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Is There Really an Export Wage Premium?
A Case Study of Los Angeles Using Matched Employee-Employer Data

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Abstract

This paper investigates the effects of exporting on wages, specifically the claim that workers are paid higher wages if they are employed in manufacturing plants that export vis-à-vis plants that do not export. Past research on US plants has supported the existence of an export wage premium, though European studies dispute those results calling for more care in econometric investigation to control for worker characteristics. We answer this call developing a matched employee-employer data set linking worker characteristics from the one-in-six long form of the Decennial Household Census to manufacturing establishment data from the Longitudinal Research Database. Analysis focuses on 1990 and 2000 data for the Los Angeles Consolidated Metropolitan Statistical Area. Our results confirm that the average wage in manufacturing plants that export is greater than that in manufacturing plants that do not export. However, after controlling for worker characteristics such as age, gender, education, race and nationality, the export wage premium vanishes. That is, when comparing workers with similar characteristics, there is no wage difference between exporting and non-exporting plants. These results concord with recent findings from Europe and elsewhere.

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1. Introduction

The debate on the extent to which international exports matter to domestic or regional economies is long-standing in economics (North 1955; Tiebout 1956). In the mid-1990s, this debate was rejuvenated by a series of empirical studies claiming that exporting establishments outperformed non-exporters (Bernard and Jensen 1999). In addition to being more productive, it was argued that exporters paid higher wages than their non-exporting counterparts. These findings were based on studies using newly available plant-level data.

In the U.S., Bernard and Jensen (1995) were among the first to identify an export-wage premium using the Census Bureau's Longitudinal Research Database. Looking at microeconomic data over the 1976 to 1987 period, they argued that on average wages were some 9 percent higher in exporting plants than in their non-exporting counterparts. Similar evidence of an export wage premium also has been found for a number of European economies (Bernard and Wagner 1997; Greenaway and Kneller 2004), for Taiwan (Aw and Batra 1999), Korea (Hahn 2004), Sweden (Hansson and Lundin 2003), Columbia (Isgut 2001), and for countries in sub-Saharan Africa (Van Biesebroeck 2005).

Recent empirical work, however, is also emerging to challenge the claim of an export wage premium. This challenge asserts that previous studies focusing on plant-level data fail to control for individual worker characteristics. Thus, it is unclear whether any difference in wages between exporting and non-exporting plants results from export status or from the fact that exporters employ different types of workers than non-exporters. Resolution of this disagreement is straightforward in theory, simply match workers with similar characteristics across manufacturing plants that export and those that do not. Some economists recognised this need for more careful empirical analysis from the start (Lawrence 1995; Tybout 2003). In practice, however, developing matched employee-employer data is a non-trivial task.

Schank et al. (2004) offer one of the first studies using such a matched data set to investigate the existence of the export wage premium. Using a detailed data set linking manufacturing firms and workers across Germany for the period 1995-1997, they show that after controlling for individual worker characteristics, the export wage premium vanishes. Heyman et al. (2004) reach the same conclusion regarding the existence of a foreign ownership wage premium for Sweden.

Unfortunately, the lack of matched employee-employer data sets has so far stymied similar research efforts in the U.S. The only existing large-scale data set combining individual worker information and plant data in the U.S. is the Worker-Establishment Characteristics Database (WECD) developed by Troske (1998). To the best of our knowledge, use of the WECD has been limited to examining the relationship between productivity and wage differentials or wages and firm size (e.g. Hellerstein et al. 1999; Troske 1999); it has not been applied to investigate the export wage premium.

The Census Bureau's ongoing Longitudinal Employer-Household Dynamics (LEHD) program will certainly help fill the void. However, given the sheer complexity and magnitude of this project, it will be some time before a comprehensive and fully operational data set is completed (Abowd et al. 2004), not to mention readily accessible to researchers.

The goal of this paper is to contribute to the growing literature examining the relationship between wages and exports. In so doing, we also hope to add a regional dimension to the national level evidence already available, by constructing a unique data set using a geographic information system (GIS) to match individual workers to manufacturing establishments for the greater Los Angeles region. We hope that our research demonstrates the value of such data sets for understanding global-local processes. In the debate about how major urban centers are becoming increasingly immersed in the global economy, the issue of the distributional effects of international trade on local wages is often side-stepped or treated in an ad hoc fashion using proxies for trade that are derived from surveys with information targeting a limited number of industries at best. Integrating real, not imputed, export data from the Longitudinal Research Database into our data set allows us to get a better handle on these issues.

The rest of the paper is organized as follows. In the next section, we document data construction efforts. Section 3 outlines the regression models used for our analyses and presents the main results. Section 4 briefly concludes and discusses some future avenues of research in this field.

2. Data Development

There are no variables in the products of the Census Bureau that directly link workers to individual business units. These links have to be produced. We exploit information on the industry and census tract of work, provided in worker records, to build an association between a worker and a unique manufacturing plant. Our matched employee-employer data set is constructed from three different sources. The first is the Census Bureau’s

Longitudinal Research Database (LRD), that provides an incredibly rich set of information on manufacturing establishments and is the only source of data on real, as opposed to estimated, US exports at the sub-national level (see McGuckin and Pascoe 1988). The second is the Census Bureau's official Business Register, also known as the Standard Statistical Establishment List (SSEL), that contains street level addresses for each business establishment. The third is the one-in-six long form of the Decennial Household Census, that provides detailed information on individual worker characteristics such as age, gender, education, race, nationality and income, as well as sector and place of work, if applicable.

Matching workers and establishments across these data sets proceeded in a series of steps. The first stage involved selecting a sub-sample of manufacturing plants and worker records from raw data files for our region of interest, the Los Angeles Consolidated Metropolitan Statistical Area (CMSA), comprising the counties of Los Angeles, Orange, Riverside, San Bernardino and Ventura. This matching process was performed for two years, 1990 and 2000. For 1990, the long-form records of the Decennial Household Census of that year were matched to plant-level data from the 1987 LRD. For 2000, the long form records of the Census were matched to the 1997 LRD. The 1997 LRD contained records for 29,216 manufacturing establishments in the study region, while the 2000 Household Census contained detailed records for 128,017 workers employed in the manufacturing sector of greater Los Angeles.[1] The actual number of manufacturing workers in the Los Angeles CMSA was approximately one million in 2000. Because of the long-form sampling procedure, we have detailed information on

[1] We simplify our discussion here by limiting our comments to 1997 LRD and 2000 Census data. Details on the 1987-1990 match are available from the authors upon request.

approximately one-in-six of those workers. We also have weights for workers with different characteristics that allow us to inflate our observations so that they approximate the region's manufacturing workforce in total. In our estimation, we employ both weighted and unweighted worker data.

The LRD does not contain information on the geographical location of plants below the county or metropolitan scale. The Census Bureau's SSEL provides detailed address data to the street level. In a second stage of analysis, we exploited a unique manufacturing plant identification number, consistent across the SSEL and the LRD, to generate a detailed address record for each manufacturing establishment.

Once the LRD and SSEL were merged, street addresses for each establishment were geocoded and converted into a census tract location using a GIS.[2] Initial batch-match geocoding resulted in 23,293 (79.7%) good establishment matches and 5,923 (20.3%) non-matches. In terms of employment, the good matches represented roughly 82% of total manufacturing jobs in the greater Los Angeles area. Most of the unmatched plants were the result of errors in the establishment address data contained in the SSEL, either in the form of incomplete or inconsistent address information, non-existent or missing zip codes and the use of P.O. boxes instead of the physical location of the establishment itself.[3] To improve the geography of our sample, we manually corrected and geocoded address data for manufacturing establishments using a series of regional

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[2] Geocoding is the process of converting tabular data into points that can be overlayed on maps. All of the geocoding for this research was carried out using ArcView GIS 3.2 for Unix. The standard "U.S. Streets with Zones" was adopted as our geocoding style, with street address names and numbers used as the primary address field and 5-digit zip codes as the secondary zone field. Geocoding preferences were set at the usual 80% for spelling sensitivity and 60% for the minimum match score.

[3] See Rigby and Breau (2005) for more information on the quality of SSEL data and problems encountered while matching addresses. Generally speaking, the quality of the address data contained in the SSEL improves over time.

business directories such that in the end, some 24,046 manufacturing establishments were successfully geocoded, accounting for more than 90% of total regional manufacturing employment. Census tract boundaries change over time. We employed tract boundaries for 2000 for our matching process over both years studied.

After 1963 the Census Bureau exempted small, single-plant firms from completing the Census of Manufactures. These small firms were designated as Administrative Record (AR) cases and data for these firms are imputed from industry averages and other information from the Internal Revenue Service and the Social Security Administration. The AR cases typically represent less than 2% of industry output and so have little impact on aggregate industry data. However, to ensure that the AR cases do not bias our results, 9,075 AR plants were dropped from our sample. The relatively small size of AR plants implies that our final sample is somewhat biased toward larger, multi-establishment firms. Another 650 or so plant records were eliminated because of industry coding errors (i.e. their SIC codes represented non-manufacturing industries) and/or because of missing wage and value added data. Our final sample of geocoded manufacturing plants from the LRD numbers 14,284 for 1997.

To merge the manufacturing establishment data with individual worker characteristics taken from the Decennial Household Census required standardizing the industry definitions in each data set. Industries in the LRD are classified according to 1987-based 4-digit Standard Industrial Classification (SIC) codes, whereas industries in the Household Census are classified using a different scheme. In many cases the Census categories are roughly equivalent to 3-digit SIC codes so building a bridge between the classification schemes was relatively straightforward, especially for the 1987 LRD and the 1990 Census. Bridging the 1997 LRD and 2000 Census industry codes was more difficult because the latter is based on the 1997 NAICS classification. This matching took two steps. First, the LRD's 1987-based SIC codes were converted to 1997 NAICS codes using the Census Bureau's standard correspondence tables (http://www.census.gov /epcd/www/naicstab.htm). Second, the 1997 NAICS codes were converted to 2000 Census code equivalents yielding a total of 82 possible industry categories. Finally, an industry code crosswalk (http://www.census.gov/hhes/www/ioindex/indcswk2k.pdf) was also used to make the 1990 and 2000 Census codes consistent through time.

The matched industry codes and the geocoding of street addresses to census tracts allows us to link workers to manufacturing establishments by industry and census tract. These are the only two common variables in the LRD and the Decennial Household Census. To avoid the possibility of misallocating workers to establishments, we dropped all LRD observations where more than one manufacturing plant occupied an industry-census tract cell. This step reduced the number of plants in our sample to 5,310. Similarly, of the 128,017 person records from the census, we had to drop 17,842 observations because they were assigned to census tracts in places that were coded as "balance of county" (FIPS code 99999). Once the merge was completed, a further 171 observations were eliminated because the total number of worker records matched to a particular plant was greater than the actual level of employment reported by that establishment in the LRD.[4] In the end, our matched employee-employer data set contains information on 17,043 workers across 2,835 plants in 2000. We stress that our matching process allocates workers to a unique manufacturing establishment.

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[4] Such a problem may be the outcome of the timing mismatch between our two data sets (1997 – 2000), since establishments may have hired more workers during those three years.

Table 1 below presents summary statistics for our matched data sets. Overall, establishments in our samples account for approximately one third of manufacturing employment and shipments in the greater Los Angeles area (30.9% of total employment and 35.2% of shipments). On average, manufacturing plants in the matched data sets tend to be larger, export more, have higher productivity levels and pay higher wages than plants in the initial population. In terms of worker characteristics, the proportion of males, whites and the US-born in the matched sample tends to be higher than in the general population. Individuals in the matched samples also are slightly older, better educated, work longer hours and paid higher wages. T-tests confirm that the differences in sample means for most of these variables are statistically significant. This means that we must exercise some caution in terms of generalizing from this matched data set. Note that the bias of our matched data set echoes that of Troske (1998).

[Insert Table 1 about here]

A comparison of the data sets over time reveals other interesting trends. In terms of total employment, manufacturing establishments in the greater Los Angeles area are smaller in 2000 than in 1990. They are also more productive in real terms and, perhaps most interesting, much more export oriented than before. On average, the exports to shipments ratio more than doubles between 1990 and 2000. In terms of worker characteristics, there are notable increases in the percent of the foreign born and the non-white share of the manufacturing workforce in Los Angeles over the same period.

3. Regression Analyses and Results

The general question we want to study is whether or not workers in exporting plants are paid a wage premium compared to workers with similar characteristics employed in non-exporting plants. To investigate this relationship, we follow the econometric approach developed in Schank et al. (2004). Our starting point is a simple plant-level wage regression that replicates the standard specification adopted in the literature (see Bernard and Jensen 1995). This equation is estimated using OLS techniques over a cross-section of manufacturing plant observations. The dependent variable is the log of average wages in an individual plant and the independent variables measure a number of plant characteristics. No worker characteristics are included in this model. Typically, this relationship (Model (1)) is expressed as:

$$\ln \overline{w}_{it} = \beta_1 \ln TE_{it} + \beta_2 \ln KL_{it} + \delta_1 EXP_{it} + \delta_2 MU_{it} + \delta_3 IND_i + \varepsilon_{it} \qquad (1)$$

where $\overline{w}_{it}$ represents the average wage per worker in plant *i* at time *t*, TE_{it} is the total number of employees in plant *i* (i.e. plant size), KL_{it} is the capital to labor ratio (where capital is defined as the gross book value of machinery assets at end-of-year), EXP_{it} is a dummy variable capturing the export status of plant *i* (dummy = 1 if the plant does export), MU_{it} *is* a dummy variable indicating whether or not plant *i* is part of a multiplant firm and IND_i controls for time-invariant industry fixed effects. For each plant, average wages per worker are defined as $\overline{w}_{it} = WS_{it} / TE_{it}$, where WS_{it} represents total wages and salaries.

In a second model we retain the same specification shown in Model (1) but switch dependent variables, using the logarithm of mean annual wages and salaries for workers within each manufacturing plant. These values come from the Decennial Household

Census. In Model (1) all data derive from the LRD. The aim of Model (2) is to see if the results of Model (1) hold when we begin introducing data drawn from worker records into the plant-level analysis. Thus, the specification for Model (2) is

$$\ln \overline{w}_{jit} = \beta_1 \ln TE_{it} + \beta_2 \ln KL_{it} + \delta_1 EXP_{it} + \delta_2 MU_{it} + \delta_3 IND_i + \varepsilon_{it} \qquad (2)$$

In this model, for each plant, average wages per worker are defined as $\overline{w}_{jit} = \sum AWS_{jit} / N_{jit}$, where AWS_{jit} represents the annual wages and salaries of matched individual worker *j* in plant *i* at time *t*, and N_{jit} represents the total number of matched employee records.

All models were estimated using OLS. The Huber-White sandwich estimator was used to correct for possible heteroscedasticity. Table 2 reports the results on plant-level estimates of the export wage premium when worker characteristics are excluded. The results are broadly consistent with previous empirical studies (Bernard and Jensen 1995, 1999; Aw and Batra 1999; Greenaway and Kneller 2004). For both 1990 and 2000, the export wage premium shows up clearly in Model (1). Although the estimated coefficient on the export dummy decreases slightly in Model (2), where we switch the dependent variable, it remains statistically significant. On average, wages are between 5.0 and 11% higher in establishments that export compared to those that do not export. Wages of workers in larger plants also tend to be higher, in line with earlier results on the existence of a plant-size wage premium (see Brown and Medoff 1989; Davis and Haltiwanger 1991; Troske 1999). As expected, average wages rise as the ratio of capital to labor increases, and, in Model (1), plants that are part of multi-unit firms also pay higher wages than single plant firms. In Model (2), the coefficient on the multi-unit dummy is insignificant.

[Insert Table 2 about here]

These data confirm that exporting plants do pay higher average wages than non-exporting plants. However, analysis at the level of individual plants cannot explain whether there is a real export wage premium, that is whether exporting plants pay higher wages than non-exporting plants for workers of similar quality, or whether workers in exporting plants are different from those in non-exporting plants. We examine this issue in Model (3) extending the plant-level specifications above by adding a series of variables from the matched data set that control for worker characteristics (taken from the Decennial Household Census). To begin, we aggregate the individual worker characteristics to the level of the plant. In more formal terms, the average wage of workers *j* in plant *i* at time *t* is modeled as a function of plant characteristics and the average age of matched employees ($\overline{AGE}_{jit}$), the average level of education of the plant's workforce ($\overline{EDU}_{jit}$, measured as the average of years of educational attainment), as well as the percentage of workers *j* in plant *i* that are U.S. nationals ($PNAT_{jit}$), white ($PWHITE_{jit}$) and male ($PMALE_{jit}$). Model (3) is therefore:

$$\ln \overline{w}_{jit} = \beta_1 \ln TE_{it} + \beta_2 \ln KL_{it} + \delta_1 EXP_{it} + \delta_2 MU_{it} + \delta_3 IND_i + \alpha_1 \overline{AGE} jit + \alpha_2 \overline{EDU} jit + \alpha_3 PNATjit + \alpha_4 PWHITEjit + \alpha_5 PMALEjit + \varepsilon_{it} \qquad (3)$$

Table 3 shows the results for this regression equation for 1990 and 2000. The partial regression coefficients on average worker characteristics are consistent with theoretical expectations (Ashenfalter and Layard 1986; Dickens and Katz 1987). Thus, older workers and those with higher levels of education command higher wages than younger workers and those with lower levels of education. Average wages are also higher for male relative to female workers, for white versus non-white workers and for the native born. Average wages increase with size of plant and with the stock of capital employed per worker. Employment in a multi-unit firm had no significant influence on wages.

When these controls for individual worker characteristics are added to the plant-level specifications, the export wage premiums observed in Models (1) and (2) completely disappear. In other words, when controlling for workers in terms of age, education, nationality, race and gender, our results reveal that manufacturing establishments that export do not pay higher wages than non-exporting establishments: there is no export wage premium. This result is consistent with recent findings by Schank et al. (2004).

[Insert Table 3 about here]

Although Model (3) does control for worker characteristics, it is still estimated at the plant-level (i.e. wages and worker characteristics are plant-level averages or percentages). Thus, Model (3) does not capture heterogeneity among individual workers. In order to see if our results change when looking at individual workers and the export status of the manufacturing establishment in which they work, we specify a fourth model as

$$\ln w_{jit} = \beta_1 \ln TE_{it} + \beta_2 \ln KL_{it} + \delta_1 EXP_{it} + \delta_2 MU_{it} + \delta_3 IND_i + \alpha_1 AGEjit + \alpha_2 EDUjit + \gamma_1 NATjit + \gamma_2 WHITEjit + \gamma_3 MALEjit + \gamma_4 OCCUji + \varepsilon_{jit} \quad (4)$$

where w_{jit} represents the annual wages and salaries of individual *j* working in plant *i* at time *t*. In this specification, we control for the actual age and education of the employee, as well as for his or her nationality, race, gender and occupational classification (using the seven broad occupational categories defined in the 2000 Household Census). A fifth model adds a dummy controlling for whether or not the employee is a part-time worker (i.e. works less than 20 hours a week). The observations in Models (4) and (5) are individual workers rather than individual manufacturing plants. Note that Models (4) and (5) also adjust the standard errors of estimators to counter potential correlation of error terms across the workers of individual plants. Such correlation tends to decrease the standard errors of estimators (Moulton 1990). These models are estimated using unweighted worker observations. Note that weighting the worker data has no impact on the results from these specifications.

[Insert Table 4 about here]

Table 4 shows the coefficient estimates from Model (4) and Model (5) for 1990 and 2000. The regression coefficients on worker characteristics are consistent across all models. Relative wages increase with age and with education, they are higher for male versus female workers, for white versus non-white workers, for native-born versus foreign-born workers and for full-time versus part-time workers. Following our earlier results, there is a positive establishment-size wage effect, consistent with the findings of Brown and Medoff (1989) and Troske (1999). In addition, wages increase with the capital-labor ratio of the plant. The estimated coefficient on the multi-establishment dummy variable is not significant in 1990, but is significant and has the anticipated positive sign in 2000.

Most importantly, given the rationale for this paper, our claim that there is no export wage premium is even stronger when looking at results from individual level wage regressions. In both models across both years, the coefficient on the plant export dummy is insignificant.

4. Conclusions and Discussion

Using a unique matched employee-employer data set created for the Los Angeles CMSA, we have shown that once worker characteristics are taken into account, wages of individuals working in exporting establishments are not higher than those in non-exporting establishments. This contradicts earlier empirical results for the U.S. (e.g. Bernard and Jensen 1995, 1999) obtained using plant-level data only. While there is little question that exporting plants do pay higher average wages than non-exporting plants, the wage premium argument suggests that an individual worker would increase his/her wages by moving from a non-exporting manufacturing plant to an exporting plant, ceteris paribus. This claim is wrong. Exporting plants pay higher average wages because they employ workers with higher levels of education and skill than workers in non-exporting plants. After controlling for worker characteristics, there is no export wage premium, at least for manufacturing workers in the Los Angeles CMSA.

Our analysis was based on a matched sample of workers and manufacturing establishments that is not representative of the general population of manufacturing workers and establishments across our study region. However, the bias in our sample does not necessarily mean that our main conclusion, the non-existence of an export wage premium, would not hold in the broader population. We can think of no theoretical argument that would suggest putative differences between exporting and non-exporting plants should vary by plant-size or level of capitalization, for instance. This question could be explored in the future using the LEHD.

Another way to assess the generality of our results would be to employ the same matching process for other metropolitan areas of the US, for states and even for the nation as a whole. Results from this work would also shed light on regional variations in export dependence and on whether differences between exporting and non-exporting plants are stable over space. Of course, the employee-employer matching process that we outline might be used to examine a range of questions unrelated to trade (see Troske 1999). In very general terms, our analysis certainly points to the value of matched employee-employer data sets.

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Table 1: Summary Statistics for Initial and Matched Employee-Establishment Data, 2000 and 1990

	2000	
Plant Characteristics (from LRD)	Initial (14,284 obs.) Mean	Matched (2,835 obs.) Mean
Total employment	57	89
Total value of shipments	10560	18729
Value of export shipments	739	918
Export to shipments ratio	3.5	4.3
Value added per worker	70778	81824
Wages per worker	27551	30413
Worker Characteristics (from Household Census)	Initial (128,017 obs.)	Matched (17,614 obs.)
Average annual wages and salaries	36350	38646
Average age	39.9	41.0
Average education§	8.8	9.0
Percent U.S. nationals	46.1	49.2
Percent white	54.6	56.2
Percent male	66.1	68.3
Average hours worked per week	40.7	41.5
	1990	
Plant Characteristics (from LRD)	Initial (12,310 obs.) Mean	Matched (2,922 obs.) Mean
Total employment	82	123
Total value of shipments	9674	15244
Value of export shipments	512	855
Export to shipments ratio	1.5	1.9
Value added per worker	53508	56582
Wages per worker	21378	21884
Worker Characteristics (from Household Census)	Initial (157,798 obs.)	Matched (23,878 obs.)
Average annual wages and salaries	27909	29346
Average age	38	39
Average education§	9.9	10.1
Percent U.S. nationals	58.3	60.5
Percent white	63.6	65.2
Percent male	66.4	66.1
Average hours worked per week	42.1	42.1

Note: §Education is measured in terms of years of educational attainment (highest level).

Table 2: Plant-level Wage Regressions, 1990 and 2000

	1990		2000	
	Model (1)	Model (2)	Model (1)	Model (2)
Dependent variable	Ln wworker	Ln mean-aws	Ln wworker	Ln mean-aws
Independent variables				
Exporting plant dummy	0.098***	.053*	.108***	.069**
(yes = 1)	(5.77)	(1.68)	(6.28)	(2.32)
Log of establishment	.011*	.062***	.017**	.057***
size (lnTE)	(1.68)	(5.78)	(2.32)	(5.12)
Log of capital-labor	.168***	.084***	.145***	.064***
ratio (lnKL)	(19.71)	(6.60)	(16.66)	(4.58)
Multi-unit flag	.069***	.007	.039**	.031
(yes = 1)	(4.54)	(.23)	(2.11)	(.95)
Constant	2.230***	2.337***	2.615***	2.612***
	(44.46)	(47.48)	(33.15)	(25.73)
Weighted	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES
Number of observations	2922	2922	2835	2835
R^2	.39	.12	.35	.12

Notes: Robust t-statistics are reported in parentheses. * denotes significance at the 0.1 level, ** significance at the 0.05 level and *** significance at the 0.01 level.

Table 3: Plant-level Wage Regressions, with Average Worker Characteristics Added, 1990 and 2000

	1990	**2000**
Dependent variable	Model (3) Ln mean-aws	Model (3) Ln mean-aws
Independent Variables		
Exporting plant (yes = 1)	.021	.022
	(.78)	(.88)
Log of establishment size (lnTE)	.065***	.073***
	(7.11)	(7.46)
Log of capital to labor ratio (lnKL)	.039***	.035***
	(3.50)	(2.89)
Multi-unit flag (yes =1)	-.034	.017
	(1.28)	(.60)
Mean_age	.016***	.015***
	(8.88)	(7.80)
Mean_educ	.071***	.070***
	(10.52)	(12.64)
Pnative (%)	.232***	.150***
	(4.72)	(3.48)
Pwhite (%)	.152***	.104***
	(3.48)	(2.69)
Pmale (%)	.382***	.380***
	(9.04)	(8.75)
Constant	.926***	1.373***
	(5.16)	(11.40)
Weighted	YES	YES
Industry fixed effects	YES	YES
Number of obs.	2922	2835
R^2	.35	.33

Note: Robust t-statistics are reported in parentheses; * denotes significance at the 0.1 level, ** significance at the 0.05 level and *** significance at the 0.01 level.

Table 4: Individual Worker Regressions, 1990 and 2000

	Model Specifications			
	1990		**2000**	
	Model (4)	Model (5)	Model (4)	Model (5)
Dependent Variable	ln_aws	ln_aws	ln_aws	ln_aws
Independent Variables				
Exporting plant (yes = 1)	-.007	-.007	.004	.005
	(.48)	(.46)	(.24)	(.35)
Log of establishment size	.032***	.031***	.036***	.034***
(lnTE)	(7.26)	(6.99)	(6.97)	(6.63)
Log of capital to labor ratio	.044***	.043***	.013*	.014*
(lnKL)	(5.52)	(5.47)	(1.79)	(1.85)
Multi-unit flag (yes = 1)	-.003	-.005	.058***	.052***
	(.19)	(.29)	(3.32)	(3.09)
Age	.015***	.015***	.016***	.016***
	(31.40)	(33.26)	(26.49)	(27.31)
Educ	.049***	.048***	.056***	.056***
	(19.61)	(19.33)	(27.22)	(27.01)
Native (yes = 1)	.175***	.182***	.091***	.091***
	(12.29)	(12.73)	(6.62)	(6.81)
White (yes = 1)	.062***	.063***	.095***	.100***
	(5.99)	(6.15)	(8.33)	(8.84)
Male (yes = 1)	.319***	.316***	.341***	.332***
	(25.08)	(25.43)	(24.72)	(24.20)
Part-time (yes = 1)	---	-.872***	---	-1.210***
		(14.93)		(15.87)
Constant	.848***	1.012***	1.675***	1.687***
	(11.15)	(11.80)	(7.15)	(7.19)
Using STATA cluster routine	YES	YES	YES	YES
Weighted	NO	NO	NO	NO
Occupation fixed effects	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES
Number of obs.	23009	23009	17043	17043
R^2	.43	.45	.40	.43

Note: Robust t-statistics are reported in parentheses. STATA's cluster option was used to control for possible within-cluster correlation (see Moulton 1990); * denotes significance at the 0.1 level, ** significance at the 0.05 level and *** significance at the 0.01 level.