NBER WORKING PAPER SERIES

FOREIGN-OWNED FIRMS AND U.S. WAGES

Robert E. Lipsey

Working Paper No. 4927

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
November 1994

I am indebted to the Bureau of International Labor Affairs of the U.S. Department of Labor and to a PSC-CUNY grant from the City University of New York for support of the study. Sumiye O. McGuire of the U.S. Department of Commerce made helpful comments and suggestions on an earlier version of the paper, presented at a meeting of the Western Economic Association. I am also indebted to Qing Zhang and Ming Hu for research and computer assistance and to James Hayes for preparation of the manuscript. This paper is part of NBER's research programs in International Trade and Investment and Labor Studies. Any opinions expressed are those of the author and not those of the Department of Labor, the City University of New York, or the National Bureau of Economic Research.

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ABSTRACT

Foreign-owned establishments in the United States pay higher wages, on average, than domestically-owned establishments. The foreign-owned establishments tend to be in higher-wage industries and also to pay higher wages within industries. They tend to locate in lower-wage states, but to pay more than domestically-owned firms within industries within states.

Wages in general and wages in domestically-owned establishments tend to be higher in states and industries in which foreign-owned establishments account for a larger proportion of employment.

Foreign-owned establishments that were new in 1990, mostly takeovers, had lower than average wage levels in that year but larger increases between 1990 and 1991. Increases in sales per worker and average wages were larger where employment growth was lower, possibly an indication that lower-productivity, lower-wage workers were dropped by the new owners.

Robert E. Lipsey
National Bureau of Economic Research
269 Mercer Street, 8th Floor
New York, NY 10003
and Queens College and CUNY

Foreign-owned Firms and U.S. Wages

Robert E. Lipsey*

The purpose of this study is to compare compensation levels in foreign-owned establishments in the U.S. with those in domestically-owned establishments and to try to understand the reasons for differences between them. In particular, it is to measure the role of differences between foreign-owned and domestically-owned firms in the distribution of their employment across industries, their geographical location within the United States, and the skill levels of their employees, and, to the extent possible, to assess the impact of inward investment on U.S. workers.

It has been known for some time that foreign-owned firms in the United States pay higher compensation per worker than domestically-owned firms. However, until the Census-BEA and BLS-BEA matching of establishments, starting with 1987, it was difficult to know whether the wage differences were genuine or only the consequence of disparities in ways of reporting, in industry definitions and in coverage between BEA reports for foreign affiliates and BLS or Census wage data for all U.S. establishments.

The BEA-Census and BEA-BLS matches permit Census and BEA reporting establishments to be tagged as foreign-owned (defined as a foreign equity share of 10 per cent or more) or U.S.-owned. Establishments can thus be compared for the two groups using common definitions of compensation, industry, and establishment.

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With the matched data it is possible to "explain" differentials by partitioning them into differences in industry composition, type of employee within industry, location of plant, nationality of foreign ownership, and perhaps some residual that we might associate with foreignness of ownership itself. Any residual might represent such factors as worker preferences for foreign- or domestically-owned firms, differences in amounts of training offered by foreign and domestic employers, or differences in employer preferences with respect to unionization, stability of the labor force, or education of the labor force, or it might reflect technical or measurement factors such as differing use of part-time or temporary workers, or industry mix effects concealed by aggregation to the two-digit or three-digit SIC level.

Industry Composition

The Census-BEA match data (U.S. Department of Commerce, 1992), confirm that, for all industries taken together, compensation in foreign-owned establishments is higher than that in domestically-owned establishments by over a quarter ($25,106 as compared with $19,416). For manufacturing in the aggregate, foreign-owned establishments' wage levels exceed those in domestically-owned establishments by more than 10 per cent ($27,983 compared with $24,886), and in non-manufacturing establishments the difference is almost 30 per cent ($23,139 as compared with $17,966). One can ask how much of these differences is "explained" by differences in the industry composition of foreign and domestically-owned plants. How much difference would remain if foreign-owned plants were in the same industries as domestically-owned plants (domestic weights) or domestically-owned plants were distributed in the same

way as foreign-owned plants (foreign weights), with no changes in their wage levels? An answer to that question is given by Table 1. For both manufacturing and non-manufacturing industries, about half of the aggregate differences in compensation per worker mentioned above can be accounted for by industry distribution. There remain some residual margins of higher pay for employees of foreign-owned establishments within industries, amounting to 4 to 5 per cent in manufacturing and 12 to 18 per cent in nonmanufacturing, the precise amount depending on the weights used.

Table 1

Average Within-Industry Ratios of Foreign Relative to Domestic[a] Compensation per Worker with Industries Weighted Identically, 1987

	Foreign Employment Weights[b,c]	Domestic Employment Weights[b]
All Industries	1.10	1.14
Manufacturing	1.04	1.05
Nonmanufacturing	1.12	1.18

[a]Foreign-owned/Domestically-owned

[b]At two-digit SIC level

[c] $\frac{\sum \frac{FEC_i}{FE_i} \cdot FE_i}{\sum FE_i}$, $\frac{\sum \frac{DEC_i}{DE_i} \cdot FE_i}{\sum FE_i}$ and $\frac{\sum \frac{FEC_i}{FE_i} \cdot DE_i}{\sum DE_i}$, $\frac{\sum \frac{DEC_i}{DE_i} \cdot DE_i}{\sum DE_i}$,

where

FE_i = Employment in foreign-owned establishments in industry i

FEC_i = Employee compensation in foreign-owned establishments in industry i

DE_i = Employment in domestically-owned establishments in industry i

DEC_i = Employee compensation in domestically-owned establishments in industry i

The industry-mix effect can be measured in another way by asking how average wages would compare if foreign and domestic plants paid the same average wages in each industry, at the rates actually paid in domestic plants, but differed only in industry composition in the way that they do. The effect of industry composition is given directly in Table 2. In both groups of industries, the industry composition of employment led to higher pay in

Table 2

Effect of Industry Composition on Compensation per Worker in Foreign and Domestically-Owned Plants, 1987

	Average Compensation per Worker		Foreign / Domestic
	Foreign Employment Weights[a]	Domestic Employment Weights[b]	
All Industries	22,400	19,700	1.137
Manufacturing	26,700	24,900	1.072
Nonmanufacturing	19,400	18,200	1.066

[a] $\frac{\sum FE_i \cdot DEC_i}{\sum FE_i}$

[b] $\frac{\sum DE_i \cdot DEC_i}{\sum FE_i}$

foreign-owned plants, by margins of about 7 per cent in both manufacturing and non-manufacturing. However, foreign affiliates were much more concentrated in the relatively high-wage manufacturing sector than were domestically-owned firms (41 per cent as against 21 per cent). That difference added another 7 per cent or so to the aggregate wage differential. Thus, this calculation suggests that half of the industry-mix effect reflected differences in

compensation within manufacturing and nonmanufacturing and half the greater concentration of foreign affiliates in manufacturing, a fairly high-wage sector.

While the Census data do not include occupation, they do separate, at the one-digit industry level, administrative and auxiliary establishments from operating establishments. Employees in administrative and auxiliary establishments earned much more than those in operating establishments, about $38,000 in manufacturing and $34,000 in non-manufacturing, but employees in foreign and domestic units earned almost identical compensation. However, these high-paid, presumably high-skill, employees were a much larger component of employment in foreign-owned establishments. They accounted for over 11 per cent of employment in foreign and less than 7 per cent in domestic manufacturing and over 3 per cent and about 1 1/2 per cent in foreign-owned and domestically-owned nonmanufacturing firms respectively. Although their numbers were not large, excluding employees in administrative and auxiliary establishments from the comparison raises the proportion of the compensation difference attributed to industry mix, especially in manufacturing, from something over 4 to over 5 per cent.

The evidence up to this point, if we interpret compensation differentials within two digit industries as representing skill, suggests that the foreign affiliate industry mix is biased toward higher than average skill, including more administrative and auxiliary operations, and also toward higher skill levels within industries. (Some of that within-industry difference could turn into between-industry differences at a finer level of industry detail, such as the three-digit SIC.)

An analysis of differences between foreign-owned and domestically-owned

plants at a much finer level of industry detail, was performed for manufacturing plants in 1990 in Howenstine and Zeile (1994). The analysis not only used a finer level of detail, but also added information from the Census Bureau's Annual Survey of Manufactures that permitted a comparison of hourly, rather than annual, compensation, and the addition of detailed information on scale of plants. In addition, the definition of compensation was broader, including not only payroll per employee but also employee benefits, not available in 1987.

Given the added information, Howenstine and Zeile concluded that there was no effect of foreign ownership per se, on hourly earnings. In a regression across 312 industries with observations for foreign- and domestically-owned plants in each, the dummy variable for foreign ownership had a negative, but insignificant coefficient. Physical capital intensity had no significant influence and the only significant variable was plant scale, which has been found to be positively associated with wage levels of production workers in studies of domestic manufacturing. Foreign-owned manufacturing plants in the United States were, on average, much larger than American-owned plants, because there are very few really small foreign plants.[1] The ratio of foreign to domestic plant size in an industry, as measured by value added per establishment, was strongly correlated with the industry's foreign/domestic wage ratio. When industries were arrayed by relative wage levels, foreign-owned plants were larger than domestically-owned plants even in the industries in which foreign plant compensation levels were lower than domestic, as can be seen in the following table:

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[1]That group and Other services are heterogeneous groups consisting of all but four manufacturing industries and two service industries distinguished separately.

Table 3

Average Plant Size in Foreign-Owned Relative to Domestically-Owned Manufacturing Establishments, by Relative Wage Level, 1990

Industry Foreign/Domestic Wage Level (Per cent)	No. of Industries	Industry Average Foreign/Domestic Plant Size (per cent)
≤ 70	2	118
>70 but ≤90	41	226
>90 but <110	156	336
≥110 but <130	88	448
≥130	25	634

Source: Howenstine and Zeile (1994), Table 10

It seems apparent that the typical distribution of domestically-owned plants in an industry has a long tail of small plants that have no counterparts among the foreign-owned plants.

In the aggregate, the more broadly defined manufacturing compensation per worker in 1990 was about 16 per cent above that in domestically-owned plants (Howenstine and Zeile, 1994, p. 45). About 30 per cent of the difference was attributable to within-industry differences, about 60 per cent to industry mix (and the rest to the interaction between within-industry and between-industry differences). That compares with a 12.4 per cent difference for the narrower measure of compensation in 1987, of which 50 per cent is attributable to industry mix and 36 per cent to within industry differences in Table 2. Thus the greater detail and the broader compensation measure in the Havenstine-Zeile study do not seem to have strongly affected the results, although they may have identified somewhat more of the difference between domestically-owned and foreign-owned establishments as resulting from industry mix.

While we have, for the most part, relied on industry, rather than individual firm, data because of the confidentiality of the latter, we do have some information from a tabulation by the Bureau of Economic Analysis of individual manufacturing affiliates for 1990, described in Table 4.

Table 4

Average Ratios of Individual Affiliate to Industry Payroll per Employee, 1990

	Mean	Median	Mean of Central 90% of Observations
All affiliates (2205)	1.098	1.022	1.037
Affiliates excluding outliers (2183)	1.066	1.022	1.036

Source: Unpublished data of the Bureau of Economic Analysis. Industry data from U.S. Bureau of the Census (1992).

The average differences are somewhat larger than those in Table 1, reflecting partly the skewness of the distribution of individual firm ratios. The exclusion of outliers tends to reduce the averages, and the median ratios show foreign-owned establishments with a margin over domestic establishments of only 2 per cent in payroll per employee.

One way of describing the difference in industry composition of employment by different countries is to list some of the major peculiarities of each country's affiliate employment distribution. Table 5 lists some of the major differences between each country's affiliate employment and that of U.S. domestic firms.

While there are differences among the countries, especially in the degree of concentration in each industry, there is also a considerable degree

of consistency. Foreign shares in employment tend to be high relative to U.S. domestic shares in administrative and auxiliary activities in manufacturing, and in chemicals, and machinery among manufacturing industries; these are industries in which U.S. direct investment abroad tends to be concentrated. Foreign shares tend to be lower than domestic shares in trade other than wholesale trade in durables, in eating and drinking places, and in health and social services; these are fields in which U.S. direct investment abroad is also small.

One interpretation of this evidence is that the propensity to produce outside the home country is considerably influenced by the characteristics of particular industries as well as, possibly, by the characteristics of particular countries or of their firms. Another possible interpretation, that would have to be checked over a broad set of countries, is that a country's comparative advantages that attract inward direct investment are correlated with the comparative advantages of the country's firms that determine the industry composition of its outward direct investment.

The results to this point can be summarized by the statement that foreign-owned firms in the United States pay higher compensation overall than U.S.-owned firms and that approximately half of that difference can be ascribed to the fact that foreign-owned firms tend to be more concentrated in higher-paid, presumably higher-skill, industries and in administrative and auxiliary activities, also highly-paid. The compensation differentials within manufacturing, much smaller to begin with than those outside of manufacturing, are associated with the larger scale of foreign manufacturing plants; foreign and domestic manufacturing plants of the same size pay about the same wages.

Table 5

Differences in the Industry Distribution of Employment
Between Foreign-Owned and Domestically-Owned Plants

Country of UBO	Industry	Share in Employment: Higher than U.S. Domestic	Share in Employment: Lower than U.S. Domestic	
Canada	36	✓		Electronic & elect. equip.
	5		✓	Trade
	83		✓	Social services
	3.9	✓		Manuf. admin. & aux.
France	20	✓		Food prod.
	28	✓		Chemicals
	3.9	✓		Manuf. admin. & aux
	32	✓		Stone, glass, clay prod.
	33	✓		Metals
	35 & 36	✓		Machinery
	50	✓		Wholesale trade-durables
			✓	Other trades
	58		✓	Eating & drinking places
Germany	28	✓		Chemicals
	36	✓		Elect. Mach.
	73		✓	Business Services
	80,83		✓	Health & social serv.
Japan	15,16,17		✓	Construction
	35 & 36	✓		Machinery
	50	✓		Wholesale trade-durables
	53,55,57,59		✓	Other trade
	58		✓	Eating & drinking places
	70,73	✓		Hotels & business services
Netherlands			✓	Mining
	28	✓		Chemicals
	31,36,38	✓		Food, Electronic & Elec. mach., Instruments
	3.9	✓		Manuf. admin. & auxil.
	5			Trade
	73		✓	Business services
U.K.	20	✓		Foods
	28	✓		Chemicals
	35 & 36	✓		Machinery
	80		✓	Health services

Source: U.S. Department of Commerce (1992), Table 3.1

Location of Foreign Affiliates

It is conceivable that differences in compensation rates could reflect the geographical location of foreign affiliates. If, for example, foreign firms were more likely to be located in high-wage states within any given industry, they might pay higher wages in each industry on average even though within each state they paid exactly the same amount as domestically-owned firms and therefore were presumably hiring an equally skilled labor force. Or location in high-wage states might offset and obscure a tendency to hire less skilled workers. Thus, ignoring the location of foreign affiliates might mislead an observer into mistaking location effects for differences in the average skills employed by foreign affiliates or the prices they pay for any given skills. There would be no such problem if labor markets were completely integrated and perfectly competitive across states and regions, but that would be a strong assumption to make.

To remove possible location effects, we have calculated ratios of affiliate to domestic firm compensation per worker at the two-digit industry level in each state, and then weighted these ratios by the state x industry composition of affiliate employment and domestic firm employment. That procedure can be interpreted as assuming, in effect, that each state is a competitive labor market. These weighted wage ratios are shown in Table 6.

Making the comparisons for the country as a whole from the individual state by industry data does not change the results greatly. Foreign firms pay six or seven per cent more than domestic firms in manufacturing, as compared with four or five per cent in Table 1, where no account was taken of the geographical location of establishments. And they pay 12 to 15 per cent more in nonmanufacturing industries. The lower differential in Table 1 than in

Table 6

Ratio of Foreign Affiliate to Domestic Firm Compensation per Worker with Industries and States Weighted Identically, 1987

	Weighted by Employment in	
	Foreign Affiliates	Domestic Establishments
All Industries	1.120	1.103
excl. Admin. & Auxil.	1.122	1.052
Manufacturing	1.071	1.062
excl. Admin. & Auxil.	1.073	1.065
Nonmanufacturing	1.149	1.117
excl. Admin. & Auxil.	1.152	1.117

Table 6 for manufacturing suggests that there was more of a tendency for foreign firms than for U.S. firms to choose locations in lower-wage states within each industry. Ignoring location may therefore result in some understatement of the degree to which foreign affiliates pay higher compensation to workers than domestic firms.

Any conclusions from the state data must be taken cautiously because the advantage of including location as a variable comes with some offsetting disadvantages. In particular, the state by state data are suppressed to a much larger degree than the national data. The result is that the industry classification is coarsened, with many "all other" groups formed, not all particularly homogeneous. It would, therefore, be unwarranted to assume that the geographical breakdown necessarily provides a closer match between the foreign-owned and domestically-owned establishments being compared.

Even if the geographical breakdown did not show results substantially different from those using industry aggregates, it could show differences among states or regions in the relation of foreign affiliate to domestic firm

wages. These might indicate that the entry of foreign firms had different impacts on wages in different states or regions.

The wage differences within manufacturing industries for states with the highest and lowest differentials, using affiliate industry weights, are shown in Table 7. There does seem to be some pattern to the geographical differentials. Five of the states in which the differentials were largest were in the Southeast, a relatively low-wage region. On the other hand, among the states in which foreign firms paid lower compensation than domestic firms, three were in the industrial Midwest and three in New England.

The ranking of states by non-manufacturing wage differentials does not show any obvious logic (Table 8). The range of the ratios is wider than for the manufacturing industries, possibly a sign of a poorer match between foreign-owned and domestically-owned establishments because of suppressions in the data. Another hint that mismatching may be a problem is the fact that four of the ten states with the lowest differentials in nonmanufacturing sectors, and in fact lower wages in foreign firms, were among the ten with the largest differentials in favor of workers in foreign firms within manufacturing industries.

One might suppose that the relatively high foreign manufacturing wages in Southern states and low wages in foreign establishments in Northern states might be a reflection of the avoidance of union organization by foreign firms. The data are far from perfectly comparable, but what information we have on unionization rates indicates that the rates in foreign firms in manufacturing and in goods production in general are almost identical to the average U.S. level (Table 9). Outside of the manufacturing sector, unionization seems to be considerably more prevalent in foreign-owned firms than in the U.S. private

Table 7

Ratio of Compensation per Worker in Foreign-Owned Relative to U.S. Domestically-Owned Manufacturing Establishments Selected States, Domestic Establishment Weights, 1987

Alaska	1.276
Oklahoma	1.243
South Carolina	1.227
Georgia	1.220
Oregon	1.213
New Mexico	1.209
Kentucky	1.171
Florida	1.145
Minnesota	1.136
Virginia	1.130
Vermont	1.000
Indiana	.998
Tennessee	.994
Ohio	.994
Kansas	.984
Colorado	.950
Missouri	.931
Rhode Island	.910
New Hampshire	.887
Hawaii	.778

Table 8

Ratio of Compensation per Worker in Foreign-Owned Relative to Domestically-Owned Nonmanufacturing Establishments Selected States, Domestic Establishment Weights, 1987

Nebraska	1.480
Minnesota	1.431
Nevada	1.431
Vermont	1.386
Mass.	1.254
Colorado	1.253
New York	1.240
Illinois	1.238
Virginia	1.233
Miss.	1.223
New Mexico	.998
Texas	.976
Kentucky	.974
Dist. of Col.	.963
Utah	.946
Penn.	.946
Oregon	.941
West Va.	.923
N. Dakota	.903
Alaska	.782

sector, and that is also the case for all private industries combined.

If the entry of foreign firms has any effect on U.S. labor markets it need not be confined to the direct employment by the foreign firms. It is conceivable that the impact is felt in a rise in wages paid by both foreign-owned and domestically-owned firms because the demand for labor in that industry in that state has risen, without any effect on the margin, if any, between wages in foreign-owned and domestic plants.

How one should measure the foreign firm presence depends on one's views as to the integration or separation of labor markets. If one believed that firms compete for labor only with other firms of the same size in the same industry in the same state, the share of foreign-owned establishments and the

domestic plant wage or the average plant wage should be calculated at that level. If it is assumed that establishments of different sizes compete with each other for labor within an industry and state, the shares and wage levels should be calculated for industries within states, disregarding establishment size. That is the assumption implied by equation 1. An alternative would be that establishments in one industry compete for labor with those in other industries, an assumption that would imply measuring foreign employment shares and wage levels by state or locality, disregarding industry.

In equation 1 the dependent variable is the average compensation in domestically-owned manufacturing plants in an industry in a state. The two independent variables are the average wage in the state, as a proxy for regional or state differences in costs, and the share of foreign-owned establishments in employment in an industry in a state.

(1) $WD(SI) = 1.34 + 1.03\ WD(S) + 17.15\ F/D(SI)$ $\quad \bar{R}^2 = .131$
$\quad\quad\quad\quad\quad\quad (.66)\ (9.80)\quad\quad (8.86)$ $\quad$ No. of obs. = 1,091

where: WD(SI) = Average annual compensation in domestically-owned plants in industry i in state s, in thousands of dollars.

WD(S) = Average compensation in all domestically-owned plants in state s

F/D(SI) = The ratio of employment in foreign-owned to that in domestically-owned plants in industry i in state s

The positive coefficient for the foreign share suggests that, given the general level of wages in a state, the presence of foreign-owned establishments in an industry raises the average wage in domestic plants in that industry. However, another plausible explanation is that a high wage for an industry in a state simply represents a higher than average skill level in that industry and that foreign plants are attracted to high-skill industries.

Table 9

Union Membership as Per Cent of Total Employment, by Country of Foreign Ownership and Broad Industry Group, United States, 1987

	Country of Foreign Parent				
	Canada	Europe	Japan	Total Foreign	Total U.S.
Agriculture, Forestry, & Fishing	0	0	7.1	21.0	2.2
Mining	25.9	33.1	0	30.8	18.3[b]
Petroleum[a]	9.1	NA	0	9.1	
Manufacturing[c]	23.3	21.0	25.9	22.4	23.2[d]
Goods Production	23.2	NA	25.4	21.7	21.6
Wholesale trade[f]	NA	13.6	5.9	11.6	7.1[g]
Retail trade[f]	NA	26.0	0	20.7	
Finance, exc. banking	0	0	.7	.6	2.3
Insurance	0	0	0	.2	
Services[f]	NA	9.3	18.2	14.2	6.3[h]
Construction	NA	NA	NA	41.6	21.0
Transportation	39.0	21.8	NA	25.4	33.5
Communication & public utilities	NA	NA	100.0[e]	20.8	
Services, Broadly Defined	15.2	NA	11.5	16.1	10.0
ALL INDUSTRIES	19.1	18.9	15.6	18.9	13.2

[a]Foreign affiliate data include all petroleum operations, including extraction, refining, wholesale and retail trade, and services.

[b]Including petroleum and gas extraction but not other petroleum operations.

[c]Foreign affiliate data exclude petroleum refining

[d]Including petroleum refining

[e]Numerator and denominator both 0.1 thousand. Actual percentage could be anywhere from 50 to 100.

[f]Foreign affiliate data exclude petroleum operations

[g]Including petroleum wholesale trade and gasoline stations

[h]Includes petroleum services

Sources: U.S. Bureau of the Census (1989), Table 684.
U.S. Department of Commerce (1990), Tables F-3 and F-15.

The meaning of the state wage variables is somewhat ambiguous. The average state wage is not purely a geographical influence because it reflects the industry composition of employment in the state and, possibly, the foreign firm presence in that state.

To eliminate this ambiguity we calculate a state wage index that is an average across industries of the ratios of the state domestic plant wage in industry i to the national domestic plant wage in industry i, weighted by national employment in each industry. We also calculate an industry wage index that is an average across states of the ratios of the industry domestic plant wage in state s to the national domestic industry plant wage, weighted by manufacturing employment in each state. Equation 2 explains the level of wages in an industry in a state by these adjusted state and industry influences on wage levels and the importance of foreign-owned establishments.

$$(2)\quad WD(SI) = \underset{(4.66)}{8.49} + \underset{(1.43)}{3.46}\,\hat{WD}(S) + \underset{(4.17)}{9.55}\,\hat{WD}(I) + \underset{(10.30)}{34.27}\,F/D(SI)$$

$\bar{R}^2 = .114$

No. Obs. = 1,091

where $\hat{WD}(S)$ = the average across industries of ratios of state s wages in domestic plants in industry i to national average wages in domestic plants in industry i.

$\hat{WD}(I)$ = the average across states of ratios of industry i wages in domestic plants in state s to national average wages in domestic plants in industry i.

This equation suggests that, given the relationship of state s wages to national averages and of industry i wages to industry averages, a level of foreign participation higher by 10 percentage points is associated with a wage rate higher by about $3,400.

An equation with average wages of employees in all establishments, foreign-owned and domestically-owned, as the dependent variable (Equation 3)

shows a somewhat stronger effect of the foreign employment share. It reflects

$$(3)\quad WT(SI) = \underset{(4.64)}{8.55} + \underset{(1.46)}{3.56}\,\hat{WD}(S) + \underset{(4.05)}{9.38}\,\hat{WD}(I) + \underset{(11.06)}{37.19}\,F/D\,SI)$$

$$\bar{R}^2 = .124$$
$$\text{No. Obs.} = 1{,}091$$

the influence on the average wage of both the higher wages in foreign-owned plants and the spillover of these to domestically-owned plants.

For the most part, the introduction of the geographical dimension alters the explanation of the differential in compensation between foreign-owned and domestically-owned plants only slightly. In most comparisons, the industry and state distribution of employment by each group explains about half the differential, marginally less than the industry distribution alone. That difference implies that the geographical distribution somewhat offsets the industry distribution's effect on wages, at least in manufacturing. The impact of foreign participation may be linked to establishment size but that link, if it exists, does not affect the finding that higher foreign firms' shares in employment are associated with higher wages in domestically-owned establishments and in all establishments in an area in an industry.

Employee skills

One possible reason for differences in average compensation between foreign-owned and domestically-owned establishments, both among and within industries, is that skill levels of employees may be higher in one or the other set of establishments. Unfortunately, data on employee skills are hard to come by, but a match of BEA ownership records with BLS data on broad occupational classes for 1989 provides some information for a comparison of

skill levels between foreign-owned and domestically-owned establishments within the manufacturing sector. The analysis of the data by the BLS (1993) concluded that there were no major differences within industries but large differences among industries and between foreign establishments as a group and establishments of different countries' firms in the distribution of occupations, resulting from differences in industrial distribution.

The shares of two high-skill groups in total employment were as follows for manufacturing industry as a whole (Table 10).

Table 10

Shares of Two High-Skill Occupations in Foreign-Owned and Domestically-Owned Establishments, 1989

	Foreign-Owned	Domestically-Owned
Managerial and Administrative	6.21	6.29
Professional, paraprofessional, and technical	13.75	12.06

Source: BLS(1993), Table 1. The BLS data do not include administrative and auxiliary establishments, and the manufacturing category covers 1,696 thousand employees in foreign-owned establishments as compared with 1,640 thousand (excluding administrative and auxiliary) in the Census-BEA data.

Foreign-owned establishments used about the same proportion of managerial and administrative workers as domestically-owned establishments and a somewhat higher proportion of professional and technical workers.

These proportions reflect their use of each type of worker in each industry and the industry distribution of their employment. Within industries foreign establishments employed fewer managerial and administrative workers relative to their total labor forces than did the domestic firms, by between

six and nine per cent (Table 11). The direction of that difference is what

Table 11

Managerial and Administrative Employees as Per Cent of Total Employment in Foreign Establishments Relative to Per Cent in Domestic Establishments, 1989

Weighted by Employment in	
Foreign-Owned Establishments	Domestically-Owned Establishments
.908	.936

one would expect from the fact that the headquarters operations for the foreign-owned firms are outside the United States. However, the distribution of total employment in foreign-owned firms was biased toward industries using higher proportions of managerial and administrative employees. That can be seen by asking what the share of such employees would be if foreign firms used them in the same proportion in each industry as domestic firms did. The share in the foreign firms would then have been 6.94 per cent as compared with 6.35 per cent in domestic firms, a difference of about 9 per cent. Thus the industry mix effect just about offsets the tendency of the foreign firms to use relatively fewer managerial and administrative employees within each industry.

A similar analysis can be made of the share of professional and technical workers. Weighting the ratios for each industry by either the foreign- or the domestic industry distribution of employment we find that foreign-owned establishments use a higher proportion of professional and technical workers than domestically-owned establishments, by a margin of almost 10 per cent (Table 12). In addition, the foreign-owned establishments are much more concentrated in industries that use more of such workers. If foreign and domestically-owned firms used identical proportions of

professional and technical workers (at the level of the domestically-owned

Table 12

Professional, Paraprofessional and Technical Employees as Per Cent of Total Employment in Foreign Establishments Relative to Per Cent in Domestic Establishments, 1989

Weighted by Employment in	
Foreign-Owned Establishments	Domestically-Owned Establishments
1.094	1.095

firms), the share of such workers would have been 14 per cent in the foreign firms as compared with about 12.5 per cent in domestically-owned firms, or a 12 per cent higher proportion in the foreign firms. Thus, with respect to professional and technical employees, the overall share in foreign-owned firms was higher both because foreign firms used more of such workers in each industry and because foreign-owned firms tended to be more concentrated in industries characterized by greater use of professional and technical workers.

We can make a rough judgment as to the contribution of the distribution among these broad skill categories to the compensation differences in manufacturing reported in the BEA-Census match by weighting the national average wages for each category of employees by the employment distributions of foreign-owned and domestically-owned establishments. Unfortunately, there are several defects to the procedure. One is that the earnings of the seven categories are reported as medians for male and female employees separately, and for a more detailed breakdown of occupations, and we have calculated averages for the seven categories from these medians, a process that probably understates the arithmetic mean skill differentials that would be appropriate. A second problem is that the median incomes are for money income only. The

estimated averages for the seven groups, given in Table 13, show a wide range of average incomes, with that of the highest group four times those of the lowest occupational groups, even though we have probably underestimated the range because of the use of medians rather than arithmetic means as our basic data, and also because the income data include money income only. If higher-paid occupational groups also received more non-money compensation and fringe benefits relative to their wages, the use of money income would understate the differences among occupations in total compensation.

A third difficulty arises in using these BLS occupational distributions to explain BEA-Census compensation levels. The classification of establishments into industries by the BLS does not match that of the Census data, even at the two-digit SIC level, as can be seen from a comparison of the data in the two sources. That means that the occupational distribution applies to a set of firms somewhat different from those in the compensation data. The differences, by two-digit SIC, are shown in Table 14.

Among the larger industries (with 40,000 or more employees), the greatest discrepancy was 27 per cent, for SIC 28, Chemicals and Allied Products. Except for Instruments and Related Products (13 per cent), the others were all below 10 per cent. The calculations below using the BLS occupational distributions are based on the assumption that the occupational distribution in the BLS data is a good representation of that in the Census data despite these discrepancies.

Applying the average U.S. money income levels to the occupational distributions by industry, we can account for only a small part of the 10 per cent differential in compensation between foreign-owned and domestically-owned manufacturing establishments. The predicted wage ratios for manufacturing as

a whole, and by industry, based on the occupational distributions, are shown in Table 15.

Table 13

Estimated Average Incomes[a] for Seven Broad Occupational Groups of Employees, 1989

Occupational Group[b]	Estimated Annual Average Earnings[c] $
Managerial and administrative	30,508
Professional, paraprofessional, and technical[d]	27,456
Sales and related	14,539
Clerical and administrative support	14,836
Production and related[e]	17,350
Service	7,471
Agriculture, forestry, fishing and related	7,090

[a]Total money income including wages and salaries, self employment income, and transfer payments received on a regular basis, before payments of taxes and other deductions.

[b]Occupational group of longest job during year.

[c]Arithmetic means of median incomes for male and female workers in eleven occupation groups, weighted by numbers in each group.

[d]Average of Professional specialty and Technical and related support.

[e]Average of Precision production, craft, and repair, Machine operators, assemblers, and inspectors, Transportation and material moving, and Handlers, equipment cleaners, helpers, and laborers.

Source: U.S. Bureau of the Census (1990), Table 12

For manufacturing as a whole, the combination of the industry mix and the occupational mix within industries accounts for only a one per cent margin of foreign over domestic plant compensation, out of the more than 10 per cent overall difference mentioned earlier. Most of the differences for individual manufacturing industries explained by occupational group are small: out of 18 industries, nine are less than one per cent and another six are less than two per cent. The main exceptions are three industries in which the occupational group distribution pointed to lower wages in foreign-owned establishments, as follows:

	Foreign minus Domestic	
	Domestic	
	Predicted	Actual
Petroleum and coal products	-3.1	+9.8
Transportation equipment	-5.4	-13.5
Instruments and related products	-2.7	-7.7

Source: Table 15 and U.S. Department of Commerce (1992), Table 1.1

The occupational distribution explained part of the difference in two industries with lower compensation in foreign-owned plants, but in one case pointed in the wrong direction, leaving even more to be explained by some missing factor than was suggested by the actual wage difference.

The predicted margins in Table 15 are a combination of the differences in industry distribution with those in occupational distribution. The two influences can be separated, for manufacturing as a whole, by weighting the individual within - industry differences of Table 15 by the industry distribution of affiliates or domestic establishments.

Table 14

Employment by Foreign-owned Manufacturing Establishments
in the United States Reported by the BLS and Census Bureau, 1989

SIC		BLS	Census	BLS / Census (%)
20	Food and kindred products	146,330	147,132	99.5
21	Tobacco products	NA	NA	NA
22	Textile mill products	37,560	41,323	90.9
23	Apparel and other textile products	13,430	15,457	86.9
24	Lumber and wood products	NA	14,472	NA
25	Furniture and fixtures	15,790	NA	NA
26	Paper and allied products	47,970	47,002	102.1
27	Printing and publishing	84,810	93,566	90.6
28	Chemicals and allied products	272,380	214,323	127.1
29	Petroleum and coal products	34,610	23,069	150.0
30	Rubber and misc. plastic products	102,450	99,277	103.2
31	Leather and leather products	8,410	6,483	129.7
32	Stone, clay, and glass products	99,140	95,867	103.4
33	Primary metal industries	100,170	97,595	102.6
34	Fabricated metal products	85,230	90,565	94.1
35	Industrial machinery and equipment	187,260	190,556	98.3
36	Electronic and other elect. equipment	235,200	232,098	101.3
37	Transportation equipment	86,370	79,410	108.8
38	Instruments and related products	93,770	107,961	86.9
39	Miscellaneous manufacturing industries	25,490	25,043	101.8
	Total	1,696,490	1,640,075	103.4

Source: U.S. Bureau of Labor Statistics (1993), and U.S. Department of Commerce (1993).

Table 15

Compensation Levels in Foreign-Owned Relative to Domestically-Owned Establishments Predicted from Occupational Group Mix, 1989

1987 SIC code	Industry	Predicted Ratio: Compensation in Foreign-Owned Relative to Domestically-Owned Establishments
	Manufacturing total	101.1
20	Food and kindred products	101.7
21	Tobacco products	NA
22	Textile mill products	100.2
23	Apparel and other textile products	100.6
24	Lumber and wood products	NA
25	Furniture and fixtures	99.6
26	Paper and allied products	99.2
27	Printing and publishing	100.0
28	Chemicals and allied products	101.3
29	Petroleum and coal products	96.9
30	Rubber and miscellaneous plastic products	100.9
31	Leather and leather products	99.4
32	Stone, clay, and glass products	99.3
33	Primary metal industries	100.2
34	Fabricated metal products	101.6
35	Industrial machinery and equipment	98.6
36	Electronic and other electrical equipment	98.7
37	Transportation equipment	94.6
38	Instruments and related products	97.3
39	Miscellaneous manufacturing industries	101.3

The small margin shown here in favor of foreign-owned establishments is entirely accounted for by industry composition. If we weight the individual two-digit industry ratios estimated from occupation mix by the industry employment weights of either foreign or domestic establishments to calculate within-industry ratios, the average estimated ratio is actually slightly below, but very close to, one.

On the whole, this breakdown by broad occupational groups does not explain any substantial part of the margin between wages in foreign-owned establishments and those in domestically-owned establishments. If the foreign firms are employing more skilled workers, the difference in skill composition would have to be within these broad occupations.

Country of Ownership

Whatever the reasons for the differences in compensation between foreign- and domestically-owned firms, unless they reflect an employee aversion to foreign owners, there is no reason to expect that differentials would be the same for all nationalities of ownership. The industry distribution of affiliates, in particular, should reflect the comparative advantages of firms from different countries, such as those of German and Swiss firms in the chemicals industry.

The averages themselves differ greatly among the countries of ownership, with Japanese firms paying compensation per worker more than 60 per cent above the average in domestically owned firms and other countries paying from 15 per cent to a third more (Table 16).

Table 16

Aggregate Annual Compensation per Worker in Foreign-Owned Affiliates, by Country of Ownership, 1987

Country of Ownership	All Industries		Manufacturing		Non-Manufacturing	
	$000	Per cent of U.S. Domestic	$000	Per cent of U.S. Domestic	$000	Per cent of U.S. Domestic
U.S. Domestic	19.42	100.0	24.89	100.0	17.97	100.0
All Foreign	25.11	129.3	27.98	112.4	23.14	128.8
U.K.	24.57	126.5	25.82	103.7	23.47	130.6
Canada	22.72	117.0	30.14	121.1	17.96	99.9
Germany	24.72	127.3	29.60	118.9	21.09	117.4
Japan	31.73	163.4	28.25	113.3	33.77	187.9
Netherlands	22.85	117.7	29.07	116.8	18.83	104.8
France	25.95	133.6	26.72	107.4	25.14	139.9

Source: U.S. Department of Commerce (1992).

The range of differences among countries is much smaller for manufacturing than for non-manufacturing, but all countries' affiliates did pay somewhat more than domestically-owned firms. All countries' affiliates in manufacturing, with the exception of Japanese affiliates, paid higher compensation than the same countries' non-manufacturing affiliates. Japanese non-manufacturing affiliates paid higher average compensation than every country's manufacturing affiliates. One consistent aspect of the employment distribution was the concentration on manufacturing. The smallest manufacturing share was for Japanese affiliates, but even that, at 37 per cent, was almost twice the share of manufacturing in employment in domestically-owned establishments (U.S. Department of Commerce, 1992).

Once we take account of industry composition, the differences in compensation are smaller, as expected. The differentials adjusted for industry composition at the two-digit level, are shown in Table 17.

Foreign affiliates from all six countries paid higher compensation than did domestically-owned establishments, the differences ranging from 17 to 29 per cent by U.S. industry weights, and mostly in the 25 to 29 per cent range, and 13 to 18 per cent by the foreign affiliate weights, except for Japan, at 29 per cent. Much of this margin was related to the manufacturing-nonmanufacturing distribution.

Within manufacturing, the differential ranged from 2 to 12 per cent, with Canadian affiliates at the upper end of the distribution. The inclusion or exclusion of administrative and auxiliary establishment employment made little difference to the comparison, despite the high average compensation in them, an indication that the proportions of such employment did not differ substantially among the six countries within manufacturing, the only sector

for which we could make this distinction by country.

It is in the nonmanufacturing sectors that we find large compensation differentials within industries, ranging from over 20 to 36 per cent by U.S. industry weights and 15 to 44 per cent by affiliate weights. In most countries' affiliates the differences were smaller based on U.S. domestic establishment employment weights, but Japan was again an outlier here, with a particularly large differential based on U.S. domestic weights.

Table 17

Ratio of Compensation per Worker in Foreign-Owned to that in U.S. Domestically-Owned Establishments within Industries, by Country of Ownership, 1987

Country of Ownership	All Industries		Manufacturing		Non-manufacturing	
	U.S. Domestic Weights	Foreign Affiliate Weights	U.S. Domestic Weights	Foreign Affiliate Weights	U.S. Domestic Weights	Foreign Affiliate Weights
U.K.	1.167	1.130	1.031	1.017	1.211	1.229
Excl. Admin & Aux.			1.037	1.023		
Canada	1.205	1.139	1.097	1.117	1.240	1.152
Excl. Admin & Aux.			1.089	1.104		
Germany	1.260	1.176	1.100	1.070	1.317	1.260
Excl. Admin & Aux.			1.099	1.065		
Japan	1.272	1.294	1.071	1.054	1.341	1.436
Excl. Admin & Aux.			1.078	1.059		
Netherlands	1.249	1.144	1.063	1.094	1.312	1.179
Excl. Admin & Aux.			1.060	1.085		
France	1.284	1.152	1.032	1.030	1.365	1.280
Excl. Admin & Aux.			1.038	1.039		

The aggregate compensation differentials among countries of ownership in Table 16 are composed of several elements. One of these is wage differentials within industries, described in Table 17, which we can think of as consisting mainly of skill differences within industries, although there could be other unknown differences in worker characteristics or employment terms within industries, and differences in pay for identical workers (pure wage differentials). The other main element is differences in industry composition, in the sense of differences that would exist if foreign establishments paid the same compensation as domestically-owned establishments in each industry. These are shown in Table 18. The compensation differences

Table 18

Industry Composition Component of Affiliate Compensation Levels by Country of Ownership, 1987

Country of Ownership	All Industries	Manufacturing		Non-Manufacturing
		Including Admin. & Auxiliary	Excluding Auxiliary	
UK	1.114	1.040	1.022	1.025
Canada	1.009	1.078	1.050	.856
Germany	1.122	1.119	1.113	.974
Japan	1.277	1.081	1.095	1.340
Netherlands	1.008	1.065	1.012	.830
France	1.172	1.053	1.045	1.101

can then be interpreted as representing industry differences in the average skill of employees.

Across all industries, foreign establishments, except those of Canadian and Netherlands firms, appear to be more concentrated in higher-skill industries than U.S.-owned ones, mostly accounting for compensation differentials of 11 to 17 per cent, but with the Japanese again the outliers at 28 per cent. Within manufacturing, the foreign establishments are more consistently in the higher-skill industries, but mostly by narrower margins, ranging from 4 per cent for U.K. firms to 12 per cent for German firms. In most cases, the margin is reduced if administrative and auxiliary establishments are excluded, an indication that foreign firms from most countries use higher proportions of employees in such establishments than domestic firms.

Outside of manufacturing, the picture is much more mixed, with a wide range of skill ratios. Firms based in Canada and The Netherlands had a skill mix in the U.S. biased toward low-skill industries, particularly retail trade in the case of Canada. Japanese firms, on the other hand, had a strong bias toward high-paid, presumably high-skill nonmanufacturing industries, particularly "Security and commodity brokers and dealers," and away from low-skill industries such as retail trade.

Just as we tested whether the differences in employment mix between foreign-owned establishments in the aggregate and U.S.-owned establishments could account for the differences in average compensation, we can ask the same question about establishments belonging to different foreign countries. The wage ratios implied by the combination of industry mix, occupational group mix within industries, and average compensation of each occupational group, are as

follows:

Country of Ownership	Foreign as Per Cent of Domestic Plant Wages
Canada	100.09
Germany	102.51
U.K.	100.45
Japan	98.02

The occupational mix data do not go far toward explaining the country of ownership differences shown in Tables 16 and 17, except for Germany, for which something between a quarter and a third of the differential is explained. In the case of Japan, the occupational group mix implies lower wages in Japanese-owned plants. Either the relation between occupational group and pay is different in Japanese-owned firms, or the grouping of occupations is too broad for us to be able to observe the significant differences.

We have identified skill with either compensation or occupational group, assuming, in effect, that labor markets were sufficiently competitive that all firms, foreign and domestic, or all in a region, paid the same for a given level of skill. There is at least fragmentary evidence that the situation is more complex. For example, a study comparing Japanese-owned and U.S.-owned plants in the United States (Mincer and Higuchi, 1987) found that Japanese firms paid higher training and recruitment costs and higher fringe benefits, not included in our comparisons here, and, more important, paid more for schooling and tenure on the job than the U.S. firms in the sample. Since the higher training costs were not associated with lower wages, they presumably involved specific, rather than general, training, followed by a wage margin over U.S. employers that reduced turnover and permitted the firms to recoup their training investment.

Foreign Takeovers and U.S. Wages

One way of observing the effects of foreign ownership of U.S. firms on employees would be to follow firms or establishments when they change ownership from domestic to foreign status. Ideally, this should be done with Bureau of the Census data with ownership information added but those data were not available. It was possible to select from the Bureau of Economic Analysis data on foreign-owned enterprises those that reported as foreign-owned in 1990 but not in 1989, and to follow the same enterprises to their 1991 reports. Unfortunately, those data have several drawbacks, aside from the fact that they show only a single year's changes, a problem that will be reduced as earlier BEA data are added to their current computer system and as the BEA-Census match adds years of data. One problem is that BEA data are on an enterprise basis, so that establishments in different industries belonging to the same foreign owner are combined and assigned to their main industry. Another is that an initial appearance in the file may not always represent a foreign takeover of a formerly domestically-owned operation, as would be preferable, but may also include firms that switched from one foreign owner to another or began reporting after failing to report in earlier years. Thus, any conclusions here about the determinants and effects of takeovers must be viewed as tentative and experimental.

The data used here are for 240 "new" foreign affiliates in 1990, of which 124 were in manufacturing and the remainder in trade and services, including finance. Because of confidentiality requirements, data can be shown here only for total manufacturing and total services, for 5 subdivisions of manufacturing and three of services, and for wholesale trade, retail trade, and finance, except banking.

The new affiliates in 1990 were smaller than existing affiliates in employment in manufacturing as a whole, and in more than half the individual industries but not overall or for services as a group (Table 19). The new affiliates were larger by all the measures in Table 19, in Primary and fabricated metals and products, Hotels and other lodging places, Other services, and, by a small margin, in Other manufacturing.[2]

The new affiliates can be compared with existing affiliates in the year of takeover in other respects, including pay levels, crude proxies for efficiency or vertical integration (sales or sales minus imports per employee), and capital intensity (assets per employee or property, plant, and equipment per employee). These comparisons are shown in Table 20.

In the manufacturing sector, the new affiliates seem to have paid, on average, a little less than existing ones. That may be because American-owned firms in general paid less than foreign-owned firms and the newly acquired firms had not yet assumed the behavior of foreign-owned firms. However, no pattern can be seen in the trade and service sectors and the range of ratios is enormous, with foreign firms reporting that they paid only half of average American wages in two industries and twice American wages in two others. Sales per employee were more frequently below the average for existing affiliates than was compensation, especially in manufacturing, but were higher in the new affiliates in business and other service categories. Of the three industry groups in which new affiliates had sales per employee at or above the levels of existing affiliates, two also showed relatively high assets per employee, a fact that suggests a role for capital intensity, although the

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[2]That group and Other services are heterogeneous groups consisting of all but the four manufacturing industries and two service industries distinguished separately.

Table 19

Size of New Affiliates and All Affiliates(a), Measured by Employment, Compensation, Sales, and Assets per affiliate, 1990

	Employment (numbers)			Compensation (thousands $		
	New aff.	All aff.	New/All(%)	New aff.	All aff.	New/All(%)
ALL INDUSTRIES	827	653	126.6	29.3	22.5	130.2
Manufacturing	635	915	69.4	24.8	36.6	67.8
Food and kindred products	460	1,107	41.6	13.0	32.3	40.3
Chemicals and allied products	823	2,156	38.2	33.8	100.2	33.7
Primary and fabricated products	1,120	745	150.3	50.8	32.6	155.5
Machinery	147	748	19.7	4.9	30.8	16.0
Other manufacturing	876	725	120.8	31.2	26.5	117.4
Wholesale trade	256	260	98.4	9.2	9.5	96.4
Retail trade	342	2,552	13.4	6.1	42.7	14.4
Finance, except banking	94	101	93.3	4.3	9.1	47.6
Services	1,063	696	152.7	30.0	16.7	179.1
Hotels and other lodging places	1,216	522	233.1	9.1	8.2	110.6
Business services	455	1,100	41.3	26.5	29.9	88.5
Other services	1,196	577	207.3	59.8	14.6	410.5

	Sales (thousands $)			Assets (thousands $)		
	New aff.	All aff.	New/All(%)	New aff.	All aff.	New/All(%)
ALL INDUSTRIES	115.6	161.7	71.5	166.5	200.9	82.9
Manufacturing	101.9	164.6	61.9	112.7	178.0	63.3
Food and kindred products	48.7	211.0	23.1	52.1	208.0	25.1
Chemicals and allied products	153.5	463.8	33.1	210.2	578.2	36.4
Primary and fabricated products	213.7	149.3	143.2	192.2	139.5	137.8
Machinery	23.3	118.1	19.7	24.3	110.2	22.1
Other manufacturing	116.0	113.4	102.3	148.8	128.1	116.2
Wholesale trade	75.5	228.6	33.0	47.1	96.9	48.6
Retail trade	33.0	261.8	12.6	39.8	159.9	24.9
Finance, except banking	12.6	57.5	21.9	80.4	611.9	13.1
Services	97.7	48.7	200.5	284.1	105.1	270.4
Hotels and other lodging places	41.3	25.5	162.3	180.5	116.8	154.5
Business services	34.3	64.1	53.5	32.6	83.4	39.0
Other services	208.0	54.2	383.7	562.1	110.0	510.9

a. All affiliates present in both 1990 and 1991.

Source: Unpublished data of the Bureau of Economic Analysis, U.S. Dep't. of Commerce.

Table 20

Characteristics of New Affiliates and All Affiliates(a), Measured by Compensation, Sales, and Assets per employee, 1990

	Compensation (thousands $)		
	New aff.	All aff.	New/All(%)
ALL INDUSTRIES	35.4	34.5	102.5
Manufacturing	39.1	40.0	97.6
Food and kindred products	28.3	29.2	96.9
Chemicals and allied products	41.0	46.5	88.3
Primary and fabricated products	45.3	43.8	103.5
Machinery	33.5	41.2	81.4
Other manufacturing	35.6	36.6	97.2
Wholesale trade	38.0	36.7	98.0
Retail trade	17.9	16.7	107.2
Finance, except banking	45.9	89.9	51.0
Services	28.2	24.1	117.3
Hotels and other lodging places	7.5	15.8	47.5
Business services	58.3	27.2	214.2
Other services	50.0	25.2	198.4

	Sales (thousands $)			Sales minus Imports (thousands $)		
	New aff.	All aff.	New/All(%)	New aff.	All aff.	New/All(%)
ALL INDUSTRIES	139.8	247.7	56.5	133.4	208.4	64.0
Manufacturing	160.5	179.9	89.2	160.2	158.2	101.3
Food and kindred products	105.8	190.6	55.5	105.7	180.6	58.5
Chemicals and allied products	186.5	215.1	86.7	186.4	197.5	94.4
Primary and fabricated products	190.8	200.4	95.2	190.6	180.5	105.6
Machinery	158.2	158.2	100.0	156.6	122.2	128.1
Other manufacturing	132.5	156.4	84.7	132.3	137.2	96.4
Wholesale trade	295.1	878.9	33.6	293.6	612.7	47.9
Retail trade	96.4	102.6	93.9	96.0	99.6	96.4
Finance, except banking	133.5	568.5	23.5	133.5	568.4	23.5
Services	91.9	70.0	131.3	91.9	69.5	132.3
Hotels and other lodging places	34.0	48.8	69.7	34.0	48.7	69.7
Business services	75.5	58.3	129.4	75.5	57.9	130.4
Other services	174.0	94.0	185.1	174.0	93.1	186.9

	Assets (thousands $)			Net book value of Property, Plant & Equipment (thousands $)		
	New aff.	All aff.	New/All(%)	New aff.	All aff.	New/All(%)
ALL INDUSRTIES	200.4	307.6	65.1	64.8	69.9	92.6
Manufacturing	177.5	194.5	91.2	63.98	64.2	99.7
Food and kindred products	113.3	187.9	60.3	24.29	48.9	49.7
Chemicals and allied products	255.5	268.2	95.3	98.80	99.6	99.2
Primary and fabricated products	171.6	187.2	91.7	77.43	73.8	104.9
Machinery	165.4	147.6	112.0	30.01	33.0	90.8
Other manufacturing	169.9	176.6	96.2	53.03	61.3	86.6
Wholesale trade	184.3	372.8	49.4	41.55	58.4	71.2
Retail trade	116.4	62.7	185.7	33.09	22.9	144.3
Finance, except banking	851.7	6046.1	14.1	15.98	54.0	29.6
Services	267.4	151.0	177.1	74.57	52.6	141.7
Hotels and other lodging places	148.4	223.9	66.3	113.70	139.1	81.7
Business services	71.6	75.8	94.5	6.60	16.3	40.4
Other services	470.1	190.8	246.4	35.84	43.8	81.9

a. All affiliates present in both 1990 and 1991.

Source: Unpublished data of the Bureau of Economic Analysis, U.S. Dep't. of Commerce.

numbers of observations are too small to permit conclusions to be drawn.

Changes in employment between 1990 and 1991 for new affiliates are compared with those for existing affiliates in Table 21. Employment growth in

Table 21

Employment in 1991 as Per Cent of 1990 Employment, New Affiliates and All Affiliates

	Per Cent	
	New aff.	All aff.
Manufacturing	96.5	99.3
Food and kindred products	104.2	98.9
Chemicals and allied products	108.3	96.0
Primary and fabricated products	92.8	98.6
Machinery	99.8	100.0
Other manufacturing	93.2	101.7
Wholesale trade	102.7	105.4
Retail trade	91.7	101.6
Finance, except banking	79.8	104.3
Services	95.7	103.3
Hotels and other lodging places	89.7	100.5
Business services	103.6	102.7
Other services	102.1	105.4
ALL INDUSTRIES	98.9	101.1

Source: Unpublished data of the Bureau of Economic Analysis, U.S. Department of Commerce

new affiliates was smaller than that in all foreign affiliates in this year in most industries, although there were exceptions. The slow growth of employment in the new affiliates did not imply a slow growth in sales, however. Average sales grew more quickly in new affiliates than in existing ones in most industries and, as a consequence, or cause, of the divergence between sales growth and employment growth, sales per employee grew faster in new affiliates in almost every industry, as can be seen in Table 22. Thus, it appears on the basis of this rough proxy, at least, that the newly acquired firms raised their productivity faster than did the existing affiliates.

Table 22

Average Affiliate Sales and Sales per Employee in 1991
as Per Cent of Those in 1990, New Affiliates and All Affiliates

	Per Cent			
	Average Sales		Sales per Employee	
	New aff.	All aff.	New aff.	All aff.
Manufacturing	99.9	101.0	103.6	101.8
Food and kindred products	110.1	102.5	105.6	103.7
Chemicals and allied products	117.0	99.7	108.0	103.9
Primary and fabricated products	91.9	94.3	99.0	95.7
Machinery	114.0	103.5	114.3	103.5
Other manufacturing	96.9	103.3	104.0	101.5
Wholesale trade	114.4	95.6	111.4	90.7
Retail trade	95.4	107.3	104.0	105.6
Finance, except banking	176.6	105.8	221.4	101.4
Services	100.3	108.0	104.8	104.6
Hotels and other budget places	107.7	103.2	120.0	102.7
Business services	101.9	98.8	98.4	96.1
Other services	98.1	115.4	96.1	109.6
ALL INDUSTRIES	103.5	100.3	104.7	99.3

Source: Unpublished Data of the Bureau of Economic Analysis, U.S. Department of Commerce

Changes in average compensation did not seem to match the changes in sales per employee, as they might if the sales increases reflected rising skill levels in the labor force (Table 23). However, changes in average

Table 23

Compensation per Employee in 1991 as Per Cent of 1990 Average Compensation, New Affiliates and All Affiliates

	Per Cent	
	New Affiliates	All Affiliates
Manufacturing	105.0	104.6
Food and kindred products	105.4	106.2
Chemicals and allied products	99.7	106.1
Primary and fabricated metal products	100.6	102.0
Machinery	129.8	103.5
Other manufacturing	108.6	105.3
Wholesale trade	101.9	110.1
Retail trade	146.3	105.2
Finance, exc. banking	175.6	102.4
Services	104.7	102.4
Hotels and other lodging places	172.1	117.0
Business services	79.5	93.7
Other services	91.6	106.9
ALL INDUSTRIES	103.4	105.1

Source: Unpublished data of the Bureau of Economic Analysis, U.S. Department of Commerce.

compensation (Table 23) were negatively correlated with changes in employment (Table 21). It appears that in those industries in which new foreign affiliates decreased the level of employment, it was the least skilled employees that were dropped.

For these new manufacturing affiliates and for the set of all manufacturing affiliates in existence in both 1990 and 1991 we can also make some comparisons based on data for the individual affiliates, although the numbers are too small to separate them into industries. As a substitute for industrial grouping, we make some comparisons of each affiliate with all

establishments in the same industry in the United States. The skewness of the distributions and the presence of extreme values makes the means difficult to interpret, particularly in the full data sets before removal of outliers.

Some characteristics of the new affiliates in the year of establishment or takeover, principally the latter, seem clear. The new affiliates paid lower wages than U.S. establishments in general in 1990, even though existing foreign-owned firms paid higher wages than U.S. averages (Table 24). However, average compensation rose much faster on average, in the new affiliates between 1990 and 1991, although the median increase was the same.

The changes in wage levels between 1990 and 1991 can be related to the initial wage levels, at least as reported for the end of 1990. For both the new affiliates and the universe of foreign affiliates in the United States, lower initial wage levels relative to the affiliates' industries, that is, relative to all establishments in each affiliate's industry, were associated with larger increases in wage levels. The association of wage changes with 1990 relative wages was much stronger among the new affiliates than among all existing affiliates (Table 25), and the coefficient on the 1990 average wage relative to the industry average was also much higher in the new affiliates. Thus employees in new affiliates presumably enjoyed larger gains than those in existing affiliates for two reasons: one was that they started out in 1990 at lower wages than the averages in their industries, and the other was that, for a given distance below the average, there was a larger absolute and percentage increase for employees of new affiliates than for those of existing affiliates.

Table 24

Comparison of New and Existing Foreign-Owned Manufacturing Affiliates, 1990 and 1991
Unweighted Averages of Individual Firm Data

	Full Data Set					
	New Affiliates (119)			Existing Affiliates (2205)		
	Mean	Median	5% Trim[a]	Mean	Median	5% Trim[a]
1990 as % of All U.S. Establishments						
Compensation per employee	94.10	93.72	92.88	109.79	102.38	103.71
Sales per employee	91.93	63.91	74.42	172.49	96.53	115.12
Per Cent Change, 1990 to 1991						
Compensation per employee	32.95	7.23	18.19	19.34	7.23	8.06
Sales per employee	204.70	4.63	15.41	888.49	3.84	6.10

	Reduced Data Set[b]					
	New Affiliates (115)			Existing Affiliates (2183)		
1990 as % of All U.S. Establishments						
Compensation per employee	95.20	94.26	93.63	106.58	102.18	103.64
Sales per employee	93.74	64.73	76.36	153.12	96.61	114.70
Per Cent Change, 1990 to 1991						
Compensation per employee	20.11	7.23	18.19	12.05	7.23	7.83
Sales per employee	18.55	4.14	12.06	10.70	3.84	5.67

[a]Mean of central 90 per cent of observations

[b]With outliers removed

Source: Unpublished data of the Bureau of Economic Analysis, U.S. Department of Commerce. Industry data from U.S. Bureau of the Census (1992).

Table 25

Equations Relating Absolute and Percentage Wage Changes, 1990 to 1991, to Affiliate Wage/Industry Average Wage, 1990

	$\bar{R}^2$	1990 Wage Affiliate / Industry	t Statistic	No. Obs.
Absolute wage changes				
New Affiliates	.158	-9.07	4.79	117
Existing Affiliates	.026	-2.19	7.65	2,183
Percentage wage changes				
New Affiliates	.202	-123.53	5.53	117
Existing Affiliates	.065	-23.59	12.32	2,183

Source: Unpublished data of the Bureau of Economic Analysis, U.S. Department of Commerce.

Conclusions

Foreign-owned establishments in the United States pay higher wages, on average, than domestically-owned establishments, especially outside of the manufacturing sector. Within industries, the foreign-owned establishments pay somewhat higher compensation per worker than domestically-owned firms, particularly in nonmanufacturing industries. In manufacturing, it has been shown that the differences within industries are associated with the larger size of foreign-owned establishments, given the fact that larger firms pay higher wages than smaller firms. Taking size of establishment into account, there is no effect of foreignness per se on manufacturing wages.

Employment in foreign-owned establishments is concentrated in relatively high-wage industries. Most important is the heavy concentration of foreign establishment employment in manufacturing: 41 per cent as compared with 21 per cent for domestically-owned establishments. The manufacturing sector, on average, pays over a third more than the nonmanufacturing sector. Aside from that distinction, the industry composition of foreign establishments' employment within manufacturing and within the nonmanufacturing sector are both tilted toward higher wage industries.

Another factor in the higher wages found in foreign-owned establishments is the nature of the establishments. The proportion of employees in administrative and auxiliary establishments was much higher among foreign firms, and these establishments' average compensation was about 50 per cent higher than that in operating establishments in manufacturing and about 75 per cent higher in nonmanufacturing.

If U.S. labor markets are somewhat segmented geographically, the impact of foreign firms should be examined within these markets rather than

nationally. The only geographic dimension for which data are available for foreign-owned and domestically-owned establishments is the state, and we have assumed, in effect, that each state is a separate labor market.

Taking account of geographical location raises the differential paid by foreign establishments somewhat, especially in manufacturing. Apparently foreign manufacturing firms have a somewhat greater propensity than domestically-owned firms to choose locations in lower-wage states within each industry. There was some tendency for the wage differentials in favor of the foreign establishments to be positive and high in the southern states, but negative in older industrial areas of the north.

We cannot associate the higher wages paid by foreign-owned establishments with the skill mix of employees as defined by the distribution of the labor force among broad occupational groups. It is true that foreign firms have more employees in professional and related occupations, and that they have a higher proportion in establishments listed as administrative and auxiliary, but they have fewer employees in managerial and administrative occupations, within industries, than domestic firms. The occupational mix within industries in these terms accounts for very little of the pay differential within industries, but foreign firms' employment is concentrated in industries in which firms in general use higher proportions of both of the higher-skill categories of workers.

The industry distribution of foreign establishment employment in the United States varies among some countries, but a common thread that runs across the affiliates of the major countries is that the shares of their employment in certain industries is higher than that of U.S.-owned establishments. Of the six major parent countries, all had higher shares than

domestic firms in either electrical or non-electrical machinery and four had higher shares in chemicals. These three industries are just the ones in which U.S. direct investment abroad is concentrated. The foreign shares tended to be smaller than domestic shares in wholesale trade in nondurables, in eating and drinking places, and in health and social services, all industries in which there is little U.S. direct investment abroad. The industry distribution of foreign firms employment suggests that the propensity to produce outside the home country is at least in part an industry characteristic rather than a characteristic of home or host countries or their firms.

An indication of the impact of foreign-owned operations on wages in manufacturing is given by equations that relate domestic plant and total plant wage levels in an industry in a state to industry and state influences and the share of foreign affiliates in total employment. A higher level of foreign participation seems to raise domestic establishment wages and total foreign and domestic establishment wages. The impact of the foreign firms is not only from their own higher wage levels but also from their influence on wages in domestic plants. Thus the higher wages in foreign-owned plants do not result from simply substituting foreign for domestic high-wage employment. The assumption about labor markets implied by these equations is that they are segmented not only by state, but also by industry.

A way to go beyond simple comparisons to judge the impact of foreign firms is to observe U.S. firms taken over by foreigners after the change of ownership. We could do this only for firms acquired in 1990 and could observe only the first year of operations under foreign ownership, but some patterns emerged. The wage levels in acquired operations tended to be a little below

those in continuing operations during the year of acquisition, although there was a wide range of ratios. For the most part, employment growth was somewhat slower in the new affiliates but sales grew more rapidly, as did sales per employee, suggesting that productivity may have grown faster in the new affiliates. Changes in average compensation were negatively correlated with changes in employment, a fact that suggests that new affiliates shedding employees were dropping the lower paid and less skilled ones.

Employees in the new affiliates, starting with somewhat lower wages than those in all affiliates or all U.S. establishments in 1990 had above average increases in wages. The further below the averages initially, the larger the ensuing increases, in both absolute and relative terms.

On the whole, a rising presence of foreign operations seems to raise U.S. wage levels. Foreign-owned firms have moved into relatively high-skill, high-wage industries, to have paid more than domestically-owned firms within industries and geographical areas, and to have caused domestically-owned firms to pay higher wages as well. Within manufacturing, the higher foreign establishment wages are associated with the relatively large size of the foreign operations, but it does not seem logical to discount the effect on this account.

Whether one considers size of establishment an explanation for wage differences depends partly on the purpose of the analysis. If one is interested in comparing production functions or technology between foreign-owned and domestically-owned establishments, size of output is clearly an essential variable. For a judgment about labor market impact, the relevance of size is not clear. That is partly because the reason for the correlation between size of establishment and wage rates is not obvious. If that

correlation is related to unmeasured differences in the nature of the jobs, such as uncounted fringe benefits, or skill levels, these variables should be substituted for size because there is no assurance that the relation to size is identical in foreign-owned and domestically-owned establishments and also because these other variables are more satisfactory as theoretical explanations.

Unless the foreign differential is a compensation for unmeasured disadvantages of employment in foreign-owned firms, such as longer hours, harsher working conditions, or less training, whether the differential is associated with size of establishment seems irrelevant. Even industry may be irrelevant unless it is a proxy for skill levels. The effect on wages is positive whether that effect is a result of size, foreignness, or other establishment characteristics.

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