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FOREIGN OWNERSHIP AND WAGES IN THE UNITED STATES, 1987 - 1992

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ABSTRACT

Foreign-owned establishments in the United States pay higher wages, on average, than domestically-owned establishments. Much of the difference is related to industry composition, but there are also differences within industries within states, 5-7 percent in manufacturing and 9-10 percent in other industries. Within manufacturing, the difference can all be related to establishment, state, and industry characteristics, but in other industries, a substantial difference in average wages in favor of foreign establishments remains even when these other determinants of wages are taken into account.

Within manufacturing, the extent of foreign ownership in an industry in a state had no impact on wages in 1987 when these other factors were taken into account, but it was associated with higher wages in 1992. Outside of manufacturing, higher foreign ownership was associated with higher wages in both years, and in 1992, even with higher-wages in domestically-owned establishments. Outside of manufacturing, larger increases in foreign ownership in an industry in a state between 1987 and 1992 were associated with larger increases in average wages. The wage effect was confined to the foreign-owned establishments themselves.

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Introduction

American states and cities vie for foreign investments by offering information to prospective investors about the advantages of locating in them and sometimes by more concrete inducements, such as tax concessions and infrastructure building. For example, in 1993 the state of Alabama promised Mercedes-Benz well over $300 million in incentives to lure the company to locate its first U.S. car plant in the state (Business Week, October 1993, Wall Street Journal, November 24, 1993.) These incentives, and those offered to other firms, suggest that states perceive benefits from foreign investments.

The concessions to foreign companies are motivated by the desire to increase employment and economic growth in localities. The increase in the demand for labor in the location would presumably have the effect of raising wage levels, and that outcome would also be a factor in explaining these efforts. Another factor may be a belief that the jobs in the firms drawn to the area would be of "higher quality" than existing employment opportunities, involving higher labor skills, more technologically advanced firms, and perhaps, therefore, better jobs with a better future prospects.

In this paper, we make use of the newly available 1992 data for matched foreign and domestic establishments, the 1987 and 1992 Economic Census data for areas with no foreign establishments, and information on the half of foreign-owned operations that are outside of manufacturing to answer two questions. One is whether the hope that foreign-owned firms bring higher wage levels is based on reality; was the presence of more foreign firms associated with higher wages in an industry in a state at a given time and to higher wages within domestically-owned operations, and did increases in foreign owners from 1987 to 1992 produce increases in overall and domestic establishment wages. The second is whether, if the foreign firms do pay

more, the difference can be explained by measurable characteristics of the foreign-owned establishments or whether there is some remaining differential associated with foreign ownership.

While foreign investment in production in the United States dates back to the origins of the country, the foreign shares of U.S. employment have been relatively low. In the period we cover, 1987 to 1992, the share grew from 3.7 per cent to 5.8 per cent, a rapid growth but still a small part of the labor force (U.S. Department of Commerce, 1992 and 1997).[1] Employment in nonbank foreign affiliates grew from 2.0 million in 1980 to 3.2 million in 1987 and 4.7 million in 1992, increases of almost 60 per cent in seven years and 46 per cent in the five years we study. That means that a large part of the employment in foreign-owned firms is a result of fairly recent foreign investment.

Despite the fact that efforts to attract foreign firms are aimed at new or "green field" operations, these account for a small part of the growth in inward foreign direct investment in the United States. Between 1990 and 1996, for example, over 80 per cent of outlays for FDI in the United States were for acquisitions rather than for new establishments (Fahim-Nader, and Zeile, 1997). Between 1987 and 1992, approximately 95% of employment in new foreign direct investments was in acquired enterprises. Therefore, while the foreign-owned establishments we are observing are to a considerable extent newly foreign, they are mostly establishments that had been in existence before, some as foreign-owned but under different ownership, and some as U.S.-owned establishments.

[1] Foreign affiliates are defined as firms with at least 10% foreign ownership.

Do Foreign-Owned Establishments Pay Higher Wages?

Foreign-owned establishments in the United States, in the aggregate, pay considerably higher wages than domestically owned establishments, as is shown in Table 1a. The average payroll per employee in foreign-owned establishments was $25,105 in 1987 and $31,358 in 1992, approximately 29 percent higher than in domestically owned establishments. During this period, the number of employees in foreign-owned establishments rose by over 50 per cent while the number in U.S.-owned establishments fell by over 1 per cent.

One reason for the difference in average pay is that employment in foreign-owned establishments is concentrated in mining, manufacturing and wholesale trade, relatively high-wage industries, while over half of employment in domestically-owned establishments (in 1992), is concentrated in lower pay industries such as retail trade, and services (see Table 1b).[2]

The linking of Economic Census establishment data with BEA surveys of foreign ownership of U.S. firms, starting in 1987, has greatly expanded the possibilities for analyzing wages in foreign-owned operations in the United States. Several studies have found that foreign-owned firms pay higher wages than their U.S. counterparts. Using the BEA and Census matched data for 1987, Lipsey (1994) found margins in favor of workers in foreign-owned establishments within 2-digit SIC industries, disregarding geography, and also within industries within states, of 10 to 12 per cent. Wage differentials were lower in manufacturing, 6 to 7 per cent, than in non-manufacturing, 12 to 15 per cent. A paper by Howenstine and Zeile (1994), confined to manufacturing, but using access to more detailed information by industry and by location, found similar differentials, all of which they attributed to the larger average size of the foreign establishments. Doms and Jensen (1996) using desaggregated 1987 manufacturing plant level

[2] Part of the reported low wage must reflect the importance of part-time work, particularly in retail trade.

data, found that even controlling for four digit industry, state, plant age, and plant size, foreign-owned plants were more productive, relied relatively more on capital, and paid higher wages.[3]

Aitken, Harrison, and Lipsey (1996) surveyed literature on foreign firms in Mexico, Venezuela and the United States and found higher wages in foreign-owned firms than in domestically owned firms in all of these countries. However, only in the United States was a higher level of foreign ownership in an industry and location associated with higher wages in domestically-owned plants, interpreted as implying a spillover of wages, and presumably of productivity, from foreign-owned to domestically-owned plants.

The match between ownership data and Economic Census data has now been extended to 1992. That extension provides the opportunity in this paper to check on the stability of wage differentials between foreign and domestic establishments within industries and states and, more important, to find out whether we can attribute changes in wage rates over time to increases or decreases in the extent of foreign ownership. With these additional data, we can go beyond the cross sectional analysis of the earlier U.S. studies. Cross section analysis has some limitations because the factors that contribute to the larger proportion of foreign-owned firms may also be responsible for the higher wages in those industries and states. This study, unlike other studies, includes, in the sample, industries within states that have no foreign establishments. Moreover, the paper examines manufacturing and non manufacturing establishments, improving our understanding of the 50 percent of foreign establishments that are outside of manufacturing but have rarely been studied (with the exception of Lipsey, 1994).

[3] These data are a match of the 1987 Census of Manufactures, 1987 Central Administrative Offices and Auxiliary Establishment Survey, 1988 Survey of Manufacturing Technology and the 1987 Bureau of Economic Analysis Foreign Direct Investment Survey.

Panel data on industry wages and employment.

We use the BEA and Census matched data for 1987 and 1992 to construct a panel of industries within states. These data are used to investigate whether foreign firms pay higher wages, whether the extent of foreign ownership affects the wages paid by domestically owned establishments, and whether the growth in foreign employment results in higher wages in general within industry and state, and in domestically owned establishments. In carrying out this analysis, we control for other factors that may influence wages and for fixed industry and state characteristics. We use two-digit SIC industry level data by state for all states and for the following industry groups: Mining, Construction, Manufacturing, Transportation and Public Utilities, Wholesale Trade, Retail Trade, and Services. Data on industries in Finance, Insurance & Real Estate (FIRE) were incomplete for the year 1987 and for this reason we were not able to include them in the analysis.[4] Information was collected on number of establishments, number of employees on the payroll, gross earnings of all employees on the payroll, and the value of shipments or sales, for both foreign-owned establishments and all establishments in the U.S. From these data we calculated the values for domestically owned firms. Annual earnings per employee were calculated by dividing gross payroll by number of employees.[5]

The BEA and Census matched data did not include information on industry-by- state cells that had no foreign establishments. Excluding those industries could bias our results because many industries within states had no foreign presence in 1987 but did have a foreign presence in 1992. For this reason we collected data for industries in states that did not have any

[4] The 1987 matched data did not include value of sales for FIRE. Moreover, FIRE was not included in the 1987 Census of Establishments.

[5] Payroll includes gross earnings of all employees on the payrolls. Number of employees includes all full-time and part-time employees on the payrolls of the firms. Gross earnings includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, deductions as employees, Social Security contributions, withholding taxes, group insurance, union dues, and saving bonds. Sometimes number of employees was disclosed only in intervals to protect from potential identification of the firms. We used the middle point of the employment

foreign presence from the 1987 and 1992 U.S. Economic Censuses. Since the Economic Census has no data on the characteristics of the labor force, we added information on average education and gender of workers in each industry in each state from the 1990 Population Census. Industries within states with complete data on employment and earnings were included in our sample, and are described in Table 2.

Our sample shows foreign establishments paid 23 percent more than domestic establishments in 1987 and 15 percent more than domestic establishments in 1992.[6] Part of the wage differential between foreign-owned and domestically-owned establishments may be due to differences in industry distribution and size distribution of these establishments within industries and state. Approximately half of foreign establishments are in manufacturing, a relatively high pay industry, compared to only 25% of domestic establishments. The distribution of employment of foreign firms by industry did not change dramatically from 1987 to 1992. The average number of employees per establishment was approximately 100 in foreign firms but only 27 in domestic firms. It has been well documented that larger firms pay higher wages than small firms.

The percent of employment within industries and states that was in foreign-owned establishments increased from 3.7% to 5.7% between 1987 to 1992. A large proportion of industry-by state combinations had no employment in foreign-owned establishment; however, the proportion of cells with no foreign employment has been declining. In 1987, 49.1% of cells had 0 percent foreign employment but this declined to 38.8% by 1992. The percent of employment in foreign owned establishments in 1992 was highest in mining, 17.6% and manufacturing, 9.7%. Within manufacturing, Chemical and Allied Products (24.4%), Primary

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interval in those cases.

[6] These wage differentials are different from those shown in Table 1a because they are not weighted by employment

Metal Industries (17.8%) and Electronic and Other Electric Equipment (15.0%) had the highest proportion of employment in foreign establishments.

Evidence on pay differentials between foreign and domestic firms.

To analyze wage differentials, we used data by industry and state for foreign-owned and for domestically-owned establishments. Average wages in an industry-state-ownership cell are assumed to depend on four variables specific to the cell. These are ownership, industry, state of location, and the size distribution of plants (i.e. number of employees per establishment). They also depend on two variables for the industry-state combination, not available by ownership. These are the education level and gender of workers (per cent female) in an industry and state. Finally, there is one variable available only by state, the unionization rate within the state. The wage equation can be represented as:

$$W_{jfst} = \beta_1 Dfor_{jfst} + \beta_2 Union_{st} + \sum \theta_k DSize_{jfst} + \sum \gamma_k Skill_{js} + \beta_3 Fem_{js} + I_j + S_s + \alpha_t + \varepsilon_{jfst} \quad (1)$$

W_{jfst} is the logarithm of the annual wage per worker in foreign-owned or domestically-owned establishments f in industry j and state s during the year t. $Dfor_{jfst}$ is a dummy variable for each observation that indicates whether the industry-state cell is composed of foreign-owned or domestically- owned plants. $Union_{st}$ is the percent of the labor force that is unionized or covered by a union contract in state s and year t. $DSize_{jfst}$ are size dummies that indicate whether the average number of employees per establishment in a cell is between 50 and 99, 100 and 149, or 150 or more. $Skill_{js}$ represents the percent of the workforce that had completed schooling levels of 0 to 11 years, 13 to 15 years, 16 years and 17 or more years in industry j and state s for the census year 1990. Fem_{js} is the percent of the workforce that was female in industry j and

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of each establishment and do not include FIRE industries.

state s in 1990. The equation includes industry dummies I_j and state dummies S_s that represent wage differentials due to the existence of industry or state premiums.

Table 3a shows estimates of wage differentials between domestic and foreign owned establishments for manufacturing industries. The coefficients from equations using only industry and state dummies show a wage differential in favor of foreign-owned establishments of approximately 5 per cent in 1987 and 7 per cent in 1992. When controls are added for the average size of foreign-owned and domestically-owned establishments, for the average level of schooling of the labor force and the percent female in the industry and state, and for the extent of unionization in the state's labor force, the differential for foreign ownership disappears. The results suggest that higher wages in foreign establishments can be partly explained by the fact that they are larger on average than domestic establishments. Wage levels are also higher in industry-state combinations in which schooling levels are higher, and the female share of the labor force is lower, and higher in states where unionization is greater.

The picture is quite different in non-manufacturing industries. The differential in favor of foreign-owned establishments is considerably larger, 9 to 10 per cent, when only state and industry dummies are controlled for, and it is hardly affected by the addition of controls, still 8 to 9 per cent. Average establishment size has again an influence on wages, especially at the upper end. The percent female in the state and industry has a negative influence only in 1992, and unionization is also associated with higher average wages. However, the average schooling level in the state and industry seems to have no impact on non-manufacturing wages.

The evidence here suggests that foreign-owned firms in the United States do pay higher wages than U.S.-owned firms in the same state and industry. Why do they? If they are paying more for workers of identical characteristics, the higher pay might indicate that workers had an

antipathy toward foreign employers that had to be offset by higher wages. If the foreign firm has brought proprietary technology to the U.S. operations that it fears losing by labor turnover, it might pay higher wages to insure employee loyalty and lower turnover.

Perhaps a more plausible explanation is that the workers are not the same. For some reason, foreign firms may wish to hire a higher quality work force than that of the average U.S.-owned establishment in a give state and industry. The foreign firm may consider itself less capable of monitoring workers than its U.S.-owned counterparts. The higher quality may involve higher levels of education, a mix of occupations biased toward higher skill, more experience or schooling within occupations, or requirements for certain characteristics unobservable to an outsider, but observable by the company.

Is there any reason to suppose that foreign companies desire higher quality workers than U.S.-owned firms do? It has been suggested that foreign firms pay more simply because they are larger on average than U.S. companies in the same industries and states. Our equations suggest that size alone does not account for the difference in wages in non manufacturing industries. Size can explain wage differentials only in manufacturing, but here the question is only transformed, not answered, because there is no clear explanation as to why large firms should, in general, pay more than small ones.

It could be that there are differences in technology between foreign-owned and domestically owned firms. After all, the foreign firm presumably operates against disadvantages such as inferior knowledge of local markets and tastes and inferior connections with local politicians and financial institutions. In order to overcome these drawbacks, the foreign firm must possess some firm-specific advantages, such as superior technology, that overcome the inherent advantages of local firms. If this technological superiority call for a more

skilled labor force, that might provide a reason for foreign-owned firms to demand higher quality workers.

Effects of foreign presence on wages.

What are the effects on local labor markets of the wage premia apparently offered by foreign-owned firms? One possibility, particularly if labor markets are segmented by industry and location, is that foreign firms have acquired the best workers from local firms or have acquired the local firms with the best workers in each labor market. In either case, the average quality of the labor force in the locally - owned firms would be lower, the larger the role of foreign firms. Overall, there would be no difference in the average wage related to the extent of foreign ownership, but only a concentration of high quality employees in foreign-owned establishments. Alternatively, if foreign firms have offered higher wages than locally - owned firms for the same workers, a larger presence of foreign employers may have had the effect of increasing wages in domestic firms because domestic firms had to raise their wages in order not to lose their best workers. We call this a spillover effect.

These two possibilities are tested using the following equation:

$$W_{jst} = \beta_1 pfor_{jst} + \beta_2 Union_{st} + \sum \theta_k DSize_{jst} + \sum \gamma_k Skill_{js} + \beta_3 Fem_{js} + I_j + S_s + \alpha_t + \varepsilon_{sjt} \quad (2)$$

Where $pfor_{jst}$ is the percent of employment within an industry and state that is foreign-owned. All other variables are defined as before. The dependent variable is the wage in U.S. owned establishment or all establishments. The equation relates the average wage in domestically-owned establishments or in all establishments in an industry and state to the share of foreign-owned firms in that industry and state. The average wage is in logs while the percent foreign is in arithmetic form, so that a ten percentage point difference in the foreign share is assumed to have

the same effect (in percentage terms) on the average wage in domestically - owned plants or in all plants, whether the difference is from 0 to 10 percent foreign or 90 to 100 per cent foreign. That is a reasonable assumption for domestic plant wages but probably a poor assumption for wages in all plants because in the former case the effect on the average is diluted by the small share of the foreign establishments while in the latter case it is not.

If the higher wages in foreign-owned establishments were the result of foreign-firm poaching of the best workers or the acquisition of establishments with the best workers, and involved no increase in the demand for labor, the coefficient for foreign share would be negative in the equations explaining wages in domestically owned establishments. If foreign firms' employment represented an increase in the demand for labor, and these firms paid higher wages to attract the best workers or to lower turnover, domestic firms may have had to raise wages to compete for these workers. In that case, the coefficient for foreign share would be positive in the equations explaining wages in domestically owned establishments.

In manufacturing industries, there is no evidence that a larger presence of foreign - owned firms as employers had any effect on aggregate or domestic plant wage levels in 1987, aside from any that might have been associated with the larger size of the foreign - owned establishments (Table 4a). Average wage levels are well explained by establishment size (+), education levels in the industry in the state (+), the per cent female in the industry in the state (-), and unionization in the state as a whole (+). In 1992, however, the story was different for overall wage levels: higher foreign shares of employment in an industry-state cell were associated with higher overall wage levels. There was no significant influence on wage levels in domestically - owned plants. The coefficients for the variables other than foreign ownership were similar in the

two years in all the equations, although those for establishment size, unionization, and per cent female were all somewhat smaller in 1992.

Outside of manufacturing, a larger foreign presence appears to have been a positive influence on overall wage levels in 1987 (Table 4b). The coefficients for foreign ownership in the equations for domestic plant wages are negative, but not statistically significant once all the control variables are included. As in the manufacturing regressions, a larger fraction of workers with less than 12 years of schooling is associated with lower wages. The percent female drops out as a significant variable but size of plant shows the usual positive relation to wage levels, as does the unionization in the state.

In 1992, in contrast, the relation of wages to foreign participation seems unequivocally positive in equations for overall wage levels. Foreign participation is also a positive and significant influence on wages in domestic operations, although it is significant only at the 10 per cent level once the equation includes the control variables. This is the closest we come to a finding that labor demand by foreign - owned firms spills over to higher wages in domestically-owned establishments, aside from effects via other variables associated with foreign ownership, such as establishment size.

Effects of changes in foreign presence on wage growth.

We further analyze the impact of the growth in employment in foreign - owned plants on domestic and overall US wages by regressing the change in wages within industries and states on the corresponding changes in three variables specific to the industry-state combinations: per cent of employment that is in foreign - owned plants, shipments or sales, and the average number of employees per establishment. We also control for changes in a state-specific variable, the extent

of unionization. In addition we control for the characteristics of the labor force in 1990: the percent female and the schooling of workers within industry and state. One does not expect large changes in the schooling and percent of the workforce that is female in a short period of time, from 1987 to 1992. These variables for 1990 control for differentials in wage growth of workers with different skill levels and changes in the male-female wage gap. The estimated equation is:

$$\Delta W_{js} = \beta_1 \Delta pfor_{js} + \beta_2 \Delta Union_{st} + \sum \theta_k D\Delta Size_{js} + \sum \gamma_k Skill_{js} + \beta_3 Fem_{js} + \beta_4 Ship_{js} + \Delta \varepsilon_{sj} \quad (3)$$

Variables with a Δ symbol represent changes from 1987 to 1992. All variables are defined as before except for $\Delta Ship_{js}$ defined as the change in shipments or sales within an industry and state.

In manufacturing industries, the changes in wages in all U.S. establishments, to the extent that they are explained at all, are explained by the growth of shipments within the industry and state, and by the composition of the labor force (Table 5a). High education levels were associated with increases in wages, as were the lowest education levels and also the percent female. The positive influence of the highest education levels presumably reflects the widening of skill differentials, except, apparently, at the lowest skill levels. The positive coefficient for percent female reflects a decline in the sex differentials that had favored males in manufacturing industries.

Wages in domestically - owned establishments responded in a similar way, with two exceptions. One was that higher growth in the average size of establishments had a negative effect on wage growth, despite the positive relation between plant size and wage levels in the cross section. The other is that there is a hint of a negative association between wage growth in domestic plants and growth in foreign ownership, as would be expected if foreign establishments

hired away the best workers. However, the negative coefficient is not statistically significant when the control variables are included.

In non-manufacturing industries, the growth in wages is better explained by our controls and there is more evidence of an effect of growth in foreign ownership (Table 5b). As in manufacturing industries, the growth of shipments is a positive influence on wage growth, and changes in wage differentials favored the highest and lowest education levels. The per cent female had no influence, but it had not been a significant influence in the non-manufacturing cross sections either. Larger increases in average establishment size were negatively related to wage growth despite the strong positive relation between establishment size and wage levels in the cross-sections.

The major difference from manufacturing was that growth in wages in all U.S. establishments was positively related to increases in foreign ownership, once control variables were included in the equations. However, there is no trace here of spillovers to domestic establishment wage growth: any effect of foreign ownership growth on wages in domestically - owned establishments. All the wage gains appear to take place within the foreign - owned establishments themselves or those changing from domestic to foreign ownership.

Conclusions

Foreign - owned establishments in the United States pay higher wages than domestically - owned establishments as a whole, by almost 30 per cent. Most of the difference is related to the industry composition of the foreign - owned establishments, but there are also differences within two-digit industries within states. The margin is larger outside the manufacturing sector than within it, 9-10 per cent as compared with 5-7 per cent. Within manufacturing, the

difference is all associated with the larger size of foreign - owned establishments, the characteristics of the states they are located in, and of the labor force in those industries and states. Outside manufacturing, although most of the same factors affect wages, there remains a large differential in favor of foreign - owned establishments, 7-8 per cent.

Within manufacturing, average wages, given state, industry, and establishment characteristics, were no higher in states and industries with more foreign ownership in 1987, but they were significantly higher in 1992. The impact of foreign ownership shares on wages in domestic establishments in the same industries and states was not statistically significant. Outside of manufacturing, however, there were significant positive relations of wage levels to foreign ownership levels in both years, extending in 1992 to a marginally significant positive relation of foreign ownership to domestic establishment wages.

The contrast between manufacturing and other industries is again apparent in the analysis of changes in wages. Only outside of manufacturing did increases in foreign ownership lead to larger increases in wages, and these effects were confined within the foreign - owned establishments.

From the states or localities perspectives, it is beneficial to workers to have more foreign firms because they pay higher wages and raise average wages. Our study suggests that outside of manufacturing a larger presence of foreign firms have some spillover effect, causing domestic firms to pay higher wages. Some of the effect of foreign ownership may be concealed by our use of controls for establishment size and labor force characteristics. For example, if foreign ownership increases average establishment size, since foreign - owned establishments are so much larger, on average, than domestically - owned ones, we will have attributed that effect to establishment size rather than to foreign ownership.

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Table 1a: Employment, Payroll, and Number of Foreign-Owned and Us-Owned Establishments, 1987 and 1992[a]

	1987	1992
All US Establishments		
Payroll ($million)	1,597,297	2,006,870
Employees (000)	80,660	81,328
No. of Establishments	5,753,169	5,804,899
US Affiliates of Foreign Firms		
Payroll ($million)	81,059	155,003
Employees (000)	3,229	4,943
No. of Establishments	66,864	102,939
Payroll per Employee ($)	25,105	31,358
Employees per Establishment	48.3	48.0
US-Owned Establishments		
Payroll ($million)	1,516,238	1,851,867
Employees (000)	77,431	76,385
No. of Establishments	5,686,305	5,701,960
Payroll per Employee	19,582	24,244
Employees per Establishment	13.6	13.4

Source: US Dept. of Commerce (1992) and (1997), Table 1.1

[a] Excluding Private education and Noncommercial establishments

TABLE 1b: Distribution of Employment and Average Payroll per Employee, by Industry Group

Foreign-Owned and US-Owned Establishments in the US 1992

	Share of Employment (%)		Average Payroll
	US Owned	Foreign-Owned	Per Employee
Industry Group	1992	1992	1992
Agricultural Services, Forestry, Fishing	0.74	0.12	16,918
Mining	0.65	2.44	37,938
Construction	5.82	1.89	25,357
Manufacturing	20.32	40.55	30,699
Transportation and Public Utilities	6.6	4.69	31,704
Wholesale Trade	7.05	10.83	30,803
Retail Trade	23.15	17.26	12,918
Finance, Insurance, & Real Estate	7.83	8.11	32,561
Services	23.83	14.62	23,768
Private Education and Noncommercial	4.15	0.02	15,976
All Industries*	100	100	24,336

*-Percentages add up to slightly more than 100 because one sub-industry appears in two industry groups.
Source: US Dept. of Commerce, 1992.

TABLE 2: Summary Statistics of Industries by ownership.

	1987		1992	
	Domestic	Foreign	Domestic	Foreign
Wage per Worker[1]	$18,952	$23,220	$23,806	$27,456
Wage:(foreign/ domestic)		1.23		1.15
Employees per Establishment	27	102	27	93
Less than 50 Employees (%)	84.9%	43.6%	84.3%	50.7%
50 to 99 Employees (%)	9.8%	18.2%	11.3%	15.5%
100 to 149 Employees (%)	3.8%	16.4%	3.0%	12.0%
150 or more Employees (%)	1.6%	21.7%	1.5%	21.8%
Percent of Employment that is Foreign		3.73%		5.67%
Percent Foreign Equal to 0		49.1%		38.8%
Greater than 0 and less than or equal to 5		28.9%		27.9%
Greater than 5 and less than or equal to 10		11.0%		15.5%
Greater than 10		11.0%		17.9%
Percent of Employment that is Foreign				
Mining		12.3%		17.6%
Construction		0.6%		1.8%
Manufacturing		6.6%		9.7%
Food and Kindred Products		7.1%		9.4%
Tobacco Products		0.0%		0.0%
Textile Mill Products		3.4%		5.3%
Apparel and Other Textile Products		0.5%		2.5%
Lumber and Wood Products		1.1%		1.3%
Furniture and Fixtures		1.2%		2.3%
Paper and Allied Products		6.6%		5.4%
Printing and Publishing		2.7%		4.9%
Chemicals and Allied Products		18.8%		24.4%
Petroleum and Coal Products		9.5%		12.9%
Rubber and Misc. Plastic Products		7.1%		14.1%
Leather and Leather Products		1.0%		0.0%
Stone, Clay, and Glass Products		11.2%		16.8%
Primary Metal Industries		13.9%		17.8%
Fabricated Metal Products		3.9%		6.3%
Industrial Machinery and Equipment		5.7%		9.8%
Electronic and Other Electric Equipment		10.1%		15.0%
Transportation Equipment		3.9%		7.8%
Instruments and Related Products		7.4%		12.2%
Misc. Manufacturing Industries		4.6%		6.2%
Transportation and Public Utilities		1.5%		3.3%
Wholesale Trade		3.9%		6.1%
Retail Trade		2.5%		3.1%
Services		0.9%		1.8%

Note: 1. Earnings are different from those in Table 1a because they are averages for establishments and are not weighted by employment. Our sample does not include FIRE.

TABLE 3a: Wages of Foreign vs. Domestic Establishments-Manufacturing

Dependent Variable: Logarithm of wage per worker within industry and state.

Independent Variables	1987			1992		
Foreign Dummy	0.053 **	-0.030 **	-0.017	0.072 **	-0.006	-0.002
	(.010)	(.014)	(.012)	(.008)	(.012)	(.011)
Log % Union		0.136 **	0.096 **		0.149 **	0.115 **
in the State		(.034)	(.034)		(.024)	(.023)
Employees per						
Establishment						
50 to 99		0.073 **	0.072 **		0.076 **	0.075 **
		(.015)	(.013)		(.012)	(.011)
100 to 149		0.152 **	0.136 **		0.104 **	0.100 **
		(.018)	(.017)		(.016)	(.014)
150 or more		0.173 **	0.147 **		0.160 **	0.151 **
		(.021)	(.019)		(.017)	(.016)
Schooling (%)						
in industry-state						
0 to 11 yrs			-0.273 **			-0.337 **
			(.095)			(.079)
13 to 15 yrs			0.209 **			0.243 **
			(.086)			(.071)
16 yrs			0.219 *			0.325 **
			(.120)			(.098)
17 or more yrs			0.439 **			0.224
			(.206)			(.173)
% female			-0.491 **			-0.401 **
			(.068)			(.058)
State Dummies	yes	yes	Yes	yes	yes	yes
Industry Dummies	yes	yes	Yes	yes	yes	yes
Adj-R square	0.69	0.72	0.76	0.72	0.74	0.78
observations	896	896	836	1129	1129	1055

Note: Standard Errors are in parenthesis. ** 5% significance level * 10% significance level.
All variables except for percent union, schooling variables and percent female are included separately for foreign and domestic industries. Regressions with characteristics of workforce have fewer observations because some industry-state combinations have fewer than 10 observations in the 1990 Census.

TABLE 3b: Wages of Foreign vs. Domestic Establishments-Non Manufacturing

Dependent Variable: Logarithm of wage per worker within industry and state.

Independent Variables	1987			1992		
Foreign Dummy	0.091 **	0.092 **	0.094 **	0.097 **	0.086 **	0.084 **
	(.013)	(.014)	(.013)	(.011)	(.011)	(.011)
Log % Union		0.217 **	0.212 **		0.148 **	0.143 **
in the State		(.033)	(.032)		(.030)	(.029)
Employees per						
Establishment						
50 to 99		-0.016	-0.022		0.050 **	0.051 **
		(.026)	(.025)		(.021)	(.021)
100 to 149		-0.036	-0.040		0.040	0.032
		(.040)	(.038)		(.044)	(.043)
150 or more		0.159 **	0.166 **		0.146 **	0.146 **
		(.071)	(.067)		(.048)	(.047)
Schooling (%)						
in industry-state						
0 to 11 yrs			-0.080			-0.149
			(.109)			(.113)
13 to 15 yrs			-0.079			-0.016
			(.090)			(.096)
16 yrs			0.119			0.218 *
			(.115)			(.115)
17 or more yrs			0.128			0.203
			(.156)			(.167)
% female			0.044			-0.197 **
			(.082)			(.082)
State Dummies	yes	yes	yes	Yes	yes	yes
Industry Dummies	yes	yes	yes	Yes	yes	yes
Adj-R square	0.85	0.85	0.87	0.83	0.83	0.84
Observations	1531	1531	1416	2088	2088	1927

Note: Standard Errors are in parenthesis. ** 5% significance level * 10% significance level.
All variables except for percent union, schooling variables and percent female are included separately for foreign and domestic industries. Regressions with characteristics of workforce have fewer observations because some industry-state combinations have fewer than 10 observations in the 1990 Census.

TABLE 4a: Wage Effects of Percent Foreign Employment in Industry-State Manufacturing

Dependent Variable: Logarithm of wage per worker within industry and state.

Independent Variables	1987 Domestic		1987 Domestic		1987 Domestic		1987 US		1987 US		1987 US	
Percent Employment	0.008		-0.039		-0.095		0.114		0.041		-0.014	
that is Foreign	(.097)		(.089)		(.080)		(.078)		(.072)		(.064)	
Log % Union			0.162	**	0.125	**			0.154	**	0.098	**
in the state			(.039)		(.036)				(.030)		(.026)	
Employees per Establishment												
50 to 99			0.086	**	0.087	**			0.072	**	0.073	**
			(.018)		(.016)				(.015)		(.013)	
100 to 149			0.197	**	0.179	**			0.166	**	0.148	**
			(.024)		(.021)				(.021)		(.018)	
150 or more			0.258	**	0.230	**			0.256	**	0.229	**
			(.033)		(.028)				(.025)		(.022)	
Schooling (%) in industry-state												
0 to 11 yrs					-0.284	**					-0.268	**
					(.095)						(.083)	
13 to 15 yrs					0.217	**					0.130	*
					(.085)						(.074)	
16 yrs					0.118						0.204	**
					(.120)						(.103)	
17 or more yrs					0.744	**					0.697	**
					(.216)						(.188)	
% female					-0.472	**					-0.482	**
					(.071)						(.062)	
State Dummies	yes		yes		yes		yes		yes		yes	
Industry Dummies	yes		yes		yes		yes		yes		yes	
Adj-R square	0.73		0.77		0.83		0.75		0.79		0.85	
Observations	560		560		503		675		675		615	

Note: Standard Errors are in parenthesis. ** 5% significance level * 10% significance level.
Regressions with characteristics of workforce have fewer observations because some industry-state combinations have fewer than 10 observations in the 1990 Census.

TABLE 4a: Wage Effects of Percent Foreign Employment in Industry-State (continued)
Manufacturing

Dependent Variable: Logarithm of wage per worker within industry and state.

Independent Variables	1992 Domestic		1992 Domestic		1992 Domestic		1992 US		1992 US		1992 US	
Percent Employment	0.066		0.086		0.064		0.179	**	0.121	**	0.134	**
that is Foreign	(.061)		(.058)		(.053)		(.055)		(.053)		(.051)	
Log % Union			0.137	**	0.113	**			0.128	**	0.085	**
in the state			(.025)		(.028)				(.026)		(.024)	
Employees per												
Establishment												
50 to 99			0.080	**	0.080	**			0.068	**	0.063	**
			(.015)		(.013)				(.014)		(.014)	
100 to 149			0.123	**	0.112	**			0.117	**	0.107	**
			(.022)		(.020)				(.020)		(.019)	
150 or more			0.242	**	0.210	**			0.220	**	0.194	**
			(.029)		(.026)				(.026)		(.024)	
Schooling (%)												
in industry-state												
0 to 11 yrs					-0.324	**					-0.327	**
					(.082)						(.078)	
13 to 15 yrs					0.175	**					0.196	**
					(.075)						(.073)	
16 yrs					0.367	**					0.284	**
					(.102)						(.099)	
17 or more yrs					0.425	**					0.530	**
					(.188)						(.184)	
% female					-0.363	**					-0.384	**
					(.062)						(.059)	
State Dummies	yes		yes		yes		yes		yes		yes	
Industry Dummies	yes		yes		yes		yes		yes		yes	
Adj-R square	0.77		0.80		0.85		0.78		0.80		0.85	
Observations	656		656		596		712		712		648	

Note: Standard Errors are in parenthesis. ** 5% significance level * 10% significance level.
Regressions with characteristics of workforce have fewer observations because some industry-state combinations have fewer than 10 observations in the 1990 Census.

TABLE 4b: Wage Effects of Percent Foreign Employment in Industry-State
Non Manufacturing

Dependent Variable: Logarithm of wage per worker within industry and state.

Independent Variables	1987 Domestic		1987 Domestic		1987 Domestic		1987 US		1987 US		1987 US	
Percent Employment	-0.256	*	-0.281	**	-0.144		0.129		0.090		0.187	**
that is Foreign	(.139)		(.141)		(.124)		(.106)		(.106)		(.095)	
Log % Union			0.235	**	0.223	**			0.213	**	0.200	**
in the state			(.034)		(.028)				(.028)		(.024)	
Employees per												
Establishment												
50 to 99			0.071		0.086	*			0.067	*	0.073	**
			(.005)		(.046)				(.036)		(.031)	
100 to 149			0.198	**	0.165	**			0.209	**	0.195	**
			(.083)		(.076)				(.064)		(.058)	
150 or more[1]									0.183	**	0.202	**
									(.086)		(.072)	
Schooling (%)												
in industry-state												
0 to 11 yrs					-0.167	**					-0.173	**
					(.081)						(.073)	
13 to 15 yrs					-0.017						-0.004	
					(.066)						(.061)	
16 yrs					0.098						0.124	
					(.086)						(.079)	
17 or more yrs					0.135						0.162	
					(.114)						(.108)	
% female					-0.061						-0.073	
					(.062)						(.055)	
State Dummies	yes		yes		yes		yes		yes		yes	
Industry Dummies	yes		yes		yes		yes		yes		yes	
Adj-R square	0.89		0.89		0.93		0.91		0.91		0.93	
Observations	1123		1123		1019		1360		1360		1252	

Note: 1. In all industry-state combinations average size for non-manufacturing domestic establishments is below 150 in 1987. 2. Standard Errors are in parenthesis. ** 5% significance level * 10% significance level. Regressions with characteristics of workforce have fewer observations because some industry-state combinations have fewer than 10 observations in the 1990 Census.

TABLE 4b: Wage Effects of Percent Foreign Employment in Industry-State (continued)
Non Manufacturing

Dependent Variable: Logarithm of wage per worker within industry and state.

Independent Variables	1992 Domestic		1992 Domestic		1992 Domestic		1992 US		1992 US		1992 US	
Percent Employment	0.211	*	0.216	**	0.194	*	0.328	**	0.306	**	0.448	**
that is Foreign	(.108)		(.108)		(.100)		(.077)		(.077)		(.074)	
Log % Union			0.162	**	0.158	**			0.158	**	0.149	**
in the state			(.027)		(.023)				(.025)		(.021)	
Employees per												
Establishment												
50 to 99			0.114	**	0.108	**			0.061	*	0.060	**
			(.037)		(.032)				(.033)		(.029)	
100 to 149			0.158	**	0.180	**			0.175	**	0.166	**
			(.078)		(.069)				(.073)		(.063)	
150 or more			0.323	**	0.292	**			0.284	**	0.260	**
			(.107)		(.092)				(.082)		(.069)	
Schooling (%)												
in industry-state												
0 to 11 yrs					-0.121						-0.093	
					(.081)						(.070)	
13 to 15 yrs					0.057						0.054	
					(.067)						(.060)	
16 yrs					0.288	**					0.282	**
					(.086)						(.076)	
17 or more yrs					0.355	**					0.335	**
					(.115)						(.104)	
% female					-0.055						-0.090	*
					(.061)						(.053)	
State Dummies	yes		yes		yes		yes		yes		yes	
Industry Dummies	yes		yes		yes		yes		yes		yes	
Adj-R square	0.90		0.91		0.93		0.91		0.92		0.94	
Observations	1216		1216		1113		1349		1349		1244	

Note: Standard Errors are in parenthesis. ** 5% significance level * 10% significance level.
Regressions with characteristics of workforce have fewer observations because some industry-state combinations have fewer than 10 observations in the 1990 Census.

Table 5a: Dependent Variable: Change in Log Wage per Worker in Manufacturing

Independent Variables	1987-92 Domestic		1987-92 Domestic		1987-92 Domestic		1987-92 US		1987-92 US		1987-92 US	
Change in Percent of	-0.072		-0.129	*	-0.075		0.002		-0.016		0.004	
Empl. that is Foreign	(.064)		(.068)		(.056)		(.063)		(.063)		(.052)	
Change in			0.039	**	0.055	**			0.038	**	0.053	**
Log of Shipments			(.016)		(.014)				(.016)		(.014)	
Change in Log %			0.016		0.012				0.017		0.014	
Union in the State			(.014)		(.012)				(.014)		(.012)	
Change in Number of Employees												
Less than			0.012		-0.003				0.011		-0.0061	
or equal to -10			(.010)		(.009)				(.010)		(.009)	
Greater than -10			0.013		0.009				0.020	*	0.016	*
and less than -5			(.011)		(.009)				(.011)		(.009)	
Greater than 5			-0.016		0.007				-0.015		-0.004	
and less than 10			(.015)		(.013)				(.013)		(.011)	
Greater than			-0.036	**	-0.028	**			-0.023		-0.015	
or equal to 10			(.016)		(.014)				(.016)		(.013)	
Schooling (%) in industry-state												
0 to 11 yrs					0.103	**					0.107	**
					(.042)						(.041)	
13 to 15 yrs					0.022						0.026	
					(.041)						(.040)	
16 yrs					0.200	**					0.198	**
					(.061)						(.060)	
17 or more yrs					0.373	**					0.361	**
					(.111)						(.109)	
% female					0.071	**					0.079	**
					(.023)						(.022)	
Adj-R squared	0.00		0.22		0.13		0.00		0.01		0.14	
Observations	485		485		447		485		485		447	

Note: Standard Errors are in parenthesis. ** 5% significance level * 10% significance level.
Regressions with characteristics of workforce have fewer observations because some industry-state combinations have fewer than 10 observations in the 1990 Census.

Table 5b: Dependent Variable: Change in Log Wage per Worker in Non-Manufacturing

Independent Variables	1987-92 Domestic		1987-92 Domestic		1987-92 Domestic		1987-92 US		1987-92 US		1987-92 US	
Change in Percent of	-0.196		-0.099		-0.008		0.092		0.410	**	0.420	**
Empl. that is Foreign	(.156)		(.123)		(.106)		(.150)		(.109)		(.087)	
Change in			0.166	**	0.118	**			0.181	**	0.135	**
Log of Shipments			(.015)		(.015)				(.013)		(.012)	
Change in Log %			0.015		-0.006				0.019		-0.002	
Union in the State			(.013)		(.011)				(.012)		(.009)	
Change in Number												
of Employees												
Less than			0.107	**	0.053				0.140	**	0.069	*
or equal to -10			(.041)		(.040)				(.042)		(.041)	
Greater than -10			0.076	**	0.000				0.086	**	-0.023	
and less than -5			(.027)		(.025)				(.030)		(.027)	
Greater than 5			-0.016		-0.014				-0.013		-0.008	
and less than 10			(.037)		(.032)				(.031)		(.025)	
Greater than			-0.150	**	-0.100	**			-0.149	**	-0.105	**
or equal to 10			(.037)		(.035)				(.032)		(.028)	
Schooling (%)												
in industry-state												
0 to 11 yrs					0.133	**					0.104	**
					(.055)						(.046)	
13 to 15 yrs					0.048						0.034	
					(.043)						(.036)	
16 yrs					0.206	**					0.190	**
					(.039)						(.033)	
17 or more yrs					0.155	**					0.142	**
					(.033)						(.028)	
% female					0.022						0.017	
					(.015)						(.012)	
Adj-R squared	0.00		0.31		0.19		0.00		0.20		0.28	
Observations	974		807		763		974		807		763	

Note: Standard Errors are in parenthesis. ** 5% significance level * 10% significance level.
Regressions with characteristics of workforce have fewer observations because some industry-state combinations have fewer than 10 observations in the 1990 Census.