Economics Bulletin

Volume 31, Issue 3

Does international trade impact wage discrimination?

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Abstract

This paper uses microdata from the 2006 Current Population Survey (CPS) combined with data from the U.S. International Trade Commission (USITC) and the Bureau of Economic Analysis (BEA) to evaluate the degree to which international trade affects wage discrimination. The paper's findings contribute to the literature in two fronts. First, it shows that empirical analyses that fail to properly account for gender or race differences might produce unreliable results regarding the impact of international trade (and/or competition) on the race/gender wage gap. Second, this paper provides evidence that export intensiveness contributes to reduce the overall gender wage gap, but adversely affects the wages of Hispanic women when compared to white non-Hispanic women. In addition, import penetration is found to increase the wage gap of male Hispanics compared to male white non-Hispanics.

Citation: Jongsung Kim and Edinaldo Tebaldi, (2011) "Does international trade impact wage discrimination?", *Economics Bulletin*, Vol. 31 No. 3 pp. 2709-2724.
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Submitted: July 20, 2011. **Published:** September 26, 2011.

1. Introduction

After more than a generation since the Equal Pay Act of 1963 and the Civil Rights Act of 1964 together prohibited employment and wage discrimination, the gender and racial wage gaps are still wide. As of 2011 first quarter, the median weekly earnings for White women working at full-time jobs were 81.7 percent of the median wage for full-time White men ($699 vs. $856). Moreover, African American men working full time and year round earn 72.5 percent of the average earnings of comparable White men. For African American and White women, the ratio is 84.4 percent.[1] Even though these descriptive statistics cannot be taken as evidence of discrimination as individuals' characteristics play a fundamental role in determining productivity and wages, they indicate that wage differentials by gender and race are still quite sizable and possibly related to wage discrimination in the United States.

While discrimination is morally despicable, Becker (1957) argues that labor market discrimination is economically inefficient and firms practicing discrimination forego profit. Becker (1957)'s model predicts that competition mitigates employers' ability to practice wage and employment discrimination as an increase in competition makes it increasingly costly for employers to engage in discrimination. Becker's hypothesis has been considered by a large empirical literature that analyzes the role of increased competition on the racial and gender wage gaps in the United States (e.g. Black and Brainerd 2004; Agesa 1998; Heywood and Peoples 2006). However, competition comes from domestic and international sources. Increased international trade openness would expose an industry to greater competition, so that profit-maximizing firms operating in sectors facing international competition will be forced to cut costs, including costs associated with discrimination. Consequently, Becker's model implies that wage discrimination should decline in industries exposed to international trade. In addition, firms face significant competition in global markets and, therefore, those firms seeking to increase their participation in global markets would also be forced to reduce any costs related to discrimination to stay competitive globally. In sum, Becker's theory implies that international trade should ultimately reduce wage discrimination.

Disentangling the impacts of international trade on race/gender wage discrimination is, however, an empirical question. This paper analyzes the extent to which export intensiveness (defined by the ratio of exports to gross domestic product - GDP) and the degree of import penetration (defined as the ratio of imports to GDP) of an industry impact the race/gender wage gap in the United States. The empirical analysis is conducted using Heckman's two-step estimator and microdata from the Current Population Survey (CPS) combined with data from the U.S. International Trade Commission (USITC) and the Bureau of Economic Analysis (BEA).

2. Literature Review

A large literature focuses on testing Becker (1957)'s argument that competition mitigates employers' ability to practice wage and employment discrimination. There is evidence that increased competition following the deregulation of the U.S. banking industry in the mid-1970s

[1] Usual Weekly Earnings of Wage and Salary Workers News Release (April 19, 2011), Bureau of Labor Statistics. Available at http://www.bls.gov/news.release/wkyeng.htm.

narrowed the wage gap between men and women with male workers' wages having fallen more than female workers' wages (Black and Strahan 2001).

In an open global market, the evidence supporting Becker (1957)'s discrimination theory is mixed. Black and Brainerd (2004) use import penetration as an indicator of competition and find that between 1976 and 1993 increased foreign competition reduced the residual gender wage gap more rapidly in concentrated industries than in competitive industries. These results lend support to Becker's argument that product market competition narrows discriminatory wage gaps. Similar evidence was also found in the case of Mexico as product market competition linked to international trade reduced gender discrimination (Hazarika and Otero 2004).

Kongar (2006), focusing on U.S. manufacturing industries over the period from 1976 to 1993, examines the impact of increased import competition on gender wage and employment differentials and finds that the gender wage gap narrowed as the result of increases in the average wage of those women who remained employed in the industry while many women lost their jobs in low-wage production occupations due to rising imports. Kongar (2006)'s finding supports the hypothesis that an increased import competition is expected to decrease the relative demand for workers in low-wage production occupations and the relative demand for low-paid women workers, given the high female share in these occupations.

Oostendorp (2009), using a cross-country data for 80 countries from 1983 to 1999, finds that the gender wage gap tends to decrease with trade and foreign direct investment (FDI) in richer countries. This relationship does not hold for poor countries. Essaji, Sweeney and Kotsopoulos (2010) find that between 1983 and 1993, about 1.4 percentage points of the racial wage gap declined due to import exposure. The decline was especially pronounced for unskilled Southern workers, one of the most disadvantaged, at 2.2 percentage points.

Sakakibara and Porter (2001) find evidence that intense domestic competition is positively related with international trade performance (industry's share of world exports). This positive relationship supports a view that competition acts as a dynamic process in which rivalry among domestic industries drives firms to constantly improve their performance in a way not substituted for by the presence of imports.

This paper reassesses the impact of international trade on the gender and racial earnings gap by i) focusing on the various representation of market exposure (import penetration, export orientation and overall trade openness, ii) drawing attention to the potential differentials of trade on major ethnic/racial groups including Hispanics and Asians (besides African Americans), and iii) using microdata.

3. Data and Empirical Model

3.1 Data

Matched data between employer and employee would be the most appropriate data to examine how import penetration and export intensiveness impact wage discrimination. However, to the knowledge of the authors, no matched employee-employer data sets are available. We circumvent this limitation by creating a new data set that combines microdata from the 2006

Current Population Survey (CPS) March Supplements[2] with data from the U.S. International Trade Commission (USITC) and Bureau of Economic Analysis (BEA). Our dataset matches individuals to the industry to which they belong and those industries' volume of exports, imports, and GDP.

The CPS uses the Industry Classification Codes (ICC) and provides detailed information on 248 industries. For industries' GDP share, we use GDP data from the Bureau of Economic Analysis (BEA). The BEA provides the GDP data by Input-Output (IO) industry codes along with a list of IO codes matching the North American Industry Classification System (NAICS) codes. Using this information and codes, we generated the GDP data by 2002 NAICS codes.[3] For industries' import and export, we used the 2006 U.S. trade data from the United States International Trade Commission (USITC), which also provides data on 456 industries in 6-digit level NAICS codes.[4]

Using the code equivalence between the ICC and the NAICS codes provided by the U.S. Census Bureau, we combined the three data sets listed above into a new data set.[5] However, this procedure requires aggregating data for many industries in the 6-digit NAICS code. The new data set used in this study comprises 264 industries, of which 89 are tradable industries [61 net-importing (imports > exports) and 28 net-exporting (imports < exports) industries], and 175 are nontradable industries.

We exclude the elderly (older than 65 years) and persons who are 24 years old or younger from the dataset. The sample used in this study consists of 62,659 civilian individuals (34,209 males and 28,450 females). Log of hourly wages are observable for 60,792 individuals (33,354 males and 27,438 females), while 1,867 observations are censored due to the fact that wages are not observable.

Table I reports selected descriptive statistics for the top five net-exporting and net-importing industries. It shows that there exist sizable gender and racial wage differentials across both net-exporting and net-importing industries. For instance, male workers employed in Resin, synthetic rubber and fibers, and filaments manufacturing (net exporting industry) earn on average hourly wage of $25.04, compared to $13.54 for female workers. White workers employed in crop production (net exporting industry) earn on average $18.30/hour, compared to $8.45 for African Americans, $10.26 for Hispanics, and $13.31 for Asians.

Table II shows that there are significant differences in average wages of male and female workers across net-importing, net-exporting and nontradable industries across all racial/ethnic groups. Table II also demonstrates that although female workers earn more than male workers in two industries out of top 5 net-importing industries, women's wage in all net-importing

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[2] The 2006 CPS March supplements data used in this paper were obtained from the NBER data archives at http://www.nber.org/data/current-population-survey-data.html.

[3] The BEA list matches the IO codes with the 1997 NAICS codes. First, we generated the GDP data by 1997 NAICS codes and then matched the 1997 NAICS codes with the 2002 NAICS codes.

[4] 2006 data is the most recent data available for matching CPS, GDP and trade data. Details for NAICS are available at http://www.census.gov/epcd/www/naics.html.

[5] Details about the equivalence between the 2002 Census Industry Classification and 2002 NAICS Codes are available at http://www.bls.gov/cps/cenind.pdf.

industries stands at 71.1 percent of men's wage. While descriptive statistics are informative, they cannot be taken as evidence of discrimination or actual wage gap as individuals' choices and characteristics play a fundamental role in determining productivity and wages. The next section further analyzes this issue by conducting regression analysis, which allows controlling for individual characteristics and then disentangling the effects of international trade on the gender and racial wage gaps.

3.2 Empirical Model

We estimate a standard Mincerian wage equation specified as follows:

$$\ln(wage) = D\delta + T\gamma + X\beta + \varepsilon \qquad (1)$$

where *wage* is a N x 1 vector of hourly wages, *D* is a matrix of binary variables accounting for race and gender, X is a N x K matrix of covariates describing the characteristics of individuals (e. g. educational attainment, market experience, and marital status), T is a N x M matrix of variables that measures the intensity[6] of international trade in the industry in which an individual is employed, γ, δ and β are vectors of parameters, and ε is a vector of disturbances. Table III lists all variables considered in the regression analysis.

Heckman two-step procedure is used to estimate Equation 1 in order to deal with sample selection bias inherent to Ordinary Least Squares estimates of Equation 1 - which arises due to unobservable wages of individuals who are not working.[7] Heckman two-step estimator controls for sample selectivity, but the resulting error term becomes heteroskedastic. We deal with heteroskedasticity by using the Heckman consistent and efficient covariance matrix. [8]

4. Results

Heckman two-step estimates for gender discrimination are reported in Table IV. Comparable empirical results for racial discrimination are reported in Tables V and VI for men and women, respectively. We check the robustness of the results by specifying the trade-related variables in two alternative ways. First, we consider a *baseline specification* by using $\tau_i = (Export_i - Import_i)/GDP_i$ and its interaction variable with the gender dummy as the relevant measure of trade intensiveness. Then we consider an *alternative specification* by using the import share $\tau_{M_i} = Import_i/GDP_i$ to control for import penetration and the export share

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[6] We measure the intensity of trade using three alternative variables: $\tau_i = \frac{(Exports_i - Imports_i)}{GDP_i}$, $\tau_{mi} = \frac{Imports_i}{GDP_i}$, and $\tau_{xi} = \frac{Exports_i}{GDP_i}$, where i indexes the industry in which the individual is employed.

[7] We follow Elmslie and Tebaldi (2007) and estimate a Probit model (not reported) in which the dependent variable assumes value 1 if a person's hourly wage is observable and 0 otherwise. The set of explanatory variables includes education, potential work experience and its square, number of own children in family under 6, non-wage income, industry dummies, and state dummies.

[8] Due to the potential cluster problem that may arise from the presence of some explanatory variables with industry-level characteristics (Moulton 1990), we also computed a robust variance estimates that adjusts for within-cluster correlation described in Wooldridge (2003). The results, available upon request, are almost identical to those reported in Tables IV - VI.

$\tau_{X_i} = Export_i / GDP_i$ to control for export intensiveness and their interaction variables with the gender dummy.

International Trade and Gender Discrimination

All regressions of Table IV include controls for educational attainment, potential work experience, marital status, metropolitan area, and interaction variables between some of these variables and the gender dummy. Occupation fixed effects and state fixed effects are also included in the model. The estimated coefficients on the Heckman's lambda (λ) for sample selection are significant at 5 percent level only in models 1 and 2 of Table IV, which includes both male and female sample. However, the coefficients on the sample selection variable are all statistically significant in Table V (male sample) and Table VI (female sample). This suggests that the selection bias does present a major problem in these models. However, when the male and female samples are pooled, the selection bias becomes less apparent.

The results on non-trade related variables are generally conforming to the theory and empirical evidence available in the literature. Only the parameters on the gender dummy and its interactions with trade openness are discussed below. In keeping with the literature, these estimates show that gender has a sizeable and significant impact on wages. The point estimates in models 1 and 3 of Table IV suggest that female workers earn about 23 percent less than similarly endowed male workers. When detailed interaction[9] variables are added to models 2 and 4 to control for gender-related differential aspects in the labor market, the gender wage gap declines substantially. More precisely, the wage differential reduces to about 14 percent. That is, female workers earn approximately 14 percent less than similarly endowed male workers. This "net-differential" is indicative of differential treatments (potential discrimination) between male and female workers in the labor market.

Regarding international trade, the estimated positive coefficients on trade intensiveness (**τ**) of regressions 1 and 2 of Table IV – both of which are statistically significant – provide evidence of a positive wage premium for workers employed in net-exporting industries. The estimates in regression 2 of Table IV suggest that an increase of one point in **τ** is associated with an increase of 2.5 percent on average wage. This point estimate was used to calculate the wage gap for similarly skilled individuals working in the top five net-exporting industries compared to individuals working in the top five net-importing industries. A wage differential of about 11 percent was found in favor of workers employed in net-exporting industries, compared to all other workers.[10] These results imply that the wage gap across importing and exporting industries

[9] Interaction terms account for differential returns based on the gender of the individual on educational attainment, marital status, and other covariates.

[10] The wage-gap can be calculated as follows:
$E[\ln(w)|(\tau = \tau_{x5} = 0.253, Z)] - \mathrm{E}[\ln(w)|(\tau = \tau_{m5} = -3.89,\ Z) = 0.1036$ where Z is a vector of a worker's characteristics and τ_{x5} and τ_{m5} denote the average trade share of the top five exporting and top five importing industries, respectively. Then we need to apply the Halvorsen and Palmquist (1980) adjustment-formula to obtain the wage gap in percentage terms. Precisely, the percentage change in wages is given by: $\%\Delta wage = 100 * [\exp(\beta_i) - 1]$ where β is the coefficient (or combination of coefficients) of interest.

increases as the industries become more dissimilar in terms of trade orientation. They are also consistent with expectations from the neoclassical trade theory and empirical record (Bernard and Jensen 2004, 2000; Schank *et al.* 2007; Tebaldi and Kim 2010).

Does international trade affect the wage gap between male and female workers? Regression 2 of Table IV shows that the coefficient on the interaction term τ**Female* is negative and statistically insignificant. This finding along with the significant positive estimate for τ implies that increased international trade orientation plays an important role in determining workers' wages, but plays little role in determining the gender wage gap. Regressions (3) and (4) of Table IV focus on the differentiated effects of export intensiveness and important penetration on wages. We consider that increased imports penetration is equivalent to an increase in competition within an industry (Tebaldi and Kim 2010; Black and Brainered 2004).

Table IV shows that the estimated coefficients on import penetration (τ_M) are negative and statistically significant. It also shows that the estimated coefficient on the interaction variable between import penetration (τ_M) and gender is statistically insignificant, meaning that there is no differential impact of import penetration between male and female workers. This result contradicts Becker's hypothesis and goes against the notion that with the rise of import penetration, market competition becomes fiercer which in turn places pressure on employers to reduce discrimination.

Models 3 and 4 of Table IV also show that the estimated coefficients on export intensiveness (τ_X) are positive and statistically significant. Also noteworthy is the magnitude of the estimates. In comparison with the estimates of import penetration variable τ_M**,** the estimates of export intensiveness variable τ_X are approximately seven to ten times greater in magnitudes, confirming the presence of significant wage premium in export-oriented industries. The coefficient on the interaction term between τ_X and gender is positive and significant at the 10 percent level, which suggests gender wage discrimination may reduce in industries that are export-oriented. However, the impact of trade on the gender wage gap is relatively small. More precisely, calculated at the average export intensiveness (τ_X), the wage gap reduces from 13.6% to 11.6%.

International Trade and Race discrimination

Does international trade affect earnings across racial/ethnic groups? To avoid gender-related issues, we estimated two separate set of regressions: We also excluded observations classified as *other races* from the sample, so that the dataset comprises of people who are White, African Americans, Asians, or Hispanics. Non-Hispanic White is the benchmark category. Table V reports the results for men and Table VI reports the results for women. Model 2 of Table V shows that the coefficients on the interaction terms between the trade variables (τ , τ_X and τ_M) and Asians and African Americans are all statistically insignificant. However, the estimated coefficient of the interaction term τ*Hispanics is positive and statistically significant. These results also hold when more detailed controls for international trade are utilized. Model 4 of Table V shows that the coefficient estimates on the interaction variables of African Americans and Asians are all statistically insignificant. The estimated coefficient of the interaction term τ_M*Hispanics is negative and statistically significant. This suggests that the wage gap of African Americans and Asians are not affected by import penetration or export intensiveness. However, male Hispanics employed in industries exposed to high imports penetration experience even larger wage gaps compared to similarly-endowed non-Hispanic White males.

The positive estimated coefficients of τ_X in models 3 and 4 of Table VI indicate that women who are employed in export-oriented industries experience a significant wage premium compared to women employed in importing or nontradable industries. The results reported in Table VI also provide evidence that international trade does not affect the racial wage gap among African American and Asian women. More precisely, all coefficient estimates on the interaction terms between racial/ethnic groups and τ, τ_x and τ_M reported in regressions of Table VI are statistically insignificant for African American and Asian women. However, model 4 shows that the estimated coefficient of the interaction term **τ_X*Hispanics** is negative and statistically significant. This suggests that female Hispanics who are employed in industries with high export intensiveness experience larger wage gaps compared to similarly-endowed non-Hispanic White females.

5. Final Remarks

This paper evaluates the degree in which international trade affects the gender and racial wage gaps. The paper's findings contribute to the literature in two fronts. First, it shows that empirical analyses that fail to properly account for gender differences in control variables might produce unreliable results regarding the impact of international trade (and/or competition) on the wage gap. Second, this paper provides evidence that import penetration exert no impact on the overall gender wage gap, while export intensiveness narrows the gap. More precisely, it provides evidence that women who are employed in export-oriented industries experience a significant reduction in their wage gap. This result indicates that women workers benefit as the industry becomes more export oriented. However, this international trade does not reduce the racial wage gap across female workers with different race/ethnicity. In fact, wage gap between Hispanic females and non-Hispanic White females widens in industries with high export intensiveness. This paper also provides evidence that international trade has a differential impact on the wages of Hispanic males as they are susceptible to an increased wage gap when employed in industries highly exposed to import penetration.

In the past two decades, the U.S. economy has increased its links with global markets. Despite the conjecture that the competition from international trade may reduce the discriminatory gender/race wage gaps, this paper's findings suggest that if a large number of male (female) Hispanic workers are employed in industries exposed to high import penetration (high export intensiveness), it will still take more time for the race wage gap to narrow even in an optimistic scenario. In a pessimistic scenario, the disadvantaged economic status of Hispanic workers will persist.

This paper examines how international trade impacts wage discrimination on a static framework, which allows identifying the covariation between trade competition and wage discrimination. Further research, therefore, can extend this research by using panel data and/or time-series data to analyze the effects of increased international trade competition on wage discrimination.

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TABLES

Table I Trade Orientation and Wages by Race and Gender, United States, 2006

Top 5 Exporting							Hourly Wage ($)
ICC Code	Industry	**τ***	Average	White	Non-White	African American	Hispanic
Top 5 Net-Exporting Industries							
3580	Aircraft and parts manufacturing	0.50	27.75	29.4	23.67	19.72	20.07
2970	Ordnance	0.38	20.66	19.66	23.24	30.58	12.82
170	Crop Production	0.14	13.87	18.3	10.34	8.45	10.26
2170	Resin, synthetic rubber and fibers, and filaments manufacturing	0.13	25.04	28.01	18.55	15.38	18.49
390	Metal ore mining	0.12	31.35	32.55	18.75	NA	18.75
	Average - Top five net-exporting industries	0.25	23.73	25.58	18.91	18.53	16.08
	All Net Exporting Industries	0.07	23.52	26.59	17.74	17.58	14.64
Top 5 Net-Importing Industries							
1770	Footwear manufacturing	-9.76	22.03	25.88	15.61	14.42	10.5
1680	Cut and sew apparel manufacturing	-3.51	16.78	35.6	10.67	12.5	10.01
1670	Knitting mills	-3.51	15.22	17.83	10	NA	10
280	Fishing, hunting, and trapping	-1.64	12.26	12.73	11.52	16.03	10.7
370	Oil and gas extraction	-1.04	28.57	18.34	31.62	16.03	14.96
	Average - Top five net-importing industries	-3.89	18.97	22.08	15.88	14.75	11.23
	All Net Importing Industries	-0.56	23.5	25.67	18.16	17.9	15.54

Source: Author's calculation using data from the Current Population Survey, U.S. International Trade Commission, and Bureau of Eco

τ = (Exports – Imports) / GDP

Table II Average Hourly Wage by Race and Gender, United States, 2006

Category	Average Hourly Wage ($) Gender Wage Ratio in the parentheses		
	Net-Exporting	**Net-Importing**	**Nontradable**
Male	23.52	23.50	25.15
White	26.59	25.67	27.62
African American	17.58	17.90	19.77
Hispanic	14.64	15.54	17.20
Asian	28.37	27.21	28.53
Female	16.97 (72.2%)	16.95 (72.1%)	18.41 (73.2%)
White	19.78 (74.4%)	18.23 (71.0%)	19.26 (69.7%)
African American	14.18 (80.7%)	16.04 (89.6%)	16.70 (84.5%)
Hispanic	11.03 (75.3%)	12.16 (78.3%)	14.31 (83.2%)
Asian	19.02 (67.1%)	19.91 (73.2%)	20.82 (73.0%)

Source: Author's calculation using data from the Current Population Survey, U.S. International Trade Commission and Bureau of Economic Analysis.

Table III List of Variables used in the Regression Analysis

Variables	Definition
Wage	Hourly wage = Annual salary earnings / Total number hours worked per
High School Degree	1 if a worker has a High school degree, 0 otherwise
Associate Degree	1 if a worker has Associate degree, 0 otherwise
College Degree	1 if a worker has a College degree, 0 otherwise
Graduate Degree	1 if a worker has a graduate degree (MA and beyond), 0 otherwise
Market Experience	Age – years of schooling – 6
Female	1 if Female, 0 otherwise
Dependent	Number of own children in household under 6
Nonwhite	1 if nonwhite, 0 otherwise
Married	1 if married, 0 otherwise
Metropolitan	1 if a worker resides in a metropolitan area, 0 otherwise
Fulltime	1 if a worker works fulltime, 0 otherwise
τ	(Exports - Imports) / GDP
τ_M	Imports / GDP
τ_X	Exports / GDP
Occupation fixed effect	Dummy variables for 9 major occupation categories*
Industry fixed effect	Dummy variables for 13 major industry categories**
State fixed effect	Dummy variables for all states in the United States

*1. Management, business, and financial occupations; 2. Professional and related occupations; 3. Service occupations; 4. Sales and related occupations; 5. Office and administrative support occupations; 6. Farming, fishing, and forestry occupations; 7. Construction and extraction occupations; 8. Installation, maintenance, and repair occupations; 9. Production occupations, Transportation and material, and moving occupations.
** 1. Agriculture, forestry, fishing, and hunting; 2. Mining; 3. Construction; 4. Manufacturing; 5. Wholesale and retail trade; 6. Transportation and utilities; 7. Information; 8. Financial activities; 9. Professional and business services; 10. Educational and health services; 11. Leisure and hospitality; 12. Other services; 13. Public administration.

Table IV – Heckman Two-Step Regression Analysis
The dependent variable is the natural logarithm of hourly wage

	(1)	(2)	(3)	(4)
Female	-0.259***	-0.144***	-0.256***	-0.149***
	[-47.53]	[-5.82]	[-46.96]	[-5.99]
Non-White	-0.0552***	-0.0585***	-0.0565***	-0.0598***
	[-7.97]	[-8.46]	[-8.16]	[-8.65]
τ	0.0190**	0.0252**		
	[2.32]	[2.03]		
τ * Female		-0.00959		
		[-0.59]		
τ_M			-0.0310***	-0.0375***
			[-3.75]	[-2.99]
τ_X			0.308***	0.274***
			[10.98]	[8.07]
τ_M * Female				0.00836
				[0.50]
τ_X * Female				0.115*
				[1.96]
High School	0.324***	0.343***	0.322***	0.340***
	[33.60]	[29.04]	[33.48]	[28.92]
Associate Degree	0.452***	0.464***	0.449***	0.458***
	[37.61]	[30.14]	[37.44]	[29.88]
College Degree	0.626***	0.636***	0.622***	0.630***
	[54.94]	[45.87]	[54.85]	[45.58]
Graduate Degree	0.854***	0.859***	0.850***	0.852***
	[64.99]	[54.14]	[65.13]	[53.96]
Experience	0.0217***	0.0215***	0.0220***	0.0218***
	[20.78]	[20.56]	[21.35]	[21.17]
Experience^2	-0.0335***	-0.0335***	-0.0344***	-0.0345***
	[-15.36]	[-15.37]	[-15.96]	[-16.01]
Union	0.0905***	0.117***	0.0914***	0.116***
	[5.70]	[5.53]	[5.75]	[5.50]
Married	0.0983***	0.184***	0.0973***	0.182***
	[18.29]	[24.40]	[18.15]	[24.28]
Metropolitan	0.132***	0.109***	0.132***	0.109***
	[19.50]	[12.37]	[19.52]	[12.38]
Fulltime	0.114***	0.101***	0.112***	0.0994***
	[15.93]	[9.11]	[15.74]	[8.97]
High School * Female		-0.0572***		-0.0559***
		[-2.97]		[-2.90]
Associate Degree * Female		-0.0453*		-0.0409*
		[-1.94]		[-1.76]
College Degree * Female		-0.0409*		-0.0360*
		[-1.96]		[-1.72]
Graduate Degree * Female		-0.0362		-0.0308
		[-1.57]		[-1.33]
Union * Female		-0.0603*		-0.0562*
		[-1.90]		[-1.77]
Married * Female		-0.169***		-0.168***
		[-16.13]		[-16.05]
Metropolitan * Female		0.0450***		0.0450***
		[3.68]		[3.68]
Fulltime * Female		0.00906		0.00929
		[0.63]		[0.64]
λ (Inverse Mill's Ratio)	-0.310**	-0.309**	-0.12	-0.115
	[-1.98]	[-1.98]	[-0.77]	[-0.74]
Number of Observations	62659	62659	62659	62659

Fixed effects for State and Occupation are included in all models. t statistics are reported in brackets, * p<0.10, ** p<0.05** p<0.01. All regressions were estimated with an intercept term, which is not reported in the tables.

Table V – Heckman Two-Step Regression Analysis, Men
The dependent variable is the natural logarithm of hourly wage

	(1)	(2)	(3)	(4)
African American	-0.158***	-0.160***	-0.159***	-0.162***
	[-12.58]	[-12.61]	[-7.39]	[-7.18]
Hispanic	-0.217***	-0.213***	-0.215***	-0.213***
	[-20.32]	[-19.85]	[-11.82]	[-11.24]
Asian	-0.105***	-0.104***	-0.109***	-0.117***
	[-6.31]	[-6.23]	[-3.82]	[-3.86]
τ	0.0216*	-0.00481		
	[1.68]	[-0.29]		
τ * African American		-0.0467		
		[-0.89]		
τ * Hispanic		0.109***		
		[3.52]		
τ * Asian		0.0337		
		[0.84]		
τ_M			-0.0343	-0.00706
			[-1.55]	[-0.24]
τ_X			0.277***	0.221***
			[4.50]	[3.03]
τ_M * African American				0.0333
				[0.36]
τ_M * Hispanic				-0.106**
				[-1.96]
τ_M * Asian				-0.0413
				[-0.59]
τ_X * African American				0.0299
				[0.13]
τ_X * Hispanic				0.15
				[0.87]
τ_X * Asian				0.211
				[1.03]
High School	0.268***	0.267***	0.266***	0.265***
	[20.70]	[20.61]	[12.05]	[11.95]
Associate Degree	0.382***	0.381***	0.378***	0.377***
	[22.81]	[22.73]	[13.23]	[13.14]
College Degree	0.550***	0.549***	0.546***	0.545***
	[34.92]	[34.82]	[20.30]	[20.18]
Graduate Degree	0.764***	0.763***	0.760***	0.759***
	[41.78]	[41.67]	[24.32]	[24.18]
Experience	0.0279***	0.0279***	0.0281***	0.0281***
	[18.87]	[18.82]	[11.09]	[11.05]
Experience Squared	-0.0469***	-0.0469***	-0.0481***	-0.0481***
	[-14.94]	[-14.90]	[-8.94]	[-8.91]
Union	-0.0332	-0.0326	-0.0352	-0.034
	[-0.41]	[-0.40]	[-0.26]	[-0.25]
Married	0.171***	0.171***	0.171***	0.171***
	[21.75]	[21.73]	[12.73]	[12.68]
Metropolitan	0.135***	0.135***	0.135***	0.135***
	[14.27]	[14.31]	[8.40]	[8.38]
Fulltime	0.101***	0.101***	0.0997***	0.0996***
	[8.86]	[8.86]	[5.14]	[5.11]
λ (Inverse Mill's Ratio)	0.619**	0.638**	1.094**	1.098**
	[1.98]	[2.04]	[2.00]	[2.00]
Number of observations	34209	34209	34209	34209

* p<0.10, ** p<0.05, *** p<0.01; t statistics in brackets. Only includes White, African American, Hispanics and Asian (excludes all "other" categories); Baseline category is non-Hispanic White. Fixed effects for State and Occupation are controlled.

Table VI – Heckman Two-Step Regression Analysis, Women
The dependent variable is the natural logarithm of hourly wage

	(1)	(2)	(3)	(4)
African American	-0.0379***	-0.0379***	-0.0358***	-0.0385***
	[-3.42]	[-3.41]	[-3.24]	[-3.41]
Hispanic	-0.114***	-0.112***	-0.113***	-0.106***
	[-9.83]	[-9.67]	[-9.74]	[-8.91]
Asian	-0.0288*	-0.0259	-0.0352**	-0.0299*
	[-1.69]	[-1.50]	[-2.06]	[-1.68]
τ	0.0114	-0.00695		
	[1.09]	[-0.47]		
τ * African American		0.00633		
		[0.18]		
τ * Hispanic		0.0404*		
		[1.67]		
τ * Asian		0.0504		
		[1.60]		
τ_M			-0.0240**	-0.0114
			[-2.28]	[-0.76]
τ_X			0.415***	0.439***
			[8.52]	[7.38]
τ_M * African American				-0.012
				[-0.33]
τ_M * Hispanic				-0.0189
				[-0.76]
τ_M * Asian				-0.0403
				[-1.25]
τ_X * African American				0.204
				[1.19]
τ_X * Hispanic				-0.284**
				[-2.19]
τ_X * Asian				-0.0577
				[-0.39]
High School	0.230***	0.229***	0.228***	0.225***
	[14.47]	[14.37]	[14.33]	[14.13]
Associate Degree	0.351***	0.350***	0.348***	0.346***
	[18.78]	[18.70]	[18.67]	[18.53]
College Degree	0.517***	0.516***	0.514***	0.511***
	[28.43]	[28.34]	[28.30]	[28.11]
Graduate Degree	0.741***	0.739***	0.738***	0.736***
	[36.39]	[36.31]	[36.36]	[36.20]
Experience	0.0160***	0.0160***	0.0161***	0.0161***
	[11.13]	[11.13]	[11.19]	[11.19]
Experience Squared	-0.0257***	-0.0257***	-0.0259***	-0.0259***
	[-8.67]	[-8.67]	[-8.76]	[-8.76]
Union	-0.0819	-0.0824	-0.0831	-0.0852
	[-1.23]	[-1.23]	[-1.25]	[-1.28]
Married	0.0185**	0.0186**	0.0190***	0.0193***
	[2.53]	[2.54]	[2.60]	[2.64]
Metropolitan	0.147***	0.147***	0.146***	0.147***
	[15.45]	[15.49]	[15.40]	[15.48]
Fulltime	0.110***	0.110***	0.108***	0.108***
	[12.32]	[12.32]	[12.11]	[12.11]
λ (Inverse Mill's Ratio)	0.270**	0.268**	0.245*	0.248*
	[2.06]	[2.04]	[1.87]	[1.89]
Number of observations	28450	28450	28450	28450

* $p<0.10$, ** $p<0.05$, *** $p<0.01$; t statistics in brackets. Only includes White, African American, Hispanics and Asian (excludes all "other" categories); Baseline category is non-Hispanic White. Fixed effects for State and Occupation are controlled.