100 | 12.2 | 16.7 | 14.5 |
| 227 | Carpets and rugs ................................................................. | 3,310 | 179,830 | 661,636 | 51,800 | 2,917,300 | 10,038,400 | 6.4 | 6.2 | 6.6 |
| 2273 | Carpets and rugs ...................................................................... | 3,310 | 179,830 | 661,636 | 51,800 | 2,917,300 | 10,038,400 | 6.4 | 6.2 | 6.6 |
| 228 | Yarn and thread mills ....... | 10,800 | 394,793 | 996,732 | 100,700 | 3,753,100 | 10,574,600 | 10.7 | 10.5 | 9.4 |
| 2281 | Yarn spinning mills ............................................................... | 6,693 | 246,816 | 619,148 | 75,000 | 2,654,500 | 7,259,200 | 8.9 | 9.3 | 8.5 |
| 2282 | Throwing and winding mills ..................................................... | F | ( ${ }_{\text {( })}^{\text {D }}$ | $\left(\begin{array}{l}\text { D } \\ \text { D }\end{array}\right.$ | 18,500 | 769,300 329 | 2,521,000 | $(\mathrm{D})$ | (D) | (D) |
| 2284 | Thread mills ..................................................................... | H | (D) | (D) | 7,100 | 329,300 | 794,500 |  |  |  |
| 229 | Miscellaneous textile goods | 7,828 | 520,049 | 1,524,095 | 52,200 | 3,292,000 | 7,477,800 | 15.0 | 15.8 | 20.4 |
| 2295 | Coated fabrics, not rubberized.. |  | ( ${ }^{\text {( }}$ ) |  | 8,900 | 578,600 | 1,361,800 | ( ${ }^{\text {D }}$ ) | (D) | ( ${ }^{\text {D }}$ ) |
| 2296 | Tire cord and fabrics ............................................................ | 2,849 | 94,050 | 443,174 | 5,100 | 334,300 | 981,600 | 55.9 | 28.1 | 45.1 |
| 2297 | Nonwoven fabrics ...... | 2,329 | 214,792 | 669,364 | 16,900 | 1,306,900 | 2,851,000 | 13.8 | 16.4 | 23.5 |
| $\begin{aligned} & 2298 \\ & 2299 \end{aligned}$ | Cordage and twine <br> Textile goods, nec | 1,199 | 118,688) | 203, ${ }_{(167}{ }^{\text {P }}$ ( | 7,000 14,400 | 248,800 823,400 | 636,900 $1,646,500$ | ${ }^{(\mathrm{D})} 8$ | ${ }_{14.4}^{(\mathrm{D})}$ | ${ }^{(\mathrm{D}} \mathrm{D}_{12.3}$ |
|  | Texille goods, nec |  |  |  |  |  |  |  |  |  |
| 23 | Apparel and other textile products | 23,085 | 850,240 | 1,727,481 | 992,900 | 33,034,000 | 64,413,600 | 2.3 | 2.6 | 2.7 |
| 231 | Men's and boys' suits and coats | 4,262 | 148,603 | 234,577 | 48,400 | 1,500,800 | 2,622,400 | 8.8 | 9.9 | 8.9 |
| 2311 | Men's and boys' suits and coats ......................................... | 4,262 | 148,603 | 234,577 | 48,400 | 1,500,800 | 2,622,400 | 8.8 | 9.9 | 8.9 |
| 232 | Men's and boys' furnishings ..................................................... | 7,982 | 264,990 | 548,727 | 258,800 | 8,051,400 | 14,872,900 | 3.1 | 3.3 | 3.7 |
| 2321 | Men's and boys' shirts | H | ( ${ }_{(0)}^{\text {D }}$ | $\left(\begin{array}{c}\text { ( }) \\ \text { ( }) \\ \text { ( }\end{array}\right.$ | 69,700 | 2,197,700 | 4,242,600 | $(\mathrm{D})$ | ( ${ }_{\text {( }}^{\text {( })}$ |  |
| 2322 2323 |  | G | (D) | (D) | 15,300 7,400 | 381,700 268,500 | 724,900 499,900 | $(\mathrm{D})$ | (D) | (D) |
| 2325 | Men's and boys' neckwear .............. | 1,813 | 67,229 | 163,467 | 81,700 | 3,016,700 | 5,657,300 | 2.2 | 2.2 | 2.9 |
| 2326 | Men's and boys' work clothing ..................................................................... | 1,813 | (D) | (D) | 31,500 | 846,300 | 1,461,700 | ${ }^{(\mathrm{D})}$ | (D) | ( ${ }^{\text {D }}$ ) |
| 2329 | Men's and boys' clothing, nec ............................................ |  |  |  | 53,300 | 1,340,600 | 2,286,600 | ${ }^{\text {D }}$ ) |  |  |
| 233 | Women's and misses' outerwear .......................................... | 1,950 | 60,636 | 111,089 | 318,200 | 10,192,400 | 19,338,700 | . 6 | . 6 | . 6 |
| 2331 | Women's and misses' blouses and shirts ............................... | c | $\left(\begin{array}{l}\text { ( }) \\ \text { D }\end{array}\right.$ | ( ${ }^{\text {D }}$ ) | 64,400 | 1,954,900 | $3,733,000$ | (D) | (D) | (D) |
| 2335 | Women's, junior's, and misses' dresses .................................. | F | ( ${ }^{\text {D }}$ | ( ${ }^{\text {D }}$ | 106,400 | 3,346,800 | 5,914,500 | ( ${ }^{\text {P }}$ ) |  |  |
| 2337 | Women's and misses' suits and coats ................................ | 1,004 | 36,450 | 77,062 | 45,900 | 1,979,000 | 4,162,800 | 2.2 | 1.8 | 1.9 |
| 2339 | Women's and misse's outerwear, nec ...................................... | c | ( ${ }^{\text {D }}$ ( | (D) | 101,500 | 2,911,700 | 5,528,400 | $\left({ }^{\text {D }}\right.$ ( | (D) | ( ${ }^{\text {D }}$ ( |
| 234 | Women's and children's undergarments ...................................... | G | ( ${ }^{\text {D }}$ ( | ( ${ }^{\text {D }}$ ( | 60,300 | 1,859,000 | 3,424,300 | (D) | ( ${ }^{\text {D }}$ ( | (D) |
| 2341 2342 | Women's and children's underwear ........................................ | G | (D) | (D) | 48,700 | 1,298,400 | 2,337,400 | (D) | (D) | (D) |
| 235 | Hats, caps, and millinery ................ | ${ }_{0}$ | 0 | 0 | 16,500 | 424,300 | 1,736,900 | 0 | 0 | 0 |
| 2353 | Hats, caps, and millinery ................................................ | 0 | - | 0 | 16,500 | 424,300 | 736,600 | 0 | 0 | 0 |
| 236 | Girls' and children's outerwear ............................................ | F | ${ }^{\text {( }}$ ) | $\left.{ }^{(\mathrm{D}}\right)$ | 60,800 | 2,045,700 | 3,697,800 | (D) | (D) | (D) |
| 2361 | Giris' and children's dresses and blouses. | E | (D) | (D) | 29,000 | 903,800 | 1,724,500 | (D) | (D) | (D) |
| 2369 | Girls' and children's outerwear, nec ....................................... | C | (D) | (D) | 31,900 | 1,141,900 | 1,973,200 | (D) | (D) | (D) |
| 237 | Fur goods ......................................... | 0 | 0 | 0 | 2,200 | 103,600 | 378,700 | 0 | 0 | 0 |
| 2371 | Fur goods .................................. | 0 | 0 | 0 | 2,200 | 103,600 | 378,700 | 0 | 0 | 0 |
| 238 | Miscellaneous apparel and accessories .................................. | c | ${ }^{\text {( }}$ ) | ${ }^{\text {( }}$ ) | 38,300 | 1,237,900 | 2,256,400 | ${ }^{\text {(D) }}$ | (D) | ${ }^{\text {D }}$ ) |
| 2381 | Fabric dress and work gloves ............. | C | (D) | (D) | 5,200 | 212,400 | 340,800 | (D) | (D) | (D) |
| 2384 | Robes and dressing gowns ......... | 0 | 0 | 0 | 3,900 | 119,700 | 306,300 | 0 | 0 | 0 |
| 2385 | Waterproof outerwear .................... | 0 | 0 | 0 | 4,500 | 113,000 | 219,300 | 0 | 0 | 0 |
| 2386 | Leather and sheep-lined clothing ........ | 0 | 0 | 0 | 2,200 | 73,000 | 166,600 | 0 | 0 |  |
| 2387 | Apparel belts ............................ | 0 | , | 0 | 11,100 | 386,100 | 673,400 | 0 | 0 | 0 |
| 2389 | Apparel and accessories, nec ............................................ | 0 |  | 0 | 11,500 | 333,800 | 550,100 | 0 | 0 | 0 |
| 239 | Miscellaneous fabricated textile products .................................... | 6,515 | 273,047 | 620,649 | 189,300 | 7,618,800 | 17,085,900 | 3.4 | 3.6 | 3.6 |
| 2391 2392 | Curtains and draperies ..................................................... |  |  |  | 23,400 44800 | 685,400 1,967300 | 1,499,200 | ( ${ }_{5}{ }_{5}$ | ${ }^{(\mathrm{D}} \mathrm{O}_{4.4}$ | ${ }^{(\mathrm{D}} \mathrm{C}_{4.4}$ |
| 2393 | Textile bags ............................................................................... | -360 | 12,369 | 214,278 29 | 44,00 5,700 | 1,930,000 | 4,813,000 | 5.9 6.3 | 5.4 | 5.7 |
| 2394 | Canvas and related products ........................................... | C |  |  | 17,300 | 531,100 | 1,134,900 | (D) | (D) | (D) |
| 2395 | Pleating and stitching ................................................................................ | 0 | 0 | 0 | 14,200 | 388,100 | -742,700 | 0 | 0 | 0 |
| 2396 | Automotive and apparel trimmings ............................................. |  | (D) | (D) | 47,100 | 2,267,400 | 5,104,800 | (D) | (D) | (D) |
| 2397 | Schiflli machine embroideries ........................................................ |  |  |  | 5,900 | 172,900 | 309,200 |  |  | (D) |
| 2399 | Fabricated textile products, nec ............................................. | 1,586 | 110,416 | 206,322 | 31,100 | 1,376,600 | 2,910,300 | 5.1 | 8.0 | 7.1 |
| 24 | Lumber and wood products ........................................................... | 17,043 | 842,486 | 2,304,003 | 682,900 | 28,597,200 | 74,287,200 | 2.5 | 2.9 | 3.1 |
| 241 | Logging .................................................................................. | 721 | 119,353 | 382,586 | 83,400 | 4,313,200 | 12,229,000 | . 9 | 2.8 | 3.1 |
| 2411 | Logging ............................................................................ | 721 | 119,353 | 382,586 | 83,400 | 4,313,200 | 12,229,000 | . 9 | 2.8 | 3.1 |
| 242 | Sawmills and planing mills .................................................. | 2,706 | 143,504 | 431,743 | 170,800 | 7,174,500 | 19,934,900 | 1.6 | 2.0 | 2.2 |
| 2421 | Sawmills and planing mills, general ....................................... | 2,071 | 122,196 | 378,485 | 138,900 | 6,184,300 | 17,923,000 | 1.5 | 2.0 | 2.1 |
| 2426 | Hardwood dimension and flooring mills .................................. |  |  |  | 29,300 | 908,800 | 1,800,500 | $(\mathrm{D})$ | (D) | (D) |
| 2429 | Special product sawmills, nec ............................................... | B |  |  | 2,500 | 87,500 | 211,300 | (D) |  | (D) |
| 243 2431 | Millwork, plywood and structural members .................................. | 7,930 3 | 339,789 168644 | 777,564 375646 | 229,400 | 9,577,600 | 23,245,200 | 3.5 | 3.5 | 3.3 |
| 2431 | Millwork .......................................................................... | 3,909 | 168,644 | 375,646 | 90,500 | 3,851,600 | 9,524,700 | 4.3 | 4.4 | (D) ${ }^{\text {( }}$ |
| 2434 2435 |  | G 1,328 | [(D) | 135,003 (\%) | 62,800 18,700 | 2,540,100 | $4,610,000$ $2,051,700$ | ( $\left.{ }^{\mathrm{D}}\right)$ | ${ }^{(\mathrm{D}} \mathrm{P}_{8.4}$ | $\left.{ }^{(\mathrm{D}}\right)_{6}$ |
| 2436 | Softwood veneer and plywood ........................................................ | -38 | 59,(D) | 135, (D) | 35,600 | 1,669,200 | 5,030,400 | (D) | (D) ${ }^{\text {( }}$ | ${ }^{\text {(D) }}$ ( ${ }^{\text {d }}$ |
| 2439 |  | F | (D) | (D) | 21,800 | 810,100 | 2,028,400 | (D) | (D) | (D) |
| 244 |  | C | (D) | (D) | 41,500 | 1,189,200 | 2,850,000 | (D) | (D) | (D) |
| 2441 | Nailed wood boxes and shook ............................................. | 0 | 0 | 0 | 6,000 | 191,600 | 431,300 | 0 | 0 |  |
| 2448 | Wood pallets and skids | C |  | (D) | 28,300 | 802,000 | 1,948,600 | (D) | (D) | (D) |
| $\begin{array}{r}2449 \\ 245 \\ \hline\end{array}$ | Wood containers, nec $\qquad$ |  | (D) | (D) | 7,200 61400 | 195,600 2364800 | 470,200 6.471000 | (D) | (D) | (D) |
| 245 2451 | Wood buildings and mobile homes $\qquad$ | G | (D) | (D) | 61,400 38.800 | $2,364,800$ $1,501,600$ | $6,471,000$ $4,202,500$ | (D) | (D) | (D) |
| 2452 |  | 1,359 | 48,762 | 116,306 | 22,600 | 1,563,200 | 2,268,500 | 6.0 | 5.6 | 5.1 |
| 249 | Miscellaneous wood products .............................................. | 4,118 | 178,693 | 570,338 | 96,400 | 3,977,800 | 9,557,000 | 4.3 | 4.5 | 6.0 |
| 2491 | Wood preserving ............... | F |  |  | 13,000 | 696,500 | 2,642,700 | ( ${ }^{\text {P }}$ | (D) | (D) |
| 2493 | Reconstituted wood products .................................................. | 1,598 | 95,998 | 247,272 | 22,300 | 1,285,000 | 3,042,600 | 7.2 | 7.5 | 8.1 |
| 2499 | Wood products, nec ............................................................ |  |  |  | 61,100 | 1,996,300 | 3,871,800 | $\left.{ }^{( }\right)$ | ${ }^{(D)}$ | ${ }^{(\mathrm{D})}$ |
| 25 | Furniture and fixtures ........ |  | (D) | (D) | 499,200 | 21,644,700 | 41,682,000 | ${ }^{(\mathrm{D})}$ | ${ }^{(\mathrm{D})}$ | ${ }^{(\mathrm{D})}$ |

Table 14.-Employment, Value Added by Manufacture, and Value of Shipments of Foreign-Owned and All U.S. Establishments, by Detailed Industry, 1990-Continued

| $\begin{gathered} \mathrm{SIC} \\ \text { code } \end{gathered}$ | Industry | Foreign-owned establishments |  |  | All U.S. establishments |  |  | Foreign-owned establishments as a percentage of all U.S. establishments |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Number of employees | Thousands of dollars |  | Number of employees ${ }^{1}$ | Thousands of dollars |  |  |  |  |
|  |  |  | Value added by manufacture | Value of shipments |  | Value added by manufacture ${ }^{1}$ | Value of shipments ${ }^{2}$ | Employment | Value added by manufacture | Value of shipments |
| 251 | Household furniture | 9,065 | 276,284 | 692,827 | 274,800 | 9,878,100 | 19,912,900 | 3.3 | 2.8 | 3.5 |
| 2511 | Wood household furniture | 2,183 | 85,549 | 192,599 | 130,900 | 4,399,000 | 8,302,900 | 1.7 | 1.9 | 2.3 |
| 2512 | Upholstered household furniture ...... | H | (D) | (D) | 83,800 | 2,809,100 | 5,815,300 | (D) | (D) | (D) |
| 2514 | Metal household furniture ...................... | B | (D) | (D) | 26,500 | 1,032,400 | 2,184,100 | (D) | (D) | (D) |
| 2515 | Mattresses and bedsprings ..................................................... | 0 | 0 | 0 | 24,700 | 1,331,400 | 2,904,900 | 0 | 0 | 0 |
| 2517 |  | G | (D) | (D) | 3,300 | 132,600 | 246,900 | (D) | (D) | (D) |
| 2519 | Household furniture, nec ............................................................. | 1,577 | 33,088 | 148,970 | 5,700 | 173,700 | 458,700 | 27.7 | 19.0 | 32.5 |
| 252 | Office furniture | 3,761 | 277,062 | 481,778 | 74,900 | 4,719,500 | 8,030,100 | 5.0 | 5.9 | 6.0 |
| 2521 | Wood office furniture | F | ( ${ }^{\mathrm{D}} \mathrm{D}^{\mathrm{D}}$ |  | 28,200 | 1,100,800 | 1,998,800 | (D) | (D) | (D) |
| $\begin{array}{r}2522 \\ 253 \\ \hline\end{array}$ | Office furniture, except wood ............................................................ | H | (D) | $(\mathrm{D})$ | 46,700 | $3,618,700$ 1147100 | $6,031,400$ 3,112400 | $(\mathrm{D})$ | $(\mathrm{D})$ | ( D) |
| 253 2531 | Public building and related furniture | G | (D) | (D) | 26,000 26,000 | $1,147,100$ $1,147,100$ | $3,112,400$ $3,112,400$ | (D) | (D) | (D) |
| 254 | Partitions and fixtures ............................................................. | F | (D) | (D) | 72,600 | 3,409,300 | 6,193,000 | (D) | (D) | (D) |
| 2541 | Wood partitions and fixtures | F | (D) | (D) | 40,100 | 1,788,500 | 3,147,200 | (D) | (D) | (D) |
| 2542 | Paritions and fixtures, except wood .......................................... | F | (D) | (D) | 32,500 | 1,620,800 | 3,045,800 | (D) | (D) | (D) |
| 259 | Miscellaneous furniture and fixtures ......................................... | G | (D) | (D) | 50,900 | 2,490,600 | 4,433,600 | ( ${ }_{\text {D }}$ ( ${ }^{\text {d }}$ | (D) | $(\mathrm{D})$ |
| $\begin{aligned} & 2591 \\ & 2599 \end{aligned}$ | Drapery hardware and blinds and shades <br> Furniture and fixtures, nec | C | (D) | (D) | 19,000 31,900 | $1,005,100$ $1,485,600$ | $\begin{aligned} & 1,886,300 \\ & 2,547,300 \end{aligned}$ | (D) | (D) | (D) |
| 26 | Paper and allied products | 48,644 | 4,709,223 | 11,395,189 | 628,100 | 59,823,300 | 131,444,600 | 7.7 | 7.9 | 8.7 |
| 261 | Pup mill ..................................................................... | E |  |  | 16,100 | 3,416,400 | 6,239,100 | (D) | ( ${ }^{\text {D }}$ ) | (D) |
| 2611 | Pulp mills ...................................................................... | E | (D) | D) | 16,100 | 3,416,400 | $6,239,100$ | (D) | (D) | (D) |
| 262 | Paper mills ................................................................... | 10,612 | 1,458,591 | 3,553,586 | 130,100 | 16,599,800 | 35,321,800 | 8.2 | 8.8 | 10.1 |
| 2621 | Paper mills | 10,612 | 1,458,591 | 3,553,586 | 130,100 | 16,599,800 | 35,321,800 | 8.2 | 8.8 | 10.1 |
| 263 | Paperboard mills .................................................................. | 7,562 | 1,119,742 | 2,147,095 | 53,100 | 8,123,000 | 15,919,300 | 14.2 | 13.8 | 13.5 |
| 2631 | Paperboard mills | 7,562 | 1,119,742 | 2,147,095 | 53,100 | 8,123,000 | 15,919,300 | 14.2 | 13.8 | 13.5 |
| 265 | Paperboard containers and boxes .............................................. | 17,531 | 997,570 | 3,034,012 | 200,300 | 11,082,100 | 30,510,400 | 8.8 | 9.0 | 9.9 |
| 2652 | Setup paperboard boxes | 344 | 22,552 | 42,885 | 8,800 | 312,900 | 565,100 | 3.9 | 7.2 | 7.6 |
| 2653 | Corrugated and solid fiber boxes | 9,976 | 538,037 | 1,891,850 | 110,100 | 5,901,900 | 18,572,200 | 9.1 | 9.1 | 10.2 |
| 2655 | Fiber cans, drums and similar products ................................... | G | (D) |  | 13,300 | 750,600 | 1,884,900 | $(\mathrm{D})$ | (D) | $(\mathrm{D})$ |
| 2656 | Sanitary food containers ................................................... | C 5 |  | (D) 873,388 | 17,500 50 | 1,074,400 | 2,518,700 | ( ${ }^{\text {D }}$ ) | ${ }^{(\mathrm{D})}$ |  |
| 2657 | Folding paperboard boxes .................................................. | 5,477 | 347,908 | 873,388 | 50,700 | 3,042,400 | 6,969,400 | 10.8 | 11.4 | 12.5 |
| 267 | Miscellaneous converted paper products ..................................... |  | ${ }_{80}(\mathrm{D})$ | ${ }^{\text {( }}$ ( $)$ | 228,500 | 20,602,000 | 43,454,000 | ${ }^{(\mathrm{D})}$ |  |  |
| 2671 | Paper coated and laminated, packaging ................................. | 1,404 <br> 4 <br> 159 | 80,606 443 | 257,078 | 16,400 | 1,133,400 | 3,026,700 | 8.6 | 7.1 1.3 | 8.5 |
| 2672 | Paper coated and laminated, nec. | 4,579 | 443,059 | 1,185,660 | 35,000 | 3,321,000 | 7,077,800 | 13.1 | 13.3 | 16.8 |
| 2673 | Bags: plastics, laminated, and coated ...................................... | 1,101 | 84,592 | 177,252 | 37,400 | 2,625,100 | 5,494,600 | 2.9 | 3.2 | 3.2 |
| 2674 | Bags: uncoated paper and multiwall ....................................... | 723 | 34,172 | 96,731 | 16,900 | 877,100 | 2,750,100 | 4.3 | 3.9 | 3.5 |
| 2675 | Die-cut paper and board ......................................................... | G | $\left(\begin{array}{l}\text { D } \\ \text { (D) }\end{array}\right.$ | (D) | 16,800 | 1,045,700 | 2,119,000 | (D) | (D) | (D) |
| 2676 | Sanitary paper products ........................................................ | B | (D) | (D) | 39,000 | 7,896,200 | 14,709,200 |  | (D) | (D) |
| 2677 | Envelopes $\qquad$ | C | (D) | (D) | 26,100 10,100 | 1,194,900 | 2,816,600 $1,332,100$ | $(\mathrm{D})$ | $(\mathrm{D})$ | (D) |
| 2679 | Converted paper products, nec ........................................................................................... | 3,354 | 251,711 | 504,305 | 30,700 | 1,930,700 | 4,127,900 | 10.9 | 13.0 | 12.2 |
| 27 | Printing and publishing | 103,983 | 10,408,807 | 16,499,934 | 1,538,100 | 103,179,000 | 157,059,500 | 6.8 | 10.1 | 10.5 |
| 271 | Newspapers ... | 19,774 | 798,449 | 1,055,891 | 443,400 | 26,559,600 | 34,641,700 | 4.5 | 3.0 | 3.0 |
| 2711 | Newspapers ...................................................................... | 19,774 | 798,449 | 1,055,891 | 443,400 | 26,559,600 | 34,641,700 | 4.5 | 3.0 | 3.0 |
| 272 | Periodicals ........................................................................... | 14,122 | 1,957,867 | 3,124,876 | 115,200 | 13,847,700 | 20,396,700 | 12.3 | 14.1 | 15.3 |
| 2721 | Periodicals | 14,122 | 1,957,867 | 3,124,876 | 115,200 | 13,847,700 | 20,396,700 | 12.3 | 14.1 | 15.3 |
| 273 | Books | 21,423 | 3,365,885 | 4,660,080 | 122,200 | 13,320,400 | 19,449,900 | 17.5 | 25.3 | 24.0 |
| 2731 | Book publishing | 17,407 | 3,167,853 | 4,305,984 | 73,500 | 10,919,500 | 15,317,900 | 23.7 | 29.0 | 28.1 |
| 2732 | Book printing ... | 4,016 | 198,032 | 354,096 | 48,700 | 2,400,900 | 4,132,000 | 8.2 | 8.2 | 8.6 |
| 274 | Miscellaneous publishing ......................................................... | 4,732 | 551,139 | 650,747 | 65,200 | 6,656,200 | 8,874,700 | 7.3 | 8.3 | 7.3 |
| 2741 | Miscellaneous publishing ..................................................... | 4,732 | 551,139 | 650,747 | 65,200 | 6,656,200 | 8,874,700 | 7.3 | 8.3 | 7.3 |
| 275 | Commercial printing ........... | 28,413 | 2,322,445 | 4,549,246 | 580,400 | 29,001,300 | 52,903,700 | 4.9 | 8.0 | 8.6 |
| 2752 | Commercial printing, lithographic .......................................... | 15,041 | 1,274,879 | 2,547,334 | 423,300 | 21,230,300 | 38,877,400 | 3.6 | 6.0 | 6.6 |
| 2754 | Commercial printing, gravure ....... | 8,876 | 732,128 | 1,473,185 | 23,900 | 1,742,000 | 3,635,900 | 37.1 | 42.0 | 40.5 |
| 2759 | Commercial printing, nec ......... | 4,496 | 315,438 | 528,727 | 133,200 | 6,029,100 | 10,390,400 | 3.4 | 5.2 | 5.1 |
| 276 | Manifold business forms .......... |  |  | $\left(\begin{array}{l}\text { D } \\ \text { D }\end{array}\right.$ | 50,300 | 4,038,100 | 7,807,500 | ( ${ }_{\text {D }}$ ( ${ }^{\text {d }}$ | $(\mathrm{D})$ | ( ${ }_{\text {D }}$ ( $)$ |
| 2761 | Manifold business forms ...... | 1 |  |  | 50,300 | 4,038,100 | 7,807,500 | (D) | (D) | (D) |
| 277 | Greeting cards ................................................................ | 0 | 0 |  | 24,600 | 2,827,500 | 3,720,700 | 0 | 0 | 0 |
| 2771 | Greeting cards ............................................... | 0 | P | 0 | 24,600 | 2,827,500 | 3,720,700 | 0 | 0 | 0 |
| 278 | Blankbooks and bookbinding .................................................... | H | (D) |  | 70,200 | 3,218,700 | 4,549,400 | $(\mathrm{D})$ |  |  |
| 2782 | Blankbooks and looseleaf binders ........................................... | H |  | ( ${ }^{\text {D }}$ ( $)$ | 38,500 31700 | 2,182,900 | 3,186,100 | (D) | (D) | (D) |
| 2789 | Bookbinding and related work ............................................ |  |  |  | 31,700 | $1,035,800$ 3,709 | 1,363,400 | ${ }^{(\mathrm{D}} \mathrm{C}_{4.4}$ | ( ${ }^{\text {c }}$ ) | ( ${ }^{\text {D }}$ ) ${ }^{\text {d }}$ |
| 279 2791 | Printing trade services ........................................................ | 2,938 | 220,906 | 286,725 | 66,500 | 3,709,400 | 4,715,200 | (D) 4 | ${ }^{6} .0$ | 6.1 |
| 2796 | Platemaking services .................................. | G | (D) | (D) | 32,900 | 2,103,700 | 2,757,800 | (D) | (D) | (D) |
| 28 | Chemicals and allied products ................................................... | 242,392 | 48,835,701 | 87,678,890 | 853,300 | 153,032,400 | 288,183,700 | 28.4 | 31.9 | 30.4 |
| 281 | Industrial inorganic chemicals ................................................... | 22,882 | 4,576,277 | 7,845,636 | 100,900 | 16,099,700 | 26,690,800 | 22.7 | 28.4 | 29.4 |
| 2812 | Alkalies and chlorine .............................................................. |  |  |  | 6,800 | 1,449,900 | 2,709,800 | (D) | (D) | $(\mathrm{D})$ |
| 2813 | Industrial gases ................................................................... |  |  |  | 9,000 | 1,919,200 | 3,058,100 | (D) | (D) | (D) |
| 2816 | Inorganic pigments ............................................................ | 4,343 | 1,369,809 | 2,055,671 | 8,500 | 1,930,800 | 3,203,900 | 51.1 | 70.9 | 64.2 |
| 2819 | Industrial inorganic chemicals, nec ........................................... | 13,469 | 2,153,141 | 4,167,800 | 76,600 | 10,799,800 | 17,719,000 | 17.6 | 19.9 | 23.5 |
| 282 | Plastics materials and synthetics ............................................... | 54,991 | 8,854,655 | 18,797,001 | 131,600 | 20,511,200 | 48,419,800 | 41.8 | 43.2 | 38.8 |
| 2821 | Plastics materials and resins ................................................. | 14,365 | 3,446,830 | 8,244,436 | 62,400 | 12,195,300 | 31,325,800 | 23.0 | 28.3 | 26.3 |
| 2822 | Synthetic rubber ...................................................................... |  |  |  | 11,400 | 1,706,700 | 4,210,300 | (D) | (D) | (D) |
| 2823 2824 | Cellulosic manmade fibers $\qquad$ |  | $4002{ }^{(\mathrm{D})}$ | 7215 (D38 | 9,700 48,100 | 679,000 5930 | 1,456,700 | (D) | (D) ${ }_{6}$ | (D) |
| $\begin{array}{r}2824 \\ 283 \\ \hline\end{array}$ |  | 29,307 | 4,002,359 $14,234,655$ | $7,215,738$ $19,489,079$ | 48,100 182,900 | 5,930,200 $38,244,500$ | $11,427,100$ $53,719,700$ | 60.9 35.7 | 67.5 37.2 | 63.1 36.3 |
| 2833 |  | 2,063 | 259,825 | 602,462 | 10,900 | 2,392,200 | 4,919,400 | 18.9 | 10.9 | 12.2 |
| 2834 | Pharmaceutical preparations ................................................. | 51,180 | 12,591,173 | 16,760,810 | 143,800 | 32,744,700 | 44,182,300 | 35.6 | 38.5 | 37.9 |
| 2835 | Diagnostic substances ...................................................... | 3,865 | 476,620 | 655,862 | 14,900 | 1,790,100 | 2,462,200 | 25.9 | 26.6 | 26.6 |
| 2836 | Biological products except diagnostic ....................................... | 8,270 | 907,037 | 1,469,945 | 13,300 | 1,317,400 | 2,155,800 | 62.2 | 68.9 | 68.2 |
| 284 | Soap, cleaners, and toilet goods ............................................. | 22,075 | 5,537,023 | 9,216,467 | 126,100 | 25,007,800 | 41,437,900 | 17.5 | 22.1 | 22.2 |
| 2841 | Soap and other detergents ........................................................ | 5,439 | 1,389,093 | 2,657,805 | 36,300 | 7,971,200 | 15,373,400 | 15.0 | 17.4 | 17.3 |
| 2842 | Polishes and sanitation goods ............................................. | H |  |  | 19,600 | 3,691,400 | 5,847,900 | $(\mathrm{D})$ | (D) | (D) |
| 2843 | Surface active agents ............................................................ |  | ${ }^{(\mathrm{D})}$ | ${ }^{(\mathrm{D})}$ | 9,100 | 1,241,000 | 3,168,300 | (D) | (D) | (D) |
| 2844 | Toilet preparations .......................................................... | 10,436 | 2,681,808 | 3,719,110 | 61,100 | 12,104,200 | 17,048,400 | 17.1 | 22.2 | 21.8 |
| 285 | Paints and allied products ....................................................... | 10,833 | 1,635,949 | 3,528,421 | 53,900 | 6,765,700 | 14,238,700 | 20.1 | 24.2 | 24.8 |
| 2851 | Paints and allied products ................................................. | 10,833 | 1,635,949 | 3,528,421 | 53,900 | 6,765,700 | 14,238,700 | 20.1 | 24.2 | 24.8 |
| 286 | Industrial organic chemicals. | 38,025 | 9,261,864 | 19,192,018 | 125,800 | 28,813,100 | 65,695,500 | 30.2 | 32.1 | 29.2 |
| 2861 | Gum and wood chemicals .................................................. |  |  |  | 2,500 | 340,500 | 642,900 | (D) | (D) | (D) |
| 2865 | Cyclic crudes and intermediates ........................................... |  | $770{ }^{(\mathrm{D})}$ | 4502 ${ }^{\text {( })}$ | 23,000 | 3,980,100 | 10,892,600 | (D) | ( ${ }^{\text {D }}$ |  |
| 2869 | Industrial organic chemicals, nec ............................................ | 27,762 | 7,766,996 | 15,432,739 | 100,300 | 24,492,400 | 54,160,000 | 27.7 | 31.7 | 28.5 |
| 287 | Agricultural chemicals ........................................................... | 10,186 | 2,623,169 | 4,815,384 | 42,800 | 8,060,000 | 18,307,400 | 23.8 | 32.5 | 26.3 |
| 2873 | Nitrogenous fertilizers ..... |  |  |  | 7,500 | 1,213,300 | 3,113,400 | (D) | (D) | (D) |
| 2874 | Phosphatic fertilizers ..... | 1,752 | 195,655 | 701,957 | 10,500 | 1,151,100 | 4,636,200 | 16.7 | 17.0 | 15.1 |

Table 14.-Employment, Value Added by Manufacture, and Value of Shipments of Foreign-Owned and All U.S. Establishments, by Detailed Industry, 1990-Continued

| $\begin{aligned} & \text { SIC } \\ & \text { code } \end{aligned}$ | Industry | Foreign-owned establishments |  |  | All U.S. establishments |  |  | Foreign-owned establishments as a percentage of all U.S. establishments |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Number of employees | Thousands of dollars |  | Number of employees ${ }^{1}$ | Thousands of dollars |  |  |  |  |
|  |  |  | Value added by manufacture | Value of shipments |  | Value added by manufacture ${ }^{1}$ | Value of shipments ${ }^{2}$ | Employment | Value added by manufac ture | Value of shipments |
| 2875 | Fertilizers, mix | B | (D) | ( ${ }^{\text {) }}$ | 7,100 | 552,900 | 2,018,800 | (D) | (D) | (D) |
| 2879 | Agricultural chemicals, nec | 7,778 | 2,331,159 | 3,836,117 | 17,700 | 5,142,700 | 8,538,900 | 43.9 | 45.3 | 44.9 |
| 289 | Miscellaneous chemical products | 18,022 | 2,112,109 | 4,794,884 | 89,200 | 9,530,600 | 19,674,000 | 20.2 | 22.2 | 24.4 |
| 2891 | Adhesives and sealants ............ | 5,339 | 600,694 | 1,352,921 | 21,400 | 2,333,200 | 5,485,100 | 24.9 | 25.7 | 24.7 |
| 2892 | Explosives .................. |  |  |  | 13,800 | 874,400 | 1,324,600 | ${ }^{\text {( }}$ ) | (D) | (D) |
| 2893 | Printing ink ... | 3,622 | 408,164 | 1,291,774 | 11,400 | 1,035,700 | 2,754,400 | 31.8 | 39.4 | 46.9 |
| 2895 | Carbon black ................................................................................. |  | ${ }^{(\mathrm{D})}$ |  | 1,800 40 | 380,000 | 691,900 | $\left({ }^{(\mathrm{D})}\right.$ | ( ${ }^{\text {D }}$ (176 | ( ${ }^{\text {D }}$ ) |
| 2899 | Chemical preparations, nec ................................................ | 6,810 | 863,758 | 1,786,912 | 40,900 | 4,907,200 | 9,418,000 | 16.7 | 17.6 | 19.0 |
| 29 | Petroleum and coal products ............................................................ | 25,638 | $4,106,797$ 3,41895 | $46,372,551$ | 111,900 71900 | 27,214,100 | 172,588,600 | 22.9 | 15.1 | 26.9 |
| 2911 | Petroleum refining <br> Petroleum refining $\qquad$ | 19,702 19 1,702 | $\begin{aligned} & 3,418,395 \\ & 3,418,395 \end{aligned}$ | $\begin{aligned} & 44,134,647 \\ & 44,134,647 \end{aligned}$ | 71,900 71,900 | $\begin{aligned} & \text { 22,822,000 } \\ & \text { 22,822,000 } \end{aligned}$ | $\begin{aligned} & 159,411,100 \\ & 159,411,100 \end{aligned}$ | 27.4 27.4 | 15.0 15.0 | 27.7 27.7 |
| 295 | Asphalt paving and roofing materials | 3,469 | 413,016 | 1,073,158 | 26,700 | 2,734,700 | 7,798,700 | 13.0 | 15.1 | 13.8 |
| 2951 | Asphalt paving mixtures and blocks. | H |  | (D) | 14,300 | 1,449,800 | 4,213,800 | ${ }^{\text {D }}$ ) | (D) | (D) |
| 2952 | Asphalt felts and coatings ............... | F | (D) | (D) | 12,400 | 1,284,900 | 3,584,900 | (D) | (D) | (D) |
| 299 | Miscellaneous petroleum and coal products ................................. | 2,467 | 275,386 | 1,164,746 | 13,200 | 1,657,400 | 5,378,700 | 18.7 | 16.6 | 21.7 |
| $\begin{aligned} & 2992 \\ & 2999 \end{aligned}$ | Lubricating oils and greases <br> Petroleum and coal products, nec | $\mathrm{C}_{\mathrm{C}}^{\mathrm{G}}$ | $\left(\begin{array}{c}\text { ( }) \\ \text { (D) }\end{array}\right.$ | ( ${ }_{(0)}^{(\mathrm{D})}$ | 11,200 2,000 | 1,280,300 | 4,398,500 | ( $\left.{ }_{\text {(D) }}^{(\mathrm{D}}\right)$ | $\left(\begin{array}{l}\text { (D) } \\ \text { ( })\end{array}\right.$ | (D) |
| 30 | Rubber and miscellaneous plastics products ... | 120,951 | 8,757,926 | 17,790,551 | 870,100 | 49,889,000 | 101,398,200 | 13.9 | 17.6 | 17.5 |
| 301 | Tires and inner tubes ................................................................... | 35,511 | 3,237,878 | 5,805,548 | 67,700 | 6,488,600 | 11,860,800 | 52.5 | 49.9 | 48.9 |
| 3011 | Tires and inner tubes | 35,511 | 3,237,878 | 5,805,548 | 67,700 | 6,488,600 | 11,860,800 | 52.5 | 49.9 | 48.9 |
| 302 | Rubber and plastics footwear ..................................................... | 789 | 37,710 | 66,656 | 10,500 | 338,700 | 650,000 | 7.5 | 11.1 | 10.3 |
| 3021 | Rubber and plastics footwear | 789 | 37,710 | 66,656 | 10,500 | 338,700 | 650,000 | 7.5 | 11.1 | 10.3 |
| 305 | Hose and belting and gaskets and packing ................................ | 10,126 | 450,334 | 863,230 | 56,300 | 3,143,300 | 5,570,200 | 18.0 | 14.3 | 15.5 |
| 3052 | Rubber and plastics hose and belting ..................................... | 2,588 | 154,716 | 323,324 | 23,100 | 1,380,100 | 2,574,800 | 11.2 | 11.2 | 12.6 |
| 3053 | Gaskets, packing and sealing devices ................................. | 7,538 | 295,618 | 539,906 | 33,200 | 1,763,300 | 2,995,400 | 22.7 | 16.8 | 18.0 |
| 306 | Fabricated rubber products, nec ................................................. | 15,317 | 970,180 | 2,148,422 | 103,000 | 5,225,400 | 10,559,200 | 14.9 | 18.6 | 20.3 |
| 3061 | Mechanical rubber goods .......... | 4,617 | 273,121 | 470,427 | 46,300 | 2,086,300 | 3,930,200 | 10.0 | 13.1 | 12.0 |
| 3069 | Fabricated rubber products, nec ........................................ | 10,700 | 697,059 | 1,677,995 | 56,600 | 3,139,100 | 6,629,000 | 18.9 | 22.2 | 25.3 |
| 308 | Miscellaneous plastics products, nec ...................................... | 59,208 | 4,061,824 | 8,906,695 | 632,600 | 34,692,900 | 72,758,000 | 9.4 | 11.7 | 12.2 |
| 3081 | Unsupported plastics film and sheet ...................................... | 9,582 | 885,377 | 1,948,224 | 51,400 | 4,294,300 | 9,284,700 | 18.6 | 20.6 | 21.0 |
| 3082 | Unsupported plastics profile shapes .................................... | 3,434 | 171,737 | 377,308 | 26,700 | 1,285,700 | 2,688,800 | 12.9 | 13.4 | 14.0 |
| 3083 | Laminated plastics plate and sheet ...... | 3,238 | 240,299 | 448,093 | 17,600 | 1,159,600 | 2,293,000 | 18.4 | 20.7 | 19.5 |
| 3084 | Plastics pipe ..................................... | 2,432 | 199,298 | 598,688 | 12,900 | 807,700 | 2,616,000 | 18.9 | 24.7 | 22.9 |
| 3085 | Plastics bottles. | 1,466 | 106,544 | 200,942 | 28,800 | 1,626,400 | 3,728,900 | 5.1 | 6.6 | 5.4 |
| 3086 | Plastics foam products | 6,382 | 413,715 | 1,027,385 | 63,700 | 3,788,300 | 8,988,200 | 10.0 | 10.9 | 11.4 |
| 3087 | Custom compound purchased resins | 2,927 | 233,343 | 720,485 | 18,200 | 1,297,800 | 3,246,900 | 16.1 | 18.0 | 22.2 |
| 3088 | Plastics plumbing fixtures ........... | 1,588 | 205,501 | 301,540 | 9,100 | 577,200 | 965,200 | 17.5 | 35.6 | 31.2 |
| 3089 | Plastics products, nec .................................................. | 28,159 | 1,606,010 | 3,284,030 | 404,200 | 19,855,800 | 38,946,300 | 7.0 | 8.1 | 8.4 |
| 31 | Leather and leather products | 6,362 | 287,251 | 608,138 | 117,400 | 4,586,600 | 9,887,300 | 5.4 | 6.3 | 6.2 |
| 311 | Leather tanning and finishing ............................................. | G |  |  | 12,100 | 779,900 | 2,410,900 | (D) | (D) | (D) |
| 3111 | Leather tanning and finishing ................................................ | G |  | (D) | 12,100 | 779,900 | 2,410,900 | $(\mathrm{D})$ | (D) |  |
| 313 3131 |  | E | $(\mathrm{D})$ | (D) | 5,200 | 196,400 | 413,300 413300 | (D) | (D) | (D) |
| 3131 | Footwear cut stock .................................................................. | E | ${ }^{(\mathrm{D})}$ | ${ }^{(\mathrm{D})}$ | 5,200 | 196,400 | 413,300 | ( ${ }^{\text {D }} 5$ | ( ${ }^{\text {P }}$ | (D) |
| 314 | Footwear, except rubber | 3,191 | 98,155 | 207,045 | 62,000 | 2,120,300 | 4,232,100 | 5.1 | 4.6 | 4.9 |
| 3142 | House slippers ................ | 0 | 0 | 0 | 4,300 | 160,700 | 276,000 | 0 | 0 | 0 |
| 3143 | Men's footwear, except athletic ...................................... | H | (D) | (D) | 28,500 | 1,058,600 | 2,148,800 | (D) | (D) | ${ }^{(\mathrm{D})}$ |
| 3144 | Women's footwear, except athletic ................................... | $\stackrel{0}{\text { F }}$ | (D) | 0 | 21,800 | 682,700 | 1,393,200 | 0 | 0 | 0 |
| 3149 | Footwear, except rubber, nec ......................................... | F | (D) | (D) | 7,500 | 218,200 | 414,100 | ( ${ }^{\text {d }}$ | (D) | (D) |
| 315 | Leather gloves and mittens ............ | 0 | - | 0 | 2,800 | 59,200 | 154,800 | 0 | 0 | 0 |
| 3151 | Leather gloves and mittens ........ | 0 | (D) | 0 | 2,800 | 59,200 | 154,800 | 0 | 0 | 0 |
| 316 | Luggage .......................................................................... | B | (D) | ${ }_{(0)}^{\text {( })}$ | 14,000 14000 | 618,000 | 1,169,400 | (D) | $(\mathrm{D})$ | $(\mathrm{D})$ |
| $\begin{array}{r}3161 \\ 317 \\ \hline\end{array}$ | Luggage .................................. | B | ( ${ }^{\text {d }}$ ) 37.599 | ${ }_{60}^{(D)}$ | 14,000 | 618,000 | 1,169,400 | ${ }^{\text {( })}{ }_{71}$ | ( ${ }^{\text {P }} 7.4$ |  |
| 317 | Handbags and personal leather goods | 905 | 37,599 | 60,148 | 12,800 | 509,600 | 912,200 | 7.1 | 7.4 | 6.6 |
| 3171 | Women's handbags and purses ............................................ | 905 | 37,599 | 60,148 | 6,400 | 319,700 | 546,900 | 14.1 | 11.8 | 11.0 |
| 3172 319 | Personal leather goods, nec .................................................. | 0 |  | 0 | 6,500 | 189,900 | 365,200 | 0 | 0 | 0 |
| 319 3199 | Leather goods, nec $\qquad$ Leather goods, nec | C | (D) | (D) | 8,600 8,600 | 303,200 303,200 | 594,700 594,700 | (D) | (D) | (D) |
|  |  |  |  |  |  |  |  |  |  |  |
| 32 | Stone, clay, and glass products ................................................... | 105,578 | 8,450,211 | 16,407,454 | 509,100 | 34,140,200 | 63,468,000 |  | 24.8 |  |
| 321 3211 |  |  |  |  | 14,600 14.600 | $1,394,800$ $1,394,800$ | $2,279,000$ $2,279,000$ | $\begin{aligned} & (\mathrm{D}) \\ & (\mathrm{D}) \end{aligned}$ | (D) | (D) |
| 322 |  | 21,522 | 1,645,014 | 2,887,318 | 14,600 72,000 | $1,394,800$ $5,342,800$ | 8,918,000 | 29.9 | 30.8 | 32.4 |
| 3221 | Glass containers ........................... | 16,391 | 1,266,761 | 2,250,907 | 36,600 | 2,751,400 | 4,946,100 | 44.8 | 46.0 | 45.5 |
| 3229 | Pressed and blown glass, nec | 5,131 | 378,253 | 636,411 | 35,400 | 2,591,400 | 3,971,900 | 14.5 | 14.6 | 16.0 |
| 323 | Products of purchased glass .................................................... | 6,953 | 427,734 | 907,180 | 53,900 | 3,341,500 | 6,141,300 | 12.9 | 12.8 | 14.8 |
| 3231 | Products of purchased glass ................................................. | 6,953 | 427,734 | 907,180 | 53,900 | 3,341,500 | $6,141,300$ | 12.9 | 12.8 | 14.8 |
| 324 | Cement, hydraulic ........................................................... | 10,501 | 1,353,752 | 2,702,922 | 17,600 | 2,196,800 | 4,250,700 | 59.7 | 61.6 | 63.6 |
| 3241 | Cement, hydraulic ......................................................... | 10,501 | 1,353,752 | 2,702,922 | 17,600 | 2,196,800 | 4,250,700 | 59.7 | 61.6 | 63.6 |
| 325 | Structural clay products ....................................................... | 7,744 | 415,096 | 717,904 | 34,000 | 1,852,900 | 3,086,500 | 22.8 | 22.4 | 23.3 |
| 3251 | Brick and structural clay tile ..... | 4,550 | 223,697 | 365,407 | 15,500 | 753,500 | 1,168,700 | 29.4 | 29.7 | 31.3 |
| 3253 | Ceramic wall and floor tile ....... | G |  |  | 9,800 | 556,600 | 845,000 | (D) | (D) | (D) |
| 3255 | Clay refractories ............................................................. | 1,546 | 89,329 | 195,268 | 6,500 | 451,400 | 922,900 | 23.8 | 19.8 | 21.2 |
| 3259 | Structural clay products, nec .................................................. |  |  |  | 2,200 | 91,300 | 149,800 | $\left(\begin{array}{l}\text { D } \\ \text { D }\end{array}\right.$ | $\left({ }^{\text {D }}\right.$ ( ${ }^{\text {d }}$ | (D) |
| 326 3261 | Pottery and related products | G | ( ${ }_{(0)}^{\text {D }}$ | (D) | 37,700 | 1,838,800 | 2,613,400 | (D) | (D) | (D) |
| 3261 3262 | Vitreous plumbing fixtures $\qquad$ <br> Vitreous china table and kitchenware | C | ( ${ }^{\text {D }}$ | (D) | 9,300 6,000 | 578,000 278,100 | 825,100 342,000 | (D) | ( ${ }^{\text {D }}$ | (D) |
| 3263 | Vitreous china table and kitchenware ................................... | 0 | 0 | 0 | 1,200 | -34,200 | +44,500 | 0 | 0 | 0 |
| 3264 | Porcelain electrical supplies .............................................................................. | G | ( ${ }^{\text {D }}$ ) | ${ }^{(1)}$ | 8,900 | 539,400 | 810,000 | ${ }^{\text {( }}$ ) | (D) | ( ${ }^{\text {D }}$ ) |
| 3269 | Pottery products, nec ...................................................... |  |  |  | 12,200 | 409,100 | 591,700 | ( D$)$ |  | (D) |
| 327 | Concrete, gypsum, and plaster products ................................... | 33,113 | 2,227,089 | 4,875,489 | 194,600 | 11,661,600 | 24,595,000 | 17.0 | 19.1 | 19.8 |
| 3271 | Concrete block and brick. | 2,033 | 140,560 | 285,310 | 18,300 | 1,134,300 | 2,304,000 | 11.1 | 12.4 | 12.4 |
| 3272 | Concrete products, nec ....................................................... | 10,816 | 626,350 | 1,162,562 | 68,300 | 3,504,200 | 6,366,500 | 15.8 | 17.9 | 18.3 |
| 3273 | Ready-mixed concrete ........................................................ | 15,646 | 1,049,622 | 2,467,829 | 91,800 | 5,633,500 | 12,829,600 | 17.0 | 18.6 | 19.2 |
| 3274 | Lime ........................................................................... | 1,259 | 106,599 | 193,846 | 4,700 | 422,500 | 719,800 | 26.8 | 25.2 | 26.9 |
| 3275 | Gypsum products .............................................................. | 3,359 | 303,958 | 765,942 | 11,500 | 967,000 | 2,375,100 | 29.2 | 31.4 | 32.2 |
| 328 | Cut stone and stone products ............................................ | C |  |  | 13,900 | 575,300 | 988,800 | (D) | (D) | (D) |
| 3281 | Cut stone and stone products ...................................................... |  | ${ }_{1749}$ (D) |  | 13,900 | 575,300 | $\begin{array}{r}988,800 \\ \hline 1059500\end{array}$ | (D) | (D) | (D) |
| 329 | Miscellaneous nonmetallic mineral products ................................. | 18,413 | 1,749,413 | 3,298,011 | 70,800 | 5,935,700 | 10,595,300 | 26.0 | 29.5 | 31.1 |
| 3291 | Abrasive products ............................................................ | 7,997 | 922,877 | 1,711,414 | 24,200 | 2,130,600 | 3,898,400 | 33.0 | 43.3 | 43.9 |
| 3292 | Asbestos products ........................................................................ |  |  |  | 3,100 | 198,700 | 352,600 | ( ${ }^{\text {D }}$ ) | ( ${ }^{\text {D }}$ | ( ${ }^{\text {d }}$ |
| 3295 | Minerals, ground or treated .................................................... | 2,974 | 204,578 | 467,005 | 9,000 | 848,700 | 1,499,800 | 33.0 | 24.1 | 31.1 |
| 3296 | Mineral wool ...................... | 3,516 | 303,216 | 557,928 | 19,000 | 1,807,700 | 3,099,800 | 18.5 | 16.8 | 18.0 |
| 3297 | Nonclay refractories ........................................................... | 3,404 | 274,990 | 465,817 | 8,400 | 573,400 | 1,077,600 | 40.5 | 48.0 | 43.2 |
| 3299 | Nonmetallic mineral products, nec .......................................... | E | ${ }^{(D)}$ | ( ${ }^{\text {( })}$ | 7,100 | 376,600 | 667,200 | ${ }^{\text {( })}$ | ${ }^{(D)}$ | ${ }^{(\mathrm{D})}$ |

Table 14.-Employment, Value Added by Manufacture, and Value of Shipments of Foreign-Owned and All U.S. Establishments, by Detailed Industry, 1990-Continued

| $\underset{\substack{\text { SIC } \\ \text { code }}}{ }$ | Industry | Foreign-owned establishments |  |  | All U.S. establishments |  |  | Foreign-owned establishments as a percentage of all U.S. establishments |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Number of employees | Thousands of dollars |  | Number of employees ${ }^{1}$ | Thousands of dollars |  | Employment | Value added by manufac ture |  |
|  |  |  | Value added by manufacture | Value of shipments |  | Value added by manufacture ${ }^{1}$ | Value of shipments ${ }^{2}$ |  |  | Value of shipments |
| 33 | Primary metal industries | 119,087 | 10,297,630 | 31,902,909 | 711,900 | 53,366,600 | 146,052,000 | 16.7 | 19.3 | 21.8 |
| 331 | Blast furnace and basic steel products ................................... | 60,902 | 5,487,240 | 14,963,600 | 258,800 | 23,766,000 | 62,121,100 | 23.5 | 23.1 | 24.1 |
| 3312 | Blast furnaces and steel mills .......... | 45,361 | 4,215,490 | 11,073,717 | 188,500 | 18,283,000 | 45,950,400 | 24.1 | 23.1 | 24.1 |
| 3313 | Electrometallurgical products .... | 2,502 | 225,270 | 540,250 | 5,200 | 431,200 | 1,180,400 | 48.1 | 52.2 | 45.8 |
| 3315 | Steel wire and related products .......................................... | 5,762 | 338,443 | 833,015 | 26,700 | 1,723,400 | 4,179,700 | 21.6 | 19.6 | 19.9 |
| 3316 | Cold finishing of steel shapes ....................................... | 3,210 | 343,536 | 1,387,426 | 16,300 | 1,620,800 | 5,842,200 | 19.7 | 21.2 | 23.7 |
| 3317 |  | 4,067 | 364,501 | 1,129,192 | 22,100 | 1,707,700 | 4,968,500 | 18.4 | 21.3 | 22.7 |
| 332 | Iron and steel foundries ......................................................... | 10,651 | 650,840 | 1,172,560 | 132,500 | 6,691,500 | 12,064,500 | 8.0 | 9.7 | 9.7 |
| 3321 | Gray and ductile iron foundries | 3,204 | 160,093 | 366,026 | 81,000 | 4,111,200 | 7,825,300 | 4.0 | 3.9 | 4.7 |
| 3322 | Malleable iron foundries .................................................... | 0 | 0 | (D) | 4,900 | 196,800 | 320,600 | 0 | 0 | 0 |
| 3324 |  |  | (D) | (D) | 19,800 | 1,033,500 | 1,592,100 | (D) | (D) | (D) |
| 3325 | Steel foundries, nec ............ | G |  | (D) | 26,700 | 1,350,000 | 2,326,500 |  |  |  |
| 333 | Primary nonferrous metals | 9,006 | 1,096,651 | 5,122,942 | 34,700 | 4,265,800 | 15,507,100 | 26.0 | 25.7 | 33.0 |
| 3331 | Primary copper .............. | G | ( ${ }^{\text {D }}$ ) | (D) | 4,600 | 918,000 | 4,201,200 | (D) | (D) | (D) |
| 3334 | Primary aluminum. | H |  | ( ${ }^{\text {d }}$ ) | 19,500 | 2,205,600 | 7,033,900 |  | (D) |  |
| 3339 |  | 3,956 | 500,755 | 2,615,331 | 10,600 | 1,142,200 | 4,272,000 | 37.3 | 43.8 | 61.2 |
| 334 | Secondary nonferrous metals .................................................. | 1,369 | 127,534 | 580,769 | 14,700 | 1,107,500 | 6,130,200 | 9.3 | 11.5 | 9.5 |
| 3341 | Secondary nonferrous metals .... | 1,369 | 127,534 | 580,769 | 14,700 | 1,107,500 | 6,130,200 | 9.3 | 11.5 | 9.5 |
| 335 | Nonferrous rolling and drawing | 30,029 | 2,367,427 | 8,977,349 | 157,100 | 11,832,500 | 39,330,900 | 19.1 | 20.0 | 22.8 |
| 3351 | Copper rolling and drawing | 2,948 | 227,006 | 982,802 | 21,400 | 1,679,300 | 6,880,200 | 13.8 | 13.5 | 14.3 |
| 3353 | Aluminum sheet, plate, and foil ...... | 7,405 | 609,787 | 3,765,865 | 25,100 | 2,508,500 | 11,121,500 | 29.5 | 24.3 | 33.9 |
| 3354 | Aluminum extruded products ............................. | ${ }^{H}$ | $\left(\begin{array}{c}\text { (D) } \\ \text { D }\end{array}\right.$ | $\left(\begin{array}{c}\text { D } \\ \text { D }\end{array}\right.$ | 30,900 | 1,466,900 | 4,850,300 | $\left({ }^{\text {D }}\right.$ ( ${ }_{\text {d }}$ | ( ${ }_{\text {D }}($ | (D) |
| $\begin{array}{r}3355 \\ 3356 \\ \hline\end{array}$ | Aluminum rolling and drawing, nec $\qquad$ | B 5 5354 | 450, ${ }^{\text {( })}$ | ${ }_{1,140,812}$ | 800 18.600 | 54,600 $1.502,500$ | 388,300 $3.481,200$ | (D) | (D) | (D) |
| 3356 | Nonferrous rolling and drawing, nec .................... | 5,354 | 450,339 | 1,140,812 | 18,600 | 1,502,500 | 3,481,200 | 28.8 | 30.0 | 32.8 |
| 336 | Nonferrous wiredrawing and insulating Nonferrous foundries (castings) .......... | $\begin{array}{r}\text { re, } \\ 4,125 \\ \hline\end{array}$ | 215,566 | 2,412,845 | 79,800 | 3,548,000 | 12,159,300 | 16.7 5.2 | 6.1 | 19.6 5.8 |
| 3363 | Aluminum die-castings ........ | 1,051 | 60,815 | 109,066 | 28,800 | 1,326,600 | 2,779,500 | 3.6 | 4.6 | 3.9 |
| 3364 | Nonferrous die-casting except aluminum | 1,378 | 76,771 | 137,898 | 13,200 | 598,200 | 1,317,900 | 10.4 | 12.8 | 10.5 |
| 3365 | Aluminum foundries ............................... | 879 | 35,879 | 84,672 | 23,600 | 980,700 | 1,919,100 | 3.7 | 3.7 | 4.4 |
| 3366 | Copper foundries | 440 | 23,689 | 44,381 | 9,000 | 353,100 | 677,800 | 4.9 | 6.7 | 6.5 |
| 3369 | Nonferrous foundries, nec | 377 | 18,412 | 36,828 | 5,200 | 289,500 | 465,000 | 7.3 | 6.4 | 7.9 |
| 339 | Miscellaneous primary metal products .. | 3,005 | 352,372 | 672,844 | 34,200 | 2,155,300 | 3,738,800 | 8.8 | 16.3 | 18.0 |
| 3398 | Metal heat treating | 619 | 54,553 | 70,710 | 20,500 | 1,274,000 | 1,871,700 | 3.0 | 4.3 | 3.8 |
| 3399 | Primary metal products, nec ................................................ | 2,386 | 297,819 | 602,134 | 13,700 | 881,300 | 1,867,100 | 17.4 | 33.8 | 32.3 |
| 34 | Fabricated metal products | 93,300 | 6,350,246 | 13,973,579 | 1,438,700 | 79,951,900 | 163,052,800 | 6.5 | 7.9 | 8.6 |
| 341 | Metal cans and shipping containers ........................................ |  |  |  | 43,100 | 4,090,500 | 13,555,700 | (D) | (D) | (D) |
| 3411 | Metal cans .......................... | F | (D) |  | 35,900 | 3,668,400 | 12,342,400 | (D) | (D) | (D) |
| 3412 | Metal barrels, drums, and pails | F |  |  | 7,200 | 422,100 | 1,213,300 |  | (D) |  |
| 342 | Cutlery, handtools, and hardware. | 7,490 | 520,445 | 880,277 | 139,000 | 8,504,200 | 14,666,300 | 5.4 | 6.1 | (D) 0 |
| 3421 3423 | Cutlery $\qquad$ Hand and edge tools, nec | E | ${ }_{(0)}^{\text {(D) }}$ | ( ${ }_{(\mathrm{D})}^{\text {( })}$ | 10,900 40,600 | 977,800 2,392,800 | $1,320,500$ $3,966,700$ | (D) | (D) | (D) |
| 3425 | Saw blades and handsaws | 199 | 11,253 | 19,052 | 8,700 | 540,300 | -916,800 | 2.3 | 2.1 | 2.1 |
| 3429 | Hardware, nec | 5,804 | 370,289 | 646,714 | 78,800 | 4,593,300 | 8,462,300 | 7.4 | 8.1 | 7.6 |
| 343 | Plumbing and heating, except electric | 893 | 43,752 | 91,560 | 43,400 | 3,079,500 | 5,897,200 | 2.1 | 1.4 | 1.6 |
| 3431 | Metal sanitary ware ..................... | C | (D) | (D) | 7,700 | 524,800 | 980,000 | (D) | (D) | (D) |
| 3432 | Plumbing fixture fittings and trim ... | B | (D) | (D) | 17,300 | 1,400,100 | 2,749,900 | (D) |  |  |
| 3433 | Heating equipment, except electric .... | 617 | 34,384 | 71,294 | 18,400 | 1,154,600 | 2,167,400 | 3.4 | 3.0 | 3.3 |
| 344 | Fabricated structural metal products ........................................ | 29,974 | 1,759,842 | 3,963,428 | 405,900 | 19,934,500 | 44,936,100 | 7.4 | 8.8 | 8.8 |
| 3441 | Fabricated structural metal | 3,542 | 196,117 | 456,577 | 82,700 | 4,035,400 | 9,788,100 | 4.3 | 4.9 | 4.7 |
| 3442 | Metal doors, sash, and trim | 5,478 | 279,379 | 648,667 | 72,200 | 3,053,500 | 6,981,500 | 7.6 | 9.1 | 9.3 |
| 3443 | Fabricated plate work (boiler shops) .................................... | 9,865 | 623,795 | 1,146,070 | 76,100 | 4,198,500 | 8,653,700 | 13.0 | 14.9 | 13.2 |
| 3444 | Sheet metal work | 3,743 | 255,366 | 718,505 | 99,100 | 4,867,400 | 10,249,100 | 3.8 | 5.2 | 7.0 |
| 3446 | Architectural metal work | 1,796 | 80,549 | 142,548 | 30,000 | 1,350,800 | 2,492,900 | 6.0 | 6.0 | 5.7 |
| 3448 | Prefabricated metal buildings .................................................. | 4,682 | 264,414 | 683,464 | 22,800 | 1,183,000 | 2,984,100 | 20.5 | 22.4 | 22.9 |
| 3449 | Miscellaneous metal work | 868 | 60,222 | 167,597 | 23,000 | 1,245,900 | 3,786,800 | 3.8 | 4.8 | 4.4 |
| 345 | Screw machine products, bolts, etc ........................................ | H | $\left(\begin{array}{c}\text { D } \\ \text { D }\end{array}\right.$ |  | 95,200 | 5,150,400 | 8,723,000 | $\left({ }^{\text {D }}\right.$ ( ${ }^{\text {D }}$ | (D) | $(\mathrm{D})$ |
| 3451 | Screw machine products ................................................ | $\stackrel{\text { F }}{ }$ | ( ${ }_{\text {D }}^{\text {D }}$ | (D) | 42,400 52800 | $1,956,000$ 319400 | 3,034,400 | (D) | (D) | $(\mathrm{D})$ |
| 346 | Bots, nuts, rivets, and washers .... | 12,364 | 779,611 | 1,671,569 | 52,800 | 3,194,400 $13,665,600$ | $5,688,600$ $29,662,800$ | 5.0 | 5.7 | 5.6 |
| 3462 | Iron and steel forgings .... | 1,026 | 66,069 | 141,519 | 28,400 | 1,764,900 | 3,858,800 | 3.6 | 3.7 | 5.6 3.7 |
| 3463 | Nonferrous forgings ...... |  |  |  | 7,200 | 495,200 | 1,159,100 | (D) | (D) | (D) |
| 3465 | Automotive stampings .................................................... | 7,486 | 499,953 | 998,998 | 110,600 | 6,300,200 | 14,544,500 | 6.8 | 7.9 | 6.9 |
| 3466 | Crowns and closures .......................................................... |  |  |  | 4,400 | 358,200 | 720,200 | $\left.{ }^{(\mathrm{D}}\right)$ | (D) | (D) |
| 3469 | Metal stampings, nec ..................................................... | 2,645 | 140,343 | 345,992 | 98,400 | 4,747,300 | 9,380,200 | 2.7 | 3.0 | 3.7 |
| 347 | Metal services, nec ..... | 2,818 | 139,431 | 300,355 | 117,400 | 5,410,300 | 9,441,900 | 2.4 | 2.6 | 3.2 |
| 3471 | Plating and polishing .......................................................... | 1,766 | 80,996 | 150,156 | 73,200 | 2,981,000 | 4,513,300 | 2.4 | 2.7 | 3.3 |
| 3479 | Metal coating and allied services ........................................... | 1,052 | 58,435 | 150,199 | 44,300 | 2,429,300 | 4,928,700 | 2.4 | 2.4 | 3.0 |
| 348 | Ordnance and accessories, nec .................................................. | 8,880 | 627,458 | 875,955 | 70,500 | 4,741,100 | 6,725,100 | 12.6 | 13.2 | 13.0 |
| 3482 | Small arms ammunition ................................................................. | F |  |  | 8,500 | 535,900 | 844,100 | $\left.{ }^{(\mathrm{D}}\right)$ | ( ${ }^{\text {D }}$ ) | ( ${ }^{\text {d }}$ |
| 3483 | Ammunition, except for small arms, nec ................................... | 3,229 | 224,824 | 332,965 | 27,100 | 1,908,900 | 3,128,600 | 11.9 | 11.8 | 10.6 |
| 3484 | Small arms .................................................................. | 4,152 | 311,061 | 376,861 | 12,500 | 859,900 | 1,108,800 | 33.2 | 36.2 | 34.0 |
| 3489 | Ordnance and accessories, nec ............................................ |  |  |  | 22,400 | 1,436,400 | 1,643,600 | ${ }^{(\mathrm{D})}$ | ( ${ }^{\text {P }}$ | (D) |
| 349 | Miscellaneous fabricated metal products .................................. | 19,488 | 1,365,184 | 2,903,330 | 275,100 | 15,375,700 | 29,444,700 | 7.1 | 8.9 | 9.9 |
| 3491 | Industrial valves. | 3,772 | 308,526 | 516,548 | 46,400 | 3,385,500 | 5,745,400 | 8.1 | 9.1 | 9.0 |
| 3492 | Fluid power valves and hose fittings ....................................... | 2,773 | 163,642 | 291,756 | 30,900 | 1,913,600 | 3,322,800 | 9.0 | 8.6 | 8.8 |
| 3493 | Steel springs, except wire ............................................... | 658 | 41,082 | 91,764 | 6,100 | 286,400 | 524,700 | 10.8 | 14.3 | 17.5 |
| 3494 | $V$ Vaves and pipe fittings, nec | 1,961 | 138,061 | 218,489 | 26,000 | 1,535,800 | 2,924,000 | 7.5 | 9.0 | 7.5 |
| 3495 | Wire springs .................................................................. | 752 | 47,549 | 94,747 | 20,100 | 974,700 | 1,843,900 | 3.7 | 4.9 | 5.1 |
| 3496 | Miscellaneous fabricated wire products .................................... | 1,127 | 76,025 | 177,381 | 33,200 | 1,552,100 | 2,999,700 | 3.4 | 4.9 | 5.9 |
| 3497 | Metal foil and leat ............................ | 2,971 | 233,451 | 773,891 | 10,600 | 938,400 | 2,845,800 | 28.0 | 24.9 | 27.2 |
| 3498 | Fabricated pipe and fittings .................................................. | 1,318 | 82,758 | 173,957 | 21,900 | 1,027,000 | 2,333,800 | 6.0 | 8.1 | 7.5 |
| 3499 | Fabricated metal products, nec .............................................. | 4,156 | 274,090 | 564,797 | 80,000 | 3,762,300 | 6,904,600 | 5.2 | 7.3 | 8.2 |
|  | Industrial machinery and equipment ...................................... | 191,440 | 13,561,697 | 31,010,583 | 1,876,700 | 132,165,800 | 256,344,700 | 10.2 | 10.3 | 12.1 |
| 351 | Engines and turbines ............................................................. | 16,390 | 1,112,504 | 3,116,038 | 83,200 | 7,159,000 | 16,580,900 | 19.7 | 15.5 | 18.8 |
| 3511 | Turbines and turbine generator sets ........................................ | G | (D) | ( ${ }_{(0)}^{\text {( })}$ | 21,900 | 2,259,200 | 4,356,700 | (D) | ( ${ }^{\text {D }}$ ) | ( ${ }^{\text {D }}$ |
| 3519 | Internal combustion engines, nec ............................................ |  |  |  | 61,300 | 4,899,800 | 12,224,200 | (D) | (D) | (D) |
| 352 | Farm and garden machinery ................................................... | 12,375 | 835,435 | 2,111,956 | 94,100 | 7,985,000 | 16,456,200 | 13.2 | 10.5 | 12.8 |
| 3523 | Farm machinery and equipment .............................................. | 3,120 | 203,438 | 402,467 | 69,600 | 5,978,500 | 11,546,200 | 4.5 | 3.4 | 3.5 |
| 3524 | Lawn and garden equipment .................................................... | 9,255 | 631,997 | 1,709,489 | 24,500 | 2,006,500 | 4,910,000 | 37.8 | 31.5 | 34.8 |
| $\begin{array}{r}353 \\ 3531 \\ \hline\end{array}$ | Construction and related machinery ......................................... | 27,880 | 1,598,623 | 4,021,136 | 202,700 | 13,928,000 | 30,696,600 | 13.8 | 11.5 | 13.1 |
| 3531 | Construction machinery ........................................................... | 11,704 | 732,113 | 1,908,758 | 89,900 | 6,797,300 | 16,069,600 | 13.0 | 10.8 | 11.9 |
| 3532 | Mining machinery .............................................................. | 3,171 | 192,219 | 461,029 | 15,500 | 912,800 | 1,865,500 | 20.5 | 21.1 | 24.7 |
| 3533 <br> 3534 | Oil and gas field machinery ................................................ | 3,705 | 201,485 | 467,686 | 27,200 | 2,040,900 | 3,634,700 | 13.6 | 9.9 | 12.9 |
| 3534 <br> 3535 | Elevators and moving stairways ........................................................................ |  | $(\mathrm{D})$ 276,854 | 605,623) | 9,200 | 556,500 | 1,343,100 | $\left.{ }^{(\mathrm{D}}\right)$ | ${ }^{(\mathrm{D})}$ |  |
| ${ }_{3536}$ | Conveyors and conveying equipment $\qquad$ Hoists, cranes, and monorails $\qquad$ | 5,025 | 276,854 (D) | 605,623 (D) | $\begin{array}{r} 32,900 \\ 7,900 \end{array}$ | $\begin{array}{r} 2,066,300 \\ 517,500 \end{array}$ | $\begin{aligned} & \text { 4,089,900 } \\ & 966,400 \end{aligned}$ | $\begin{aligned} & 15.3 \\ & (\mathrm{D}) \end{aligned}$ | (D) | (D) |

See footnotes at end of table.

Table 14.-Employment, Value Added by Manufacture, and Value of Shipments of Foreign-Owned and All U.S. Establishments, by Detailed Industry, 1990-Continued

| $\begin{gathered} \text { SIC } \\ \text { code } \end{gathered}$ | Industry | Foreign-owned establishments |  |  | All U.S. establishments |  |  | Foreign-owned establishments as a percentage of all U.S. establishments |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Number of employees | Thousands of dollars |  | Number of employees ${ }^{1}$ | Thousands of dollars |  |  |  |  |
|  |  |  | Value added by manufacture | Value of shipments |  | Value added by manufacture ${ }^{1}$ | Value of shipments ${ }^{2}$ | Employment | Value added by manufacture | Value of shipments |
| 3537 | Industrial trucks and tractors | 2,383 | 115,580 | 291,798 | 20,100 | 1,036,700 | 2,727,500 | 11.9 | 11.1 | 10.7 |
| 354 | Metalworking machinery ... | 19,092 | 1,394,423 | 2,725,415 | 280,800 | 16,515,600 | 27,035,200 | 6.8 | 8.4 | 10.1 |
| 3541 | Machine tools, metal cutting types | 2,062 | 171,141 | 443,218 | 30,300 | 1,890,300 | 3,606,800 | 6.8 | 9.1 | 12.3 |
| 3542 | Machine tools, metal forming types .... | 1,883 | 96,304 | 256,698 | 14,600 | 853,800 | 1,652,700 | 12.9 | 11.3 | 15.5 |
| 3543 | Industrial patterns .......................... |  |  |  | 8,100 | 396,600 | 534,300 | ${ }^{(1)}$ | $\left({ }^{\text {( }}\right.$ ) | (D) |
| 3544 | Special dies, tools, jigs and fixtures | 2,608 | 184,990 | 362,528 | 119,800 | 6,525,400 | 9,487,200 | 2.2 | 2.8 | 3.8 |
| 3545 | Machine tool accessories .. | 4,849 | 344,150 | 518,199 | 55,200 | 3,072,400 | 4,550,400 | 8.8 | 11.2 | 11.4 |
| 3546 | Power-driven handtools ... | 3,110 | 230,447 | 573,896 | 18,300 | 1,471,800 | 2,805,800 | 17.0 | 15.7 | 20.5 |
| 3547 | Rolling mill machinery .... | A |  | ${ }^{\text {( })}$ | 3,800 | 173,300 | 483,400 | (D) | ${ }^{\text {( })}$ | ${ }^{\text {( })}$ |
| 3548 | Welding apparatus ...... | 2,678 | 267,392 | 407,136 | 19,200 | 1,457,000 | 2,683,600 | 13.9 | 18.4 | 15.2 |
| 3549 | Metalworking machinery, nec ............................................. |  |  |  | 11,700 | 675,100 | 1,231,100 | (D) | (D) | (D) |
| 355 | Special industry machinery ....................................................... | 24,212 | 1,734,560 | 3,800,482 | 172,300 | 11,002,600 | 21,258,400 | 14.1 | 15.8 | 17.9 |
| $\begin{aligned} & 3552 \\ & 3553 \end{aligned}$ | Textile machinery Woodworking machinery |  | (D) |  | 16,000 7800 | 814,900 477400 | $1,505,100$ 936,600 | ( ${ }_{\text {D }}(1)$ | (D) | (D) |
| 3554 | Paper industries machinery | 7,475 | 434,247 | 1,362,140 | 20,300 | 1,118,700 | 2,770,400 | 36.8 | 38.8 | 49.2 |
| 3555 | Printing trades machinery . | 4,104 | 452,470 | 794,591 | 25,000 | 1,808,200 | 3,538,200 | 16.4 | 25.0 | 22.5 |
| 3556 | Food products machinery .... | 4,258 | 297,397 | 525,508 | 19,000 | 1,266,300 | 2,260,900 | 22.4 | 23.5 | 23.2 |
| 3559 | Special industry machinery, nec | 6,885 | 454,441 | 921,544 | 84,200 | 5,517,000 | 10,247,100 | 8.2 | 8.2 | 9.0 |
| 356 | General industrial machinery ................................................ | 31,198 | 2,208,830 | 4,090,152 | 260,100 | 16,811,000 | 30,338,800 | 12.0 | 13.1 | 13.5 |
| 3561 | Pumps and pumping equipment.... | 4,196 | 206,436 | 459,482 | 37,400 | 2,552,800 | 4,830,300 | 11.2 | 8.1 | 9.5 |
| 3562 | Ball and roller bearings | 10,717 | 719,562 | 1,254,013 | 39,000 | 2,481,700 | 4,306,300 | 27.5 | 29.0 | 29.1 |
| 3563 | Air and gas compressors | 1,174 | 119,325 | 377,131 | 24,500 | 1,769,900 | 3,806,900 | 4.8 | 6.7 | 9.9 |
| 3564 | Blowers and fans | 3,980 | 257,166 | 508,765 | 27,700 | 1,519,600 | 2,850,100 | 14.4 | 16.9 | 17.9 |
| 3565 | Packaging machinery | 2,931 | 231,718 | 339,278 | 23,500 | 1,735,400 | 2,762,200 | 12.5 | 13.4 | 12.3 |
| 3566 | Speed changers, drives, and gears ..................................... | 1,165 | 84,437 | 134,194 | 18,400 | 1,353,000 | 2,055,700 | 6.3 | 6.2 | 6.5 |
| 3567 | Industrial furnaces and ovens | 905 | 66,086 | 125,897 | 18,900 | 902,500 | 1,766,100 | 4.8 | 7.3 | 7.1 |
| 3568 | Power transmission equipment, nec | 1,225 | 103,237 | 153,139 | 23,700 | 1,503,300 | 2,596,500 | 5.2 | 6.9 | 5.9 |
| 3569 | General industrial machinery, nec ....................................... | 4,905 | 420,863 | 738,253 | 47,000 | 2,992,800 | 5,364,700 | 10.4 | 14.1 | 13.8 |
| 357 | Computer and office equipment ................................................ | 30,831 | 2,913,058 | 7,115,958 | 287,700 | 31,283,300 | 64,073,300 | 10.7 | 9.3 | 11.1 |
| 3571 | Electronic computers ............... | 16,459 | 1,834,287 | 4,529,638 | 134,100 | 19,666,300 | 39,293,600 | 12.3 | 9.3 | 11.5 |
| 3572 | Computer storage devices ................................................ | 2,357 | 203,435 | 496,052 | 42,600 | 4,359,000 | 8,751,100 | 5.5 | 4.7 | 5.7 |
| 3575 | Computer terminals ........ | G |  |  | 12,100 | 728,500 | 1,790,000 | (D) | (D) | (D) |
| 3577 | Computer peripheral equipment, nec | 5,873 | 416,633 | 1,175,119 | 59,100 | 3,923,000 | 9,146,300 | 9.9 | 10.6 | 12.8 |
| 3578 | Calculating and accounting equipment ..................................... |  |  |  | 7,400 | 620,400 | 1,170,200 | (D) | ( ${ }^{\text {d }}$ ) | ${ }^{(\mathrm{D}}$ ) |
| 3579 | Office machines, nec ...................................................... | 4,507 | 323,078 | 568,349 | 32,500 | 1,986,200 | 3,922,100 | 13.9 | 16.3 | 14.5 |
| 358 | Refrigeration and service machinery ....................................... | 18,237 | 1,042,239 | 2,753,038 | 186,000 | 12,158,500 | 26,218,200 | 9.8 | 8.6 | 10.5 |
| 3581 | Automatic vending machines ................................................ | F | (D) | ( ${ }^{\text {D }}$ | 7,400 | 338,100 | 741,700 | (D) | (D) | (D) |
| 3582 | Commercial laundry equipment ....... | E | ${ }^{\text {( })}$ | ${ }^{(\mathrm{D})}$ | 5,200 | 240,400 | 526,600 |  | (D) | ( ${ }^{\text {( }}$ |
| 3585 | Refrigeration and heating equipment ........................................ | 12,482 | 643,108 | 1,969,831 | 126,900 | 8,339,500 | 19,043,200 | 9.8 | 7.7 | 10.3 |
| 3586 | Measuring and dispensing pumps ........................................ |  |  |  | 8,000 | 519,100 | 1,029,500 | ${ }^{(1)}$ | (D) | (D) |
| 3589 | Service industry machinery, nec ......................................... | 2,542 | 208,850 | 390,279 | 38,600 | 2,721,400 | 4,877,200 | 6.6 | 7.7 | 8.0 |
| 359 | Industrial machinery, nec ......................................................... | 11,225 | 722,025 | 1,276,408 | 309,600 | 15,322,800 | 23,687,100 | 3.6 | 4.7 | 5.4 |
| 3592 | Carburetors, pistons, rings, valves ........................................ | 3,372 | 142,034 | 289,111 | 20,600 | 1,045,800 | 2,042,400 | 16.4 | 13.6 | 14.2 |
| 3593 | Fluid power cylinders and actuators ....................................... | 1,344 | 90,006 | 160,152 | 20,700 | 1,195,300 | 1,981,900 | 6.5 | 7.5 | 8.1 |
| 3594 | Fluid power pumps and motors .......................................... | 2,171 | 196,397 | 320,944 | 14,900 | 1,004,100 | 1,798,600 | 14.6 | 19.6 | 17.8 |
| 3596 | Scales and balances, except laboratory .................................... | 1,782 | 136,089 | 257,590 | 6,300 | 336,400 | 680,000 | 28.3 | 40.5 | 37.9 |
| 3599 | Industrial machinery, nec ...................................................... | 2,556 | 157,499 | 248,611 | 247,200 | 11,741,200 | 17,184,100 | 1.0 | 1.3 | 1.4 |
| 36 | Electronic and other electric equipment | 228,237 | 16,703,246 | 34,601,773 | 1,497,400 | 106,983,900 | 194,847,900 | 15.2 | 15.6 | 17.8 |
| 361 | Electric distribution equipment .................................................... | 15,390 | 1,075,338 | 2,305,772 | 75,100 | 5,206,700 | 9,728,600 | 20.5 | 20.7 | 23.7 |
| 3612 | Transformers, except electronic |  |  |  | 32,800 | 1,892,300 | 4,177,800 | (D) | ( D ) | (D) |
| 3613 362 | Switchgear and switchboard apparatus |  | 1,426.822 | 2.588 .408 | 42,300 161900 | $3,314,400$ 10,126800 | $5,550,800$ 18,158700 | ( ${ }^{\mathrm{D}} \mathrm{l}_{13}$ | ( ${ }_{14}{ }^{14.1}$ | ( ${ }^{\text {D }} 14.3$ |
| 362 3621 | Electrical industrial apparatus ................................................. | 22,343 | 1,426,822 | 2,588,408 | 161,900 | 10,126,800 | 18,158,700 | 13.8 | 14.1 | 14.3 |
| 3621 | Motors and generators ................................................... | 11,175 | 592,403 | 1,158,605 | 72,600 | 4,005,300 | 7,672,200 | 15.4 | 14.8 | 15.1 |
| 3624 | Carbon and graphite products ................................................ | 2,338 | 133,675 | 256,027 | 8,600 | 586,800 | 1,166,900 | 27.2 | 22.8 | 21.9 |
| 3625 | Relays and industrial controls ............................................. | 6,485 | 500,490 | 832,448 | 66,000 | 4,688,400 | 7,854,200 | 9.8 | 10.7 | 10.6 |
| 3629 | Electrical industrial apparatus, nec ...................................... | 2,345 | 200,254 | 341,328 | 14,600 | 846,300 | 1,465,400 | 16.1 | 23.7 | 23.3 |
| 363 | Household appliances ............................................................ | 19,287 | 1,131,593 | 2,666,319 | 110,500 | 7,835,900 | 18,069,000 | 17.5 | 14.4 | 14.8 |
| 3631 | Household cooking equipment |  |  |  | 19,200 | 1,138,900 | 2,994,000 | (D) |  |  |
| 3632 | Household refrigerators and freezers | ${ }_{\text {H }}$ |  |  | 23,600 | 1,464,300 | $3,799,800$ | (D) | $(\mathrm{D})$ | $(\mathrm{D})$ |
| 3633 3634 |  | G |  |  | 16,100 24,900 | $1,543,100$ $1,425,000$ | $3,234,400$ 3,055900 | (D) | (D) | (D) |
| 3634 3635 |  | H 4,270 | 272,025 ${ }^{(\mathrm{D})}$ | 483,156 | 24,900 12,400 | 1,425,000 | $3,055,900$ $1,860,100$ | ${ }_{(0)}^{\text {D }} 3.4$ | $\stackrel{(\mathrm{D})}{27.3}$ | ${ }^{(\mathrm{D})}{ }_{26.0}$ |
| 3639 |  | ${ }^{\text {H }}$ |  |  | 14,200 | 1,266,900 | 3,124,900 |  | (D) |  |
| 364 | Electric lighting and wiring equipment ................................................ | 15,332 | 983,402 | 1,817,322 | 156,600 | 10,768,500 | 19,322,300 | 9.8 | 9.1 | 9.4 |
| 3641 | Electric lamps ............................................................. |  |  |  | 19,800 | 1,862,500 | 2,830,900 | ${ }^{(\mathrm{D})}$ | (D) | ( ${ }^{\text {P }}$ |
| 3643 | Current-carrying wiring devices ............................................... | 2,898 | 129,383 | 231,081 | 44,100 | 2,642,100 | 4,404,000 | 6.6 | 4.9 | 5.2 |
| 3644 | Noncurrent-carrying wiring devices ....................................... | 793 | 73,858 | 126,128 | 22,600 | 1,919,500 | 3,346,100 | 3.5 | 3.8 | 3.8 |
| 3645 | Residential lighting fixtures .................................................... | 1,939 | 95,361 | 180,434 | 17,800 | 826,000 | 1,561,300 | 10.9 | 11.5 | 11.6 |
| 3646 | Commercial lighting fixtures ................................................... | ${ }_{1} \mathrm{G}_{1}$ | ${ }^{(\mathrm{D}}$ ) | ${ }^{(\mathrm{D})}$ | 23,000 | 1,609,800 | 3,208,900 | ( ${ }^{\mathrm{D}}$ ) | ( ${ }^{\text {D }}$ ) | ( ${ }^{\text {P }}$ ) |
| 3647 | Vehicular lighting equipment ................................................ | 1,611 | 106,561 | 201,219 | 14,900 | 1,025,100 | 2,121,700 | 10.8 | 10.4 | 9.5 |
| 3648 | Lighting equipment, nec ....................................................... | 1,697 | 89,390 | 194,671 | 14,500 | 883,600 | 1,849,500 | 11.7 | 10.1 | 10.5 |
| 365 | Household audio and video equipment ...................................... | 19,299 | 1,664,553 | 5,924,331 | 44,700 | 3,150,000 | 9,376,700 | 43.2 | 52.8 | 63.2 |
| 3651 | Household audio and video equipment .................................. | 13,038 | 923,399 | 4,924,250 | 30,800 | 1,892,000 | 7,520,500 | 42.3 | 48.8 | 65.5 |
| 3652 | Prerecorded records and tapes ............................................... | 6,261 | 741,154 | 1,000,081 | 13,900 | 1,257,900 | 1,856,100 | 45.0 | 58.9 | 53.9 |
| 366 | Communications equipment ...................................................... | 36,028 | 3,279,104 | 6,524,868 | 250,400 | 22,349,700 | 38,451,700 | 14.4 | 14.7 | 17.0 |
| 3661 | Telephone and telegraph apparatus ...................................... | 17,726 | 1,991,593 | 3,778,517 | 92,700 | 9,619,400 | 17,297,300 | 19.1 | 20.7 | 21.8 |
| 3663 | Radio and television communications equipment ..................... | 13,338 | 953,866 | 2,140,417 | 135,400 | 11,278,000 | 18,759,300 | 9.9 | 8.5 | 11.4 |
| 3669 | Communications equipment, nec ........................................... | 4,964 | 333,645 | 605,934 | 22,400 | 1,452,300 | 2,395,100 | 22.2 | 23.0 | 25.3 |
| 367 | Electronic components and accessories ...................................... | 74,588 | 5,484,636 | 8,944,169 | 535,900 | 37,270,000 | 60,844,000 | 13.9 | 14.7 | 14.7 |
| 3671 | Electron tubes ................................................................... | 7,508 | 500,498 | 1,096,153 | 23,400 | 1,317,800 | 2,570,400 | 32.1 | 38.0 | 42.6 |
| 3672 | Printed circuit boards ...................................................... | 3,325 | 173,596 | 316,281 | 76,700 | 4,997,200 | 7,844,100 | 4.3 | 3.5 | 4.0 |
| 3674 | Semiconductors and related devices ...................................... | 34,660 | 3,340,139 | 4,927,774 | 181,800 | 17,855,500 | 25,977,300 | 19.1 | 18.7 | 19.0 |
| 3675 | Electronic capacitors .......................................................... | 6,098 | 293,898 | 535,530 | 19,500 | 848,500 | 1,471,600 | 31.3 | 34.6 | 36.4 |
| 3676 | Electronic resistors ............................................................. | 4,549 | 173,124 | 317,477 | 14,400 | 535,400 | 862,700 | 31.6 | 32.3 | 36.8 |
| 3677 | Electronic coils and transformers ............................................ | 550 | 29,169 | 41,819 | 22,800 | 599,100 | 1,074,600 | 2.4 | 4.9 | 3.9 |
| 3678 | Electronic connectors ...................................................... | 3,736 | 311,131 | 446,049 | 37,400 | 2,389,300 | 3,820,900 | 10.0 | 13.0 | 11.7 |
| 3679 | Electronic components, nec ................................................ | 14,162 | 663,081 | 1,263,086 | 159,900 | 8,727,100 | 17,222,400 | 8.9 | 7.6 | 7.3 |
| 369 | Miscellaneous electrical equipment and supplies .......................... | 25,970 | 1,657,798 | 3,830,584 | 162,200 | 10,276,300 | 20,897,000 | 16.0 | 16.1 | 18.3 |
| 3691 | Storage batteries ............................................................. | 3,671 | 268,456 | 649,835 | 23,100 | 1,718,800 | 3,625,800 | 15.9 | 15.6 | 17.9 |
| 3692 | Primary batteries, dry and wet ................................................ | 1,690 | 64,619 | 161,492 | 10,600 | 761,900 | 1,580,300 | 15.9 | 8.5 | 10.2 |
| 3694 | Engine electrical equipment ................................................ | 1,606 | 86,517 | 239,178 | 46,100 | 2,846,700 | 5,810,500 | 3.5 | 3.0 | 4.1 |
| 3695 | Magnetic and optical recording media ..................................... | 7,779 | 534,811 | 1,726,704 | 24,000 | 1,675,600 | 4,032,100 | 32.4 | 31.9 | 42.8 |
| 3699 | Electrical equipment and supplies, nec ................................... | 11,224 | 703,395 | 1,053,375 | 58,400 | 3,273,300 | 5,848,300 | 19.2 | 21.5 | 18.0 |
| 37 | Transportation equipment ................................................... | 104,147 | 7,170,588 | 28,834,909 | 1,773,700 | 146,916,300 | 367,926,700 | 5.9 | 4.9 | 7.8 |
| 371 | Motor vehicles and equipment ................................................ | 73,413 | 5,436,606 | 25,011,828 | 704,400 | 69,648,700 | 214,963,800 | 10.4 | 7.8 | 11.6 |
| 3711 | Motor vehicles and car bodies ............................................ | 32,296 | 3,183,878 | 18,123,409 | 239,500 | 39,504,400 | 140,417,000 | 13.5 | 8.1 | 12.9 |

Table 14.-Employment, Value Added by Manufacture, and Value of Shipments of Foreign-Owned and All U.S. Establishments, by Detailed Industry, 1990-Continued

| $\begin{aligned} & \text { SIC } \\ & \text { code } \end{aligned}$ | Industry | Foreign-owned establishments |  |  | All U.S. establishments |  |  | Foreign-owned establishments as a percentage of all U.S. establishments |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Number of employees | Thousands of dollars |  | Number of employees ${ }^{1}$ | Thousands of dollars |  |  |  |  |
|  |  |  | Value added by manufacture | Value of shipments |  | Value added by manufacture ${ }^{1}$ | Value of shipments ${ }^{2}$ | Employment | Value added by manufacture | Value of shipments |
| 3713 | Truck and bus bodies | G | (D) | (D) | 37,200 | 1,809,300 | 4,382,200 | (D) | (D) | ${ }^{\text {D }}$ ) |
| 3714 | Motor vehicle parts and accessories ...... | 39,230 | 2,123,952 | 6,563,321 | 388,700 | 26,871,400 | 64,875,400 | 10.1 | 7.9 | 10.1 |
| 3715 | Truck trailers .................................................. |  |  | ( ${ }^{\text {d }}$ | 24,800 | 869,000 | 3,122,000 | (D) | ( ${ }^{\text {P }}$ | (D) |
| 3716 | Motor homes | 0 | 0 | 0 | 14,100 | 594,500 | 2,167,200 | 0 | 0 | 0 |
| 372 |  | 18,928 | 985,449 | 2,223,467 | 615,700 | 44,903,200 | 94,640,200 | 3.1 | 2.2 | 2.3 |
| 3721 | Aircraft | 4,945 | 243,878 | 746,741 | 289,300 | 20,235,400 | 51,369,600 | 1.7 | 1.2 | 1.5 |
| 3724 | Aircraft engines and engine parts ............................................... | 3,013 | 186,076 | 397,010 | 129,000 | 12,059,100 | 22,812,800 | 2.3 | 1.5 | 1.7 |
| 3728 | Aircraft parts and equipment, nec ....................................... | 10,970 | 555,495 | 1,079,716 | 197,500 | 12,608,700 | 20,457,900 | 5.6 | 4.4 | 5.3 |
| 373 | Ship and boat building and repairing ........................................ | 5,993 | 292,752 | 590,271 | 175,200 | 8,554,700 | 15,853,700 | 3.4 | 3.4 | 3.7 |
| $\begin{aligned} & 3731 \\ & 3720 \end{aligned}$ | Ship building and repairing |  |  |  | 121,200 | 6,362,800 | 10,855,700 | $\left(\begin{array}{l}\text { ( }{ }^{\text {D }} \text { ( }\end{array}\right.$ | $(\mathrm{D})$ | $(\mathrm{D})$ |
| 3732 | Boat building and repairing | H | (D) | (D) | 54,100 | 2,191,800 | 4,998,000 | (D) | (D) | (D) |
| 374 | Railroad equipment ........................................................ | 2,312 | 225,809 | 339,421 | 29,500 | 1,839,200 | 4,693,600 | 7.8 | 12.3 | 7.2 |
| 3743 | Railroad equipment ............................................................ | 2,312 | 225,809 | 339,421 | 29,500 | 1,839,200 | 4,693,600 | 7.8 | 12.3 | 7.2 |
| 375 | Motorcycles, bicycles, and parts | F | $\left(\begin{array}{c}\text { D } \\ \text { ( }) \\ \text { ( }\end{array}\right.$ | $\left(\begin{array}{c}\text { ( }) \\ \text { ( }) \\ \hline\end{array}\right.$ | 9,400 | 570,800 | 1,475,800 | (D) | (D) | (D) |
| 3751 | Motorcycles, bicycles, and parts | F | (D) | (D) | r9,400 | 570,800 | 1,475,800 | (D) | (D) | (D) |
| 376 3761 | Guided missiles, space vehicles, parts $\qquad$ Guided missiles and space vehicles $\qquad$ | G | (D) | (D) | 200,300 156,200 | $19,284,300$ $15,782,500$ | $30,554,100$ $25,082,600$ | ( ${ }^{\text {D }}$ | ( ${ }_{0}$ | (D) |
| 3764 | Space propulsion units and parts ......... | 0 | 0 | 0 | 29,700 | 2,412,000 | 3,755,800 | 0 | 0 | 0 |
| 3769 | Space vehicle equipment, nec ............ | G | (D) | (D) | 14,400 | 1,089,700 | 1,715,600 | ${ }^{(D)}$ | ${ }^{\text {D }}$ ) | ${ }^{(D)}$ |
| 379 | Miscellaneous transportation equipment | G | (D) | (D) | 39,100 | 2,115,600 | 5,745,500 | (D) | (D) | (D) |
| 3792 | Travel trailers and campers .............................................. | , | 0 | 0 | 13,800 | 622,800 | 1,657,500 | 0 | 0 | 0 |
| $3795$ | Tanks and tank components | 0 | (D) | (D) | 9,300 | 694,500 | 1,846,500 | 0 | 0 | 0 |
|  | Transportation equipment, nec |  | ${ }^{(D)}$ | ${ }^{(D)}$ | 16,000 | 798,300 | 2,241,500 | ${ }^{(\mathrm{D})}$ | $\left.{ }^{(\mathrm{D}}\right)$ | ${ }^{(D)}$ |
| 38 | Instruments and related products | 121,520 | 9,722,110 | 15,840,686 | 948,600 | 81,665,600 | 123,776,700 | 12.8 | 11.9 | 12.8 |
| 381 | Search and navigation equipment ... | 19,160 | 1,433,915 | 2,094,047 | 313,600 | 24,931,900 | 36,733,500 | 6.1 | 5.8 | 5.7 |
| 3812 | Search and navigation equipment ..... | 19,160 | 1,433,915 | 2,094,047 | 313,600 | 24,931,900 | 36,733,500 | 6.1 | 5.8 | 5.7 |
| 382 | Measuring and controlling devices ..................................... | 53,500 | 3,679,493 | 6,037,558 | 283,600 | 19,629,200 | 31,455,800 | 18.9 | 18.7 | 19.2 |
| 3821 | Laboratory apparatus and furniture .................................... | 3,290 | 333,003 | 506,393 | 17,800 | 1,209,700 | 1,916,700 | 18.5 | 27.5 | 26.4 |
| 3822 | Environmental controls ................. | 7,702 | 404,098 | 669,225 | 26,100 | 1,461,600 | 2,396,000 | 29.5 | 27.6 | 27.9 |
| 3823 | Process control instruments | 13,410 | 791,866 | 1,379,551 | 54,700 | 3,764,700 | 5,924,000 | 24.5 | 21.0 | 23.3 |
| 3824 | Fluid meters and counting devices .... | 3,130 | 260,544 | 440,090 | 10,400 | 976,700 | 1,665,900 | 30.1 | 26.7 | 26.4 |
| 3825 | Instruments to measure electricity ...................................... | 10,806 | 744,956 | 1,125,640 | 78,400 | 5,352,400 | 8,389,700 | 13.8 | 13.9 | 13.4 |
| 3826 | Analytical instruments ................... | 5,648 | 491,886 | 822,932 | 37,800 | 3,018,700 | 4,906,100 | 14.9 | 16.3 | 16.8 |
| 3827 | Optical instruments and lenses ......................................... | 3,027 | 160,220 | 299,938 | 22,000 | 1,326,700 | 2,217,700 | 13.8 | 12.1 | 13.5 |
| 3829 | Measuring and controlling devices, nec ................................ | 6,487 | 492,920 | 793,789 | 36,300 | 2,518,700 | 4,039,700 | 17.9 | 19.6 | 19.7 |
| 384 | Medical instruments and supplies ........................................... | 29,530 | 2,573,803 | 4,262,668 | 234,700 | 20,286,300 | 30,934,200 | 12.6 | 12.7 | 13.8 |
| 3841 | Surgical and medical instruments ...................................... | 11,597 | 1,027,510 | 1,554,613 | 88,900 | 7,077,500 | 10,261,600 | 13.0 | 14.5 | 15.2 |
| 3842 | Surgical appliances and supplies ....................................... | 7,931 | 697,442 | 1,174,739 | 86,600 | 7,163,100 | 11,127,600 | 9.2 | 9.7 | 10.6 |
| 3843 | Dental equipment and supplies .................................... | 1,078 | 77,419 | 135,006 | 12,900 | 890,100 | 1,364,700 | 8.4 | 8.7 | 9.9 |
| 3844 | X-ray apparatus and tubes ................................................. | 2,895 | 202,729 | 495,358 | 12,600 | 1,495,800 | 2,576,500 | 23.0 | 13.6 | 19.2 |
| 3845 | Electromedical equipment ................................................. | 6,029 | 568,703 | 902,952 | 33,600 | 3,659,800 | 5,603,800 | 17.9 | 15.5 | 16.1 |
| 385 | Ophthalmic goods ................................................. | 7,861 | 480,831 | 633,762 | 28,000 | 1,625,600 | 2,274,700 | 28.1 | 29.6 | 27.9 |
| 3851 | Ophthalmic goods ....................................................... | 7,861 | 480,831 | 633,762 | 28,000 | 1,625,600 | 2,274,700 | 28.1 | 29.6 | 27.9 |
| 386 | Photographic equipment and supplies ....................................... | 9,455 | 1,360,864 | 2,400,481 | 79,300 | 14,527,200 | 21,018,200 | 11.9 | 9.4 | 11.4 |
| 3861 | Photographic equipment and supplies ............................ | 9,455 | 1,360,864 | 2,400,481 | 79,300 | 14,527,200 | 21,018,200 | 11.9 | 9.4 | 11.4 |
| 387 | Watches, clocks, watchcases, and parts .................................... | 2,014 | 193,204 | 412,170 | 9,400 | 665,400 | 1,360,200 | 21.4 | 29.0 | 30.3 |
| 3873 | Watches, clocks, watchcases, and parts ................................ | 2,014 | 193,204 | 412,170 | 9,400 | 665,400 | 1,360,200 | 21.4 | 29.0 | 30.3 |
| 39 | Miscellaneous manufacturing industries | 26,087 | 1,929,276 | 3,553,235 | 386,300 | 20,095,600 | 37,205,200 | 6.8 | 9.6 | 9.6 |
| 391 | Jewelry, silverware, and plated ware ................................. | 1,138 | 54,025 | 109,874 | 49,100 | 2,590,700 | 5,754,200 | 2.3 | 2.1 | 1.9 |
| 3911 | Jewerry, precious metal ......................................................... |  | (D) |  | 35,600 | 1,869,400 | 4,180,100 | ( ${ }^{\text {D }}$ ( ${ }^{\text {d }}$ | $(\mathrm{D})$ | $(\mathrm{D})$ |
| 3914 3915 | Silverware and plated ware $\qquad$ Jewelers' materials and lapidary work |  |  |  | 7,300 6,200 | 462,300 259,000 | 751,900 822,200 | (D) | (D) | (D) |
| 393 |  | 1,545 | 79,949 | 130,485 | 11,700 | 547,700 | 872,900 | 13.2 | 14.6 | 14.9 |
| 3931 |  | 1,545 | 79,949 | 130,485 | 11,700 | 547,700 | 872,900 | 13.2 | 14.6 | 14.9 |
| 394 | Toys and sporting goods .................................................. | 10,644 | 899,270 | 1,659,072 | 98,600 | 5,919,600 | 11,043,600 | 10.8 | 15.2 | 15.0 |
| 3942 | Dolls and stuffed toys |  | ( ${ }_{\text {D }}^{\text {D }}$ |  | 4,900 | 244,100 | 380,400 | $(\mathrm{D})$ | ( ${ }_{\text {D }}($ | ( ${ }_{\text {D }}^{\text {D }}$ |
| 3944 | Games, toys, and children's vehicles | H 5842 | ${ }_{465}$ ( ${ }^{\text {( }}$ ) | 883 (D) | 27,900 | 1,911,800 | 3,622,900 | ( ${ }^{\text {P }}$ ) | ( ${ }^{\text {d }}$ ) | (D) |
| 3949 | Sporting and athletic goods, nec ........................................... | 5,842 | 465,662 | 883,445 | 65,800 | 3,763,600 | 7,040,200 | 8.9 | 12.4 | 12.5 |
| 395 | Pens, pencils, office, and art supplies ....................................... | 3,397 | 219,327 | 484,349 | 29,900 | 1,780,000 | 3,310,100 | 11.4 | 12.3 | 14.6 |
| 3951 | Pens and mechanical pencils .......... | 1,584 | 98,523 | 239,000 | 9,600 | 682,400 | 1,205,800 | 16.5 | 14.4 | 19.8 |
| 3952 | Lead pencils and art goods ...................................................... | G | ( ${ }^{\text {( }}$ |  | 5,300 | 407,200 | 745,900 | ( ${ }^{\text {D }}$ | (D) | (D) |
| 3953 <br> 3955 | Marking devices ............................................................ | E | (D) | ( ${ }^{0}$ | 7,700 7 | 295,200 | 485,600 872700 | (D) | (D) | (D) |
| 3955 | Carbon paper and inked ribbons ......................................... |  |  |  | 7,300 | 395,200 | 872,700 | ${ }^{(\mathrm{D})}{ }_{9}$ |  | $\left.{ }^{(\mathrm{D}}\right)_{11}$ |
| 3961 | Costume jewelry and notions $\qquad$ Costume jewelry |  |  | 251,30 | 28,200 19,200 | $1,363,500$ 892,400 | $2,222,900$ $1,415,700$ | ${ }_{0} 9$ | 10.6 | 11.3 0 |
| 3965 | Fasteners, buttons, needles, and pins .................................. | 2,636 | 144,693 | 251,301 | 9,000 | 471,100 | 807,200 | 29.3 | 30.7 | 31.1 |
| 399 | Miscellaneous manufactures ............................................... | 6,727 | 532,012 | 918,154 | 168,800 | 7,894,100 | 14,001,600 | 4.0 | 6.7 | 6.6 |
| 3991 | Brooms and brushes | E |  |  | 14,000 | 731,000 | 1,221,800 | (D) | (D) | $(\mathrm{D})$ |
| 3993 3995 | Signs and advertising specialties $\qquad$ | G | (D) | ( ${ }_{0}$ | 69,500 | 2,613,800 | 4,826,500 | (D) | (D) | (D) |
| 3995 3996 | Burial caskets $\qquad$ Hard surface floor coverings, nec |  | (D) | (D) | 10,200 7,100 | 579,800 793,200 | $1,093,500$ $1,377,300$ | (D) | (D) | (D) |
| 3999 | Manufacturing industries, nec ........................................................... | 4,248 | 360,031 | 560,730 | 68,000 | 3,176,200 | 5,482,400 | 6.2 | 11.3 | 10.2 |
|  | Administrative and auxiliary ................................................... | 200,064 | n.a. | n.a. | 1,260,900 | n.a. | n.a. | 15.9 | n.a. | n.a. |

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

## n.a. Not available.

1. The data shown in this column are rounded to the nearest 100 employees because they are rounded in this manner in the Census Bureau's 1990 Annual Survey of Manufactures: Statistics for Industry Groups and Industries, from which they were taken.
2. The data shown in this column are rounded to the nearest $\$ 100,000$ because they are rounded in this manner in the Census Bureau's 1990 Annual Survey of Manufactures: Statistics for Industry Groups and Industries, from
which they were taken.
3. On this line, the columns for number of employees cover both operating establishments and administrative and auxiliary establishments; the other columns cover operating establishments only.
NOTE.-Size ranges are given in employment cells that are suppressed. The size ranges are: A-0 to 19; B20 to 99; C-100 to 249; E-250 to 499; F-500 to 999; G-1,000 to 2,499; H-2,500 to 4,999; I-5,000 to 9,999; J-10,000 to 24,999 ; K-25,000 to 49,999; L-50,000 to 99,999; M-100,000 or more.

SIC Standard Industrial Classification


[^0]:    1. A U.S. affiliate is a U.S. business enterprise that is owned to percent or more, directly or indirectly, by a foreign 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 data are not adjusted for percentage of foreign ownership. Thus, for example, the employment data shown here include all employees at the manufacturing establishments of each U.S. affiliate, even though the foreign investor may own as little as 10 percent of the affiliate. However, most affiliates are majority owned; based on bea data, U.S affiliates that are majority owned (that is, affiliates that are owned more than 50 percent by direct investors) accounted for 85 percent of all manufacturing employment by U.S. affiliates.
[^1]:    2. A parallel project has linked bea's fdius data to Bureau of Labor Statistics (bls) data on all U.S. businesses. The initial results of that link, released in 1992 by bls, provided data for 1989 and 1990 on the number, employment, and payroll of foreign-owned establishments for both manufacturing and nonmanufacturing industries. In October 1993, bls released information on the occupational structure of foreign-owned manufacturing establishments in 1989. Data from the two link projects differ, particularly at the most detailed industry levels, because of differences in coverage, classification, timing, and definitions. Both projects were authorized by Congress under the Foreign Direct Investment and International Financial Data Improvements Act of 1990 .
[^2]:    of Foreign Companies: Operations in 1991" and "U.S. Business Enterprises Acquired or Established by Foreign Direct Investors in 1992."
    5. Value added measured by the Census Bureau's asm differs from bea's national income and product accounts measure of gross product because it includes purchased services but excludes indirect taxes and because it reflects inventory change valued at book value rather than at replacement cost.

[^3]:    6. 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. The foreign parent is the first foreign person in the affiliate's ownership chain. Unlike the foreign parent, the ubo of an affiliate may be located in the United States. The ubo of each U.S. affiliate is identified to ascertain the person that ultimately owns or controls and that, therefore, ultimately derives the benefits from owning or controlling the U.S. affiliate.
[^4]:    D Suppressed to avoid disclosure of data of individual companies.
    n.a. Not available.

    NOTE.-Size ranges are given in employment cells that are suppressed. The size ranges are:

[^5]:    * Less than 0.05 percent.

    D Suppressed to avoid disclosure of data of individual companies.
    UBO Ultimate beneficial owner
    SIC Standard Industrial Classification

[^6]:    D Suppressed to avoid disclosure of data of individual companies.
    NOTE.-The index is the share of total U.S. value added in the given manufacturing industry accounted for by establishments of the given UBO country divided by the share of total U.S value added in total manutacturing accounted for by establishments of the UBO country. This

[^7]:    D Suppressed to avoid disclosure of data of individual companies.
    NOTES.-The columns for number of establishments and for number of employees cover both operating establishments and administrative and auxiliary establishments; the other columns cover operating establishments only.

[^8]:    D Suppressed to avoid disclosure of data of individual companies.
    n.a. Not applicable.

[^9]:    NOTE.-Administrative and auxiliary establishments are excluded.
    SIC Standard Industrial Classification

[^10]:    8. Because the number of manufacturing establishments is not shown in the Census Bureau's asm publications, average plant scale for U.S.-owned establishments was computed using the total value added from the asm and the number of U.S. manufacturing establishments shown in the Census Bureau's County Business Patterns, 1990: United States (Washington dc: U.S. Government Printing Office, 1992). Because the County Business Patterns and aSm data are closely comparable, use of County Business Patterns establishment counts is unlikely to have significantly affected the findings of the article.
    9. The remaining difference was attributable to the interaction of the within-industry differences and industry-mix effects.

    In industries with only a few foreign-owned establishments, value added per establishment and the other measures for foreign-owned establishments discussed in this section may be so affected by the special circumstances of individual establishments that they are not representative of foreign-owned establishments generally. Because of this possibility, the decomposition was limited to the 312 four-digit industries with at least 6 foreign-owned establishments. For these industries, value added per establishment was \$17.3 million for foreign-owned establishments and $\$ 3.6$ million for U.S.-owned establishments, a difference of $\$ 13.7$ million.

[^11]:    10. Across the 312 industries, the mean difference between the foreignowned and U.S.-owned plant scale measures was \$11.0 million. Unlike the differences cited in the text and in footnote 9 , which were computed using a method that gave heavier weight to the larger industries, this figure was computed without regard to industry size; a statistical test indicated that it was statistically significant at the 1-percent confidence level.
[^12]:    11. The data needed to measure capital intensity directly are not available.
    12. This statement is based on a decomposition similar to that used for plant scale (see technical note). The decomposition was based on data for the 312 industries. For these industries, the capital intensity measures for both foreign-owned and U.S.-owned establishments were almost the same as the corresponding measures for manufacturing as a whole.
    13. Across the 312 industries, the mean difference between the foreignowned and U.S.-owned capital-intensity measures was negligible.
[^13]:    14. The remaining difference was attributable to the interaction of the within-industry differences and industry-mix effects. The decomposition was based on data for the 312 industries. For these industries, the difference in compensation per employee was $\$ 4,600$, somewhat smaller than the difference for manufacturing as a whole.

    In "Fdius: Establishment Data for 1987," differences between foreignowned and U.S.-owned establishments were examined using payroll per employee, which is a somewhat narrower measure than total employee compensation. (Payroll excludes employee benefits, whereas total employee compensation includes them.) Data on total employee compensation were not available from the 1987 link data.

    Within-industry differences were somewhat less important in explaining the overall difference in compensation per employee in the 1990 data than in explaining the overall differencein payroll per employee in the 1987 data. This result appears to largely reflect a narrowing of within-industry differences in payroll per employee between 1987 and 1990. In light of the 1990 data, within-industry differences in benefits per employee appear to be larger than within-industry differences in payroll per employee.
    15. Across the 312 industries, the mean difference between foreign-owned and U.S.-owned establishments' compensation per employee was $\$ 2,500$. A statistical test indicated that this difference was significant at the 1-percent confidence level.
    16. As noted in footnote 2, bls has released information on the occupational structure of foreign-owned manufacturing establishments for 1989. Based on this information, bls concluded that while the distribution of occupations in foreign-owned manufacturing establishments in the United States was little different from that in all U.S. manufacturing establishments at the overall manufacturing level, there were major differences in the distribution of occupations within individual industries, at least at the sic two-digit level.

[^14]:    17. The remaining difference was attributable to the interaction of the within-industry differences and industry-mix effects. The decomposition was based on data for the 312 industries. For these industries, the hourly wage rate for foreign-owned establishments was $\$ 1.26$ higher than that for U.S.-owned establishments- \$12.69, compared with $\$ 11.43$.
    18. Across the 312 industries, the mean difference between foreign-owned and U.S.- owned establishments' hourly wage rates was $\$ 0.63$. A statistical test indicated that this difference was significant at the 1 -percent confidence level.
[^15]:    19. See, for example, Steve J. Davis and John Haltiwanger, "Wage Dispersion Between and Within U.S. Manufacturing Plants, 1963-1986," Brookings Papers on Economic Activity, Special Issue (1991): 115-80.
    20. A linear regression equation was estimated in which there were 624 observations (consisting of separate observations for foreign-owned and U.S.owned establishments for each of the 312 industries). This estimation yielded the following:

    $$
    \begin{aligned}
    W & =10.42+\underset{(11.35)}{0.07 S C}+\underset{(0.90)}{0.59 C I}-\underset{(-0.43)}{0.09 F D M Y} \\
    R^{2} & =0.21, \\
    F & =54.7
    \end{aligned}
    $$

[^16]:    * Statistically significant at the 1-percent confidence level.

[^17]:    23. Across the 312 industries, the mean difference between the foreignowned and U.S.-owned productivity measures was $\$ 8.19$ per hour. A statistical test indicated that this difference was significant at the 1-percent confidence level.
[^18]:    . Value added per production worker hour
    2. Value added per establishment.
    3. Non-employee-compensation share of value added.
    4. Compensation per employee.

    NOTE.-The industries with relatively low productivity for foreign-owned establishments shown in this table are the industries in which the productivity of foreign-owned establishments was at least 30 percent lower than that

[^19]:    24. The compensation-per-employee measure of employee skill level (sometimes termed "human capital intensity") reflects both occupational structure and the accumulation of skills within occupations.
    25. Using the 312 industries as the observations, the estimation yielded the following:

    $$
    \begin{aligned}
    R P R & =-.89+\underset{(4.90)}{.02 R S C}+\underset{(15.67)}{.01 R C I}+\underset{(9.10)}{.01 R E S} \\
    R^{2} & =.61, \\
    F & =163.7
    \end{aligned}
    $$

    where $R P R, R S C, R C I$, and $R E S$ are the measures of relative productivity, plant scale, capital intensity, and employee skill level, respectively. The t-statistics for the independent variables, which appear in parentheses, indicate that the coefficients for all of the variables were statistically significant at the 1-percent confidence level. The coefficients of correlation between the independent variables were as follows: Plant scale and capital intensity, o.32; plant scale and employee skill level, o.33; capital intensity and employee skill level, o.04.

[^20]:    where $P R, S C, C I$, and $E S$ are the measures of productivity, plant scale, capital intensity, and employee skill level, respectively, and FDMY is a dummy variable for foreign ownership. The t-statistics for the independent variables, which are shown in parentheses, indicate that the coefficients of both the capital intensity and employee skill level variables were significant at the 1-percent confidence level, that the coefficient of the scale variable was significant at the 10 -percent confidence level, and that the coefficient of the foreign-ownership dummy was insignificant. To rule out the possibility that the regression results were influenced by errors in the measurement of capital intensity through the use of a proxy variable, tests controlling for this potential errors-in-variables problem using "instrumental variables" were conducted; the results of the tests suggested that such errors probably were not a problem.

