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working papers

The Impact of Immigration on the Wage Structure: Spain 1995-2002[1]

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Abstract

In this paper we estimate the impact of inward migration flows on the Spanish wage structure over the period 1995-2002 by constructing counterfactual wage distributions that provide the wages that would have been observed had individual and job characteristics remain constant over time. Hence, we compute the impact of immigration on the wage distribution from (i) the estimated wage gaps between similar immigrants and native workers and (ii) the changes in the composition of employment associated to the arrival of new immigrants.

Overall, we find that (i) the effects of immigration on wage changes are small and only noticeable when job characteristics are included as determinants of wages, and (ii) the correlation between the incidence of immigration in each decile of the wage distribution and the change in native wages not explained by changes in their individual and job characteristics is positive. These results suggest that other factors, besides immigration, should be identified as the key determinants of the wage moderation observed since the early nineties in Spain.

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1. Introduction

During the last decade inward migration flows to Spain have noticeably increased. Foreign-born population living in Spain surged from around 350 thousands (1% of total population) in 1991 to more than 4.3 millions (10% of total population) in 2006. Over the period 2000-2005 immigration accounted for almost all of the increase of working-age population, and had noticeable macroeconomic effects not only on the size, but also on the composition of aggregate supply and aggregate demand, contributing to sustain a long-lasting economic expansion that started in the mid-nineties.[2]

The last decade was also a period when wage pressures remained subdued, despite significant employment growth, and when noticeable changes in the wage structure took place.[3] Being the cause of a sizeable labour supply shock, both in terms of size and skill composition, it could be expected that immigration could have significantly contributed to both the evolution of wages and its dispersion.

There are two main dimensions in the analysis of the relationship between immigration and wages: (i) the measurement of wage gaps between immigrants and natives, and (ii) the analysis of the effects of immigration on the labour market performance, namely, wages and hours of work, of native-born workers.

On the first topic, there are two branches of research. Some studies have tried to breakdown observed wage gaps into components due to differences in individual characteristics and to differences in returns. Others, have referred to the "assimilation of immigrants", focusing on the speed of "catch up" of immigrants' wages to those of natives. The empirical literature on these two issues is too ample to be reviewed here. Limiting the quotes to recent studies on European countries and, in particular, on Spain, it is worth mentioning the following results. Adsera and Chiswick (2007), using data from the European Community Household Panel, find a significant negative effect of immigrant status on individual earnings of around 40% at the time of arrival, although the difference is somewhat smaller for women. Earnings increase with time in the destination country and the foreign-born "catch-up" to the native-born, others variables being the same, at around 18 years of residence. With the same data set, Peracchi and Depalo (2006) find that it takes to residing in the host country for 25+ years to close the earnings gap relative to a native worker with similar characteristics. As for Spain, Simón, Sanromá and Ramos (2008) find that legal immigrants from developing countries exhibit lower mean wages and a more compressed wage structure than native-born workers, and that disparities in the wage distributions for the native-born and immigrants are largely explained by their different observed characteristics, mostly due to occupational and workplace segregation. Canal-Dominguez and Rodríguez-Gutiérrez (2008) detect a remarkable wage difference against the group of immigrants with the lowest wages which is not explained by the differences in the productive features of native and immigrant workers. They find that the unexplained component of the wage

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[2] For accounting of these macroeconomic effects, see, for instance, Izquierdo, Jimeno, and Rojas (2007).

[3] According to OECD (2007) average annual growth rates of real average wages were -0.5% and -0.3% in 1995-2000 and 2000-2005, respectively. As for the trade-off between inflation and unemployment, Bentolila, Dolado, and Jimeno (2007) find that immigration contributed to make the inflation-output trade-off more favourable. Regarding changes in the Spanish wage structure, see Izquierdo and Lacuesta (2006)

difference between native and immigrant workers decreases along the wage distribution, even becoming negative at the end.

On the effects of immigrants on the wages of native-born workers, the literature is also large.[4] Available results for European countries seem to be qualitatively similar to those recently obtained for the US by, for instance, Orrenius and Zvodny (2003) and Ottaviano and Peri (2006). Typically, studies find that, once general equilibrium effects are accounted for, immigration has positive effects on wages of high-skilled native-born workers and small negative effects on wages of low-skilled native-born workers. For Spain, in a previous paper (Carrasco, Jimeno and Ortega, 2007) we failed to find any sizeable effect of immigration on the wages and employment of native workers.

Given the wage gaps documented by the papers quoted above and the different age and skill composition of the immigrant labour force, a large inflow of immigrants could very well have a significant impact on the wage distribution of the host country, even were the impact of immigration on the wages of native-born workers small. Figure 1, which plots the Spanish wage distributions for 1995 and 2002, shows two remarkable facts.[5] One is the almost negligible change in the mean of the distribution of real hourly wages. The second is that, if anything, wage inequality seems to have fallen. Overall, inequality, as indicated by the standard deviation of log wages (see Table 1), has decreased slightly in this period, being this the result of an increase of inequality in the upper tail of the distribution and a decrease of inequality in the lower tail, as indicated by the ratio of percentiles.

Figure 1. Wage distributions in 1995 and 2002

Table 1. Some measures of wage inequality

	Men			Women		
	SD.log w*	P90/P50**	P50/P10	SD.log w*	P90/P50	P50/P10
1995	.5312	1.3085	1.3276	.4917	1.3674	1.3058
2002	.5105	1.3580	1.2534	.4491	1.3795	1.2453

Notes: *Standard deviation of log real hourly wages. **Ratio of percentiles

The main goal of this paper is to measure the effects of immigration on the Spanish wage structure. To accomplish it, we construct counterfactual wage distributions that provide the wages that would have been observed in 2002 had individual and job characteristics remain as those of 1995. Hence, we compute the impact of immigration on the wage distribution from (i) the estimated wage gaps between similar immigrants and native workers and (ii) the changes in the composition of employment associated to the arrival of new immigrants within that period. The estimations of wage gaps and of the contributions of individual and job characteristics come from quantile wage regressions under two alternative specifications, one in which only workers' age and years of schooling determine wages, and another in which some job characteristics, such as tenure, occupation and sector of activity, are also included in the wage equations.

The paper is structured in four more sections. Section 2 presents a descriptive analysis of the data. Section 3 documents the changes in the composition of employment along several dimensions, accounting for immigration, and in the wage structure. Section 4 performs the construction of the counterfactual wage distributions, which constitute the basis for the break-down of the changes in the wage distribution between 1995 and 2002, and discusses the contributions of immigration to these changes. Finally, Section 5 contains some concluding remarks. An Appendix presents the quantile wage regressions underpinning the construction of the counterfactual wage distributions being used for the analysis of the impact of immigration on the wage structure.

2. Data and descriptive analysis

Our data come from the Spanish Structure of Earnings Survey (*SES* henceforth*),* of which two waves (1995 and 2002) are currently available. This survey consists in a random sample of workers from firms of at least 10 employees in the manufacturing, construction and services sectors.[6] The sampling takes place in two stages. In the first stage, firms are randomly selected from the Social Security General Register of Payments records, which are stratified by region and firm size. In the second stage, a sample of workers from each of the selected firms is also randomly selected. The survey collects detailed information on workers' wages, as well as on workers' personal characteristics, such as gender, age, and educational attainment, and job characteristics, including tenure, sector, occupation, contract and job type, firm size and ownership, and region. Unfortunately, information about workers' nationality is only available for 2002.

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[6] Unfortunately, the primary sector and domestic services, two sectors with an important presence of immigrants, are not covered by the survey.

As for wages, we use the worker's real hourly wage. We construct this variable using the gross annual salary, including extraordinary payments, and the total number of hours actually worked. We also convert the 1995 salaries into 2002 euros and take into account several differences between the samples of 1995 and 2002. Specifically, in 2002 the coverage of the survey was extended to some non-market services which have been dropped out in order to obtain a homogenous sample with 1995.

Throughout this paper we consider as immigrants those individuals residing in Spain with a nationality not belonging to any of the European Union (as of 1995) countries. Hence, by native workers we refer to Spaniards and residents from the EU-15 countries. Summary descriptive statistics of our sample are presented in the Appendix. There are clear differences in individual and job characteristics between the native and the immigrant labour forces (see Table A1). Immigrant workers are younger, less educated, and job tenured than natives. They are over-represented in part-time, temporary, and low-skilled jobs, and also in the construction (immigrant men) and services sectors (immigrant women).

Figure 2 presents the density of log real hourly wages for native workers and non-EU immigrants in 2002.[7] As for native workers, the distribution of log hourly wages is centred around 2.26 for men and 1.97 for women. In turn, the distribution of log real hourly wages for immigrants is much more peaked and is centred at a lower level of log wages (around 1.97 for men and 1.81 for women) than the distribution for natives. In addition, it is located to the left of the distribution for natives across the whole wage distribution.

Figure 2. Wage distributions by nationality
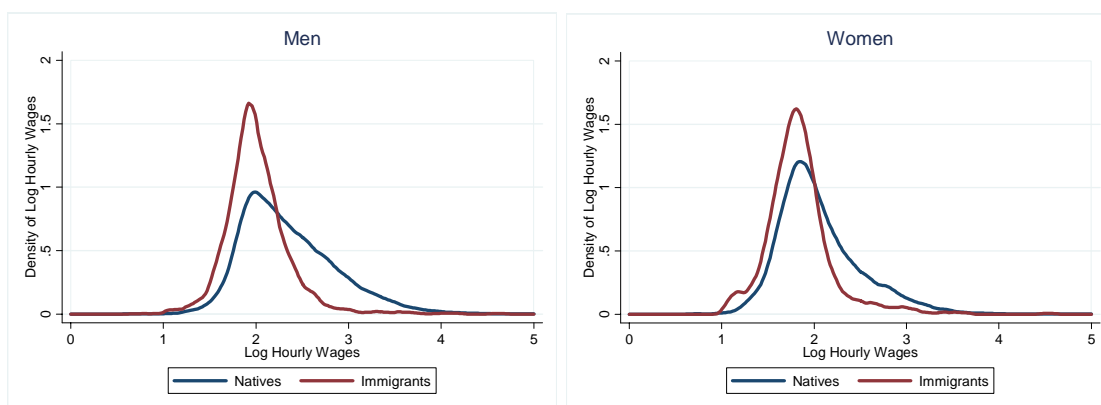
Source: SES, 2002. Natives include nationals of the EU-15.

Given the changes in the composition of the labour supply caused by immigration, the changes in the wage structure that could have been implied by other developments, such as biased technological change, globalization, etc., and the fact that immigrants seem to have a different degree of substitution with low-skilled and high-skilled native workers, comparisons of mean wages may be insufficient to characterize immigrants' wage gaps. As seen in Figure 3, that depicts the observed log real hourly natives' wage gaps relative

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[7] The analysis reported below has also been done using annual wages. Results are qualitatively similar to those obtained for hourly wages. They are available from the authors upon request.

to immigrants at the mean and at each decile in the wage distribution, the wage gap at the mean differs from the wage gap at the different deciles. Specifically, natives, both men and women, earn higher wages than immigrants and this gap becomes higher at the top of the distribution.

Figure 3

Native-Immigrant Wage Gap, 2002
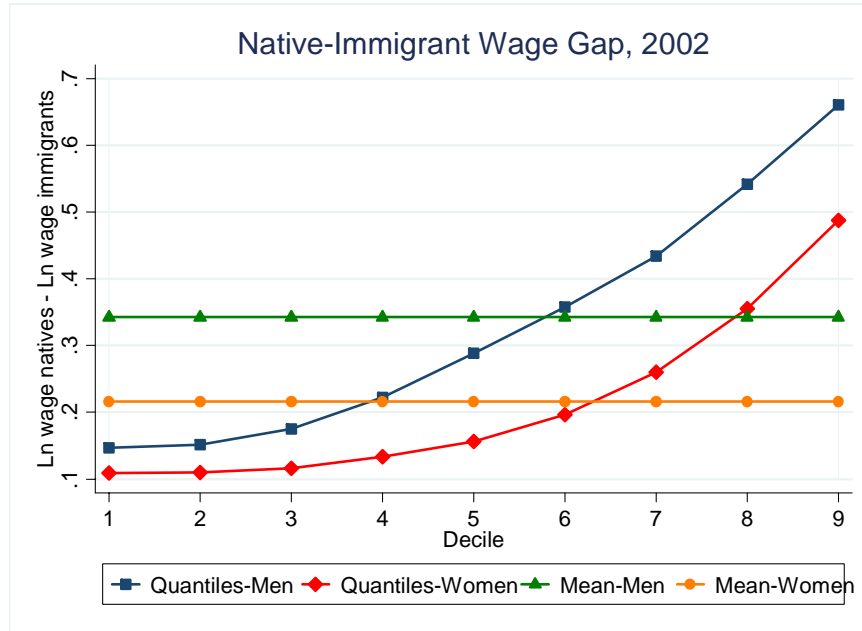
Source: SES, 2002.

3. Changes in the composition of employment and in the wage structure

Since wages depend on personal characteristics of workers, changes in the composition of employment affect the evolution of the distribution of wages. Over the period 1995-2002 there have been noticeable changes in the composition of employment in Spain. Firstly, as already stressed above, since the educational attainment and age of immigrants are lower than those of native workers, there has been an increase in the supply of less skilled workers. Secondly, the educational attainment of natives has increased (especially among women), while the average age of employed native workers has fallen.

To summarise these changes we partition the labour market in 18 segments by interacting gender with three educational attainment levels (primary, secondary and university) and three age groups (25 or less, 26-45, and above 45). Within each cell we compute the proportion of immigrants over employment, and the change in the weight of each cell over male and female employment, in each case (see Table 2). Not surprisingly, while the proportion of immigrants has significantly increased in all cells, the weight of immigrants is higher among the less educated and younger workers. As for the contribution of each segment to total male and female employment, the most noticeable change is the increasing weight of workers with secondary and university education. Regarding age, there has been a decrease in the average age of employed men, by 1.7 years, while, for women, it has increased by 0.4 years.

Thus, overall, the proportion of immigrants in employment is higher in those segments of the labour market with decreasing weight in total employment over the period 1995-

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2002. This suggests that the immigrant labour force provides, to some extent, complementary, rather than substitute, skills to those of the native labour force.

Table 2. Changes in the employment composition

	Men			Women		
	Age<=25	25<Age<=45	Age>45	Age<=25	25<Age<=45	Age>45
Primary Education						
% Immg. 1995 [a]	0.90	1.14	0.24	1.21	0.75	0.00
% Immg. 2002 [a]	17.07	8.57	1.61	7.91	11.45	1.58
% Immg. 2002 [b]	8.77	9.21	2.16	8.54	6.87	1.21
$\gamma_{02} - \gamma_{95}$ (p.p)	-0.31	-6.99	-4.67	-0.73	-6.74	-3.84
Secondary Education						
% Immg. 1995 [a]	0.27	0.95	0.12	0.24	0.62	0.00
% Immg. 2002 [a]	5.04	4.70	2.50	5.43	5.35	4.44
% Immg. 2002 [b]	2.32	2.28	0.63	1.89	1.63	1.01
$\gamma_{02} - \gamma_{95}$ (p.p)	0.68	5.11	3.31	-2.94	4.69	3.33
University Education						
% Immg. 1995 [a]	2.07	0.80	0.51	0.00	0.58	2.26
% Immg. 2002 [a]	5.77	9.59	5.57	3.19	6.03	6.73
% Immg. 2002 [b]	0.94	1.27	0.47	0.76	1.17	1.06
$\gamma_{02} - \gamma_{95}$ (p.p) [c]	0.26	2.52	0.07	0.46	5.44	0.33

Notes: [a] Percentage of immigrant employment over total employment in sectors covered by SES. (Source: Labor Force Survey). [b] Percentage of immigrant employment over total employment (Source: Structure of Earnings Survey). [c] γ is the proportion of employment in each cell over total employment (computed independently for men and women) (Source: Labor Force Survey). p.p: percentage points

Looking now at natives workers' wage changes (see Table 3), two striking facts are worth highlighting. First, real wage growth has been negative for all groups, except for younger workers (25 years of age or less), who enjoyed an average wage growth around of 7% (with the only exception of men with university studies who also had decreasing wages).[8] Thus, for younger workers, there has been a reduction in wage dispersion, as the fall in real wages has been larger at the top of the distribution (9th decile) than at the bottom (1th decile). In contrast, for older workers with university education real wages rose at the top of the distribution while falling at the bottom.

For completeness, Table 3 also reports immigrants' wage gap at the mean and within the 1st and the 9th decile for each cell. The higher the educational level and age are, the higher the gap is. Within each segment, the gap is increasing along the distribution for workers with more than 25 years and less than university education

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[8] The likely explanation of this fact is a rise of youth minimum wages. During the 1995-1997 period minimum wages for workers below 18 years were about 2/3 of minimum wages for workers over 18 years. Since 1998 all workers, regardless of age, are entitled to the same minimum wages. Not surprisingly, the wage increases are much larger at the lowest decile.

Table 3. Changes of (log) real hourly wages by employment segments

A. Men

	Age<=25			25<Age<=45			Age>45		
	Mean	P10	P90	Mean	P10	P90	Mean	P10	P90
Primary Education									
w02 - w95	.0407	.2484	-.1232	-.1347	-.0572	-.1630	-.0841	-.0631	-.0474
w02,n - w95,n	.0430	.2516	-.1211	-.1181	-.0478	-.1445	-.0756	-.0574	-.0413
w02,n - w02,i	.0264	.0676	.0311	.1798	.0866	.3583	.3939	.3163	.5632
Secondary Education									
w02 - w95	.0912	.1869	.0106	-.0724	.0049	-.1208	-.1042	-.1232	-.0351
w02,n - w95,n	.0919	.1858	.01301	-.0654	.0107	-.1152	-.1016	-.1196	-.0339
w02,n - w02,i	.0336	-.0111	.0687	.3090	.1671	.4928	.4062	.3057	.3360
University Education									
w02 - w95	-.0543	-.0422	-.1659	-.1040	-.1426	-.0677	-.0278	-.1037	.0585
w02,n - w95,n	-.0513	-.0396	-.1659	-.1003	-.1331	-.0686	-.0262	-.0929	.0585
w02,n - w02,i	.3206	.1270	.4673	.2895	.2877	-.1401	.3317	.4536	-.0217

B. Women

	Age<=25			25<Age<=45			Age>45		
	Mean	P10	P90	Mean	P10	P90	Mean	P10	P90
Primary Education									
w02 - w95	.0660	.2515	-.0265	-.1146	-.0519	-.2205	-.0849	-.0045	-.1688
w02,n - w95,n	.0733	.2615	-.0088	-.1069	-.0450	-.1985	-.0822	-.0045	-.1646
w02,n - w02,i	.0852	.1507	.1228	.1109	.0572	.1775	.2195	.0460	.5296
Secondary Education									
w02 - w95	.0736	.1752	-.0484	-.0890	-.0285	-.1425	-.2245	-.1257	-.0457
w02,n - w95,n	.0741	.1756	-.0447	-.0851	-.0266	-.1380	-.2202	-.1233	-.0451
w02,n - w02,i	.0232	.0077	.1083	.2446	.0730	.4042	.4295	.2347	.8754
University Education									
w02 - w95	.0433	.2073	.0064	-.0672	-.0662	-.0156	-.1996	-.5335	.1340
w02,n - w95,n	.0456	.2073	.0064	-.0644	-.0638	-.0120	-.1946	-.5271	.1340
w02,n - w02,i	.3108	.5497	.4017	.2326	.1270	.2167	.4791	.2157	.4410

Notes: w02 - w95: Wage growth over 1995-2002. w02,n - w95,n: Natives wage growth over 1995-2002. w02,n - w02,i: Wage gap between natives and immigrants in 2002. Source: Structure of Earnings Survey. Since the SES datasets only offer information on workers' nationality for 2002, we assume that the proportion of immigrants in 1995 was nil.

4. Accounting for the impact of immigration on changes in the wage distribution

For the analysis of the impact of immigration on the wage structure we use quantile regression techniques to decompose changes in the distribution of wages into different elements. We consider in turn the three channels through which immigration may have changed the wage distribution: i) immigrants, regardless of their characteristics, earn lower wages, ii) immigrants earn lower wages because they are younger, less educated or employed in lower-paid jobs than native workers, and iii) immigration affects negatively the wages of native workers.

To accounting for the impact of immigration on the changes in the wage distribution, we estimate the following quantile regressions separately for each year (see Chiswick at al. 2008)

$$w_{it} = Q^{\theta}(w_{it}|x_{it}, I_{it}) + \varepsilon_{it}^{\theta}, t = 1995, 2002 \qquad (1)$$

where w_{it} and x_{it} are, respectively, individual (log) wages and characteristics, I_{it} is a dummy variable that takes the value 1 for immigrants and 0 for natives, and $Q^{\theta}(.)$ is the θth-order quantile of the conditional distribution of wages, specified as

$$Q^{\theta}(w_{it}|x_{it}, I_{it}) = x_{it}'\beta_{It}^{\theta}I_{it} + x_{it}'\beta_{Nt}^{\theta}(1-I_{it}), \qquad Q^{\theta}(\varepsilon_{it}^{\theta}|x_{it}, I_{it}) = 0. \qquad (2)$$

That is, we interact all explanatory variables with the immigrant dummy to allow for different returns for the immigrants and natives characteristics. Since the SES datasets only offer information on workers' nationality for 2002, we assume that all the observations for 1995 correspond to native workers ($I_{i,1995} = 0$), which, for most deciles, is not very much at odds with the data (see Table 2).

We estimate two alternative specifications. In the first specification (model 1), only workers' age, age squared, and years of schooling are included as regressors. In the second specification (model 2), some job characteristics, such as tenure, occupation, sector of activity, are also included (although most of these additional covariates are very likely endogenous). The results from the estimation of these quantile wage regressions are presented in the Appendix.

The estimation of previous equations is used to decompose the overall wage change between 1995 and 2002. For that, we use Albretch et al's (2003) application of the Machado-Mata method, based on the mean characteristics of the individuals who are in each of the quantiles of the wage distribution (see Appendix for more details).

Taking averages in equation (1) and computing changes over the period 1995-2002, we obtain:

$$w_{02}^{\theta} - w_{95}^{\theta} = \alpha_{02}^{\theta}\overline{x}_{I,02}^{\theta}{}'\beta_{I,02}^{\theta} + (1-\alpha_{02}^{\theta})\overline{x}_{N,02}^{\theta}{}'\beta_{N,02}^{\theta} - \alpha_{95}^{\theta}\overline{x}_{I,95}^{\theta}{}'\beta_{I,95}^{\theta} - (1-\alpha_{95}^{\theta})\overline{x}_{N,95}^{\theta}{}'\beta_{N,95}^{\theta} + (\overline{\varepsilon}_{02}^{\theta} - \overline{\varepsilon}_{95}^{\theta}),$$
$$(3)$$

where w_t^{θ} is the θth quantile of the (log) wage distribution in year t, $\overline{x}_{I,t}^{\theta}$ and $\overline{x}_{N,t}^{\theta}$ are the vectors of mean characteristics of immigrants and natives at quantile θ in year t, α_t^{θ} is

the proportion of immigrants at quantile θ in year t, and $\overline{\varepsilon}_t^\theta$ is the mean of the unobserved component. The assumption that the proportion of immigrants in 1995 was nil ($\alpha_{95}^\theta = 0$), introduces, in any case, an upwards bias in our measure of the contribution of immigration to the observed wage changes .

Rewriting equation (3) as

$$w_{02}^\theta - w_{95}^\theta = \alpha_{02}^\theta (\overline{x}_{I,02}^\theta{}'\beta_{I,02}^\theta - \overline{x}_{N,02}^\theta{}'\beta_{N,02}^\theta) + (\overline{x}_{N,02}^\theta{}'\beta_{N,02}^\theta - \overline{x}_{N,95}^\theta{}'\beta_{N,95}^\theta) + (\overline{\varepsilon}_{02}^\theta - \overline{\varepsilon}_{95}^\theta), \qquad (4)$$

we obtain an illustrative decomposition of the wage changes at each quantile as follows:

$$w_{02}^\theta - w_{95}^\theta = \alpha_{02}^\theta \overline{x}_{I,02}^\theta{}'(\beta_{I,02}^\theta - \beta_{N,02}^\theta) + \alpha_{02}^\theta (\overline{x}_{I,02}^\theta{}' - \overline{x}_{N,02}^\theta{}')\beta_{N,02}^\theta$$
$$+ \overline{x}_{N,02}^\theta{}'(\beta_{N,02}^\theta - \beta_{N,95}^\theta) + (\overline{x}_{N,02}^\theta{}' - \overline{x}_{N,95}^\theta{}')\beta_{N,95}^\theta$$
$$+ (\overline{\varepsilon}_{02}^\theta - \overline{\varepsilon}_{95}^\theta),$$

where we have added and subtracted $\alpha_{02}^\theta \overline{x}_{I,02}^\theta{}'\beta_{N,02}^\theta$ and $\overline{x}_{N,02}^\theta{}'\beta_{N,95}^\theta$ in (4).

Thus, the differences in wages at each quantile can be breakdown in five terms: the first term measures a direct effect of immigration, namely, immigrants earning lower wages than natives, regardless of their characteristics; the second term measures the effect due to changes in the composition of the labour force due to immigrants (the composition effect of immigration); the third term measures changes in the coefficients of the wage equations for natives (that is, changes in the returns to natives' characteristics); the fourth term measures the effect due to changes in the composition of the natives in terms of their observed characteristics, and, finally, the fifth term is the difference in the error terms of the quantile regressions.[9] We perform this decomposition separately for men and women, considering as determinant of wages years of education and age (model 1), and also some job characteristics (model 2).

Figures 4a and 4b report the results from this decomposition. In both models the direct and the composition effects of immigration contribute to decrease wages in all deciles. Nevertheless, the overall effect of immigration on wage changes at all deciles is small compared to the terms coming from changes in the characteristics and returns of natives, although the relative contribution of both terms (natives' coefficients and returns) obviously varies depending on the chosen model.

As for model 1, under which only workers' characteristics are considered as determinants of wages, the changes in the characteristics of native workers contribute to raise wages at the bottom of the female wage distribution, due to the educational upgrading of female employment over this period. Regarding men, the positive effect of educational upgrading is often more than offset by the negative effect on wages of a fall in age. In any case, but for the second and third deciles of men and the three bottom deciles of women, the fall in returns to native workers is the main factor driving the decrease in real wages.

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[9] In our calculations, the differences in the error are in most cases equal to zero up to the third decimal.

Under model 2, not only workers' characteristics but also some jobs' characteristics are included as determinants of wages. Obviously, when doing this, the characteristics taken as a whole obtain a larger weight at explaining wage changes. Natives' characteristics contributed to raise wages only at the first decile of the male wage distribution and at the first and ninth deciles of the female wage distribution. Regarding natives' coefficients, they contributed to raise wages only at the first two deciles of both the male and female wage distribution, and at the ninth decile of the male wage distribution.

There are many factors that could explain these changes in natives' returns, such as immigration, a change in the composition of labour demand towards activities less intensive in physical and technological capital, institutional labour market reforms, the impact of globalisation on wage determination, etc. However, the observed patterns of wage changes at each decile of the male and female wage distributions are difficult to square with the idea that immigration, by affecting negatively the wages of natives workers, has been the main factor behind the recent evolution of the Spanish wage distribution. As seen in Figures 5a and 5b, which plot the incidence of immigration and the changes in natives' returns observed at each decile of the wage distribution, the correlation between both variables is positive.

It is worth mentioning that measuring the causal effect of immigration on the wages of native workers is beside the scope of this paper. We addressed this issue in Carrasco, Jimeno and Ortega (2008). Following Borjas (2003) and using correlations across skill groups, we did not find a significant negative effect of immigration on either the employment rates or wages of native workers. Within the framework of the paper at hand, we can try to provide some additional evidence on this issue by calculating the correlations between the incidence of immigration in cells defined by education and age and changes in the wages of native workers. We find that the statistical association between the incidence of immigration and native workers wage changes is positive, casting further doubts on the interpretation that immigration negatively affects natives' wages.

Figure 4a. A breakdown of wage changes by deciles. Model 1

A. Men

Immigrants:characteristics — Immigrants:coefficients — Natives:characteristics — Natives:coefficients — Observed

B. Women

Immigrants:characteristics — Immigrants:coefficients — Natives:characteristics — Natives:coefficients — Observed
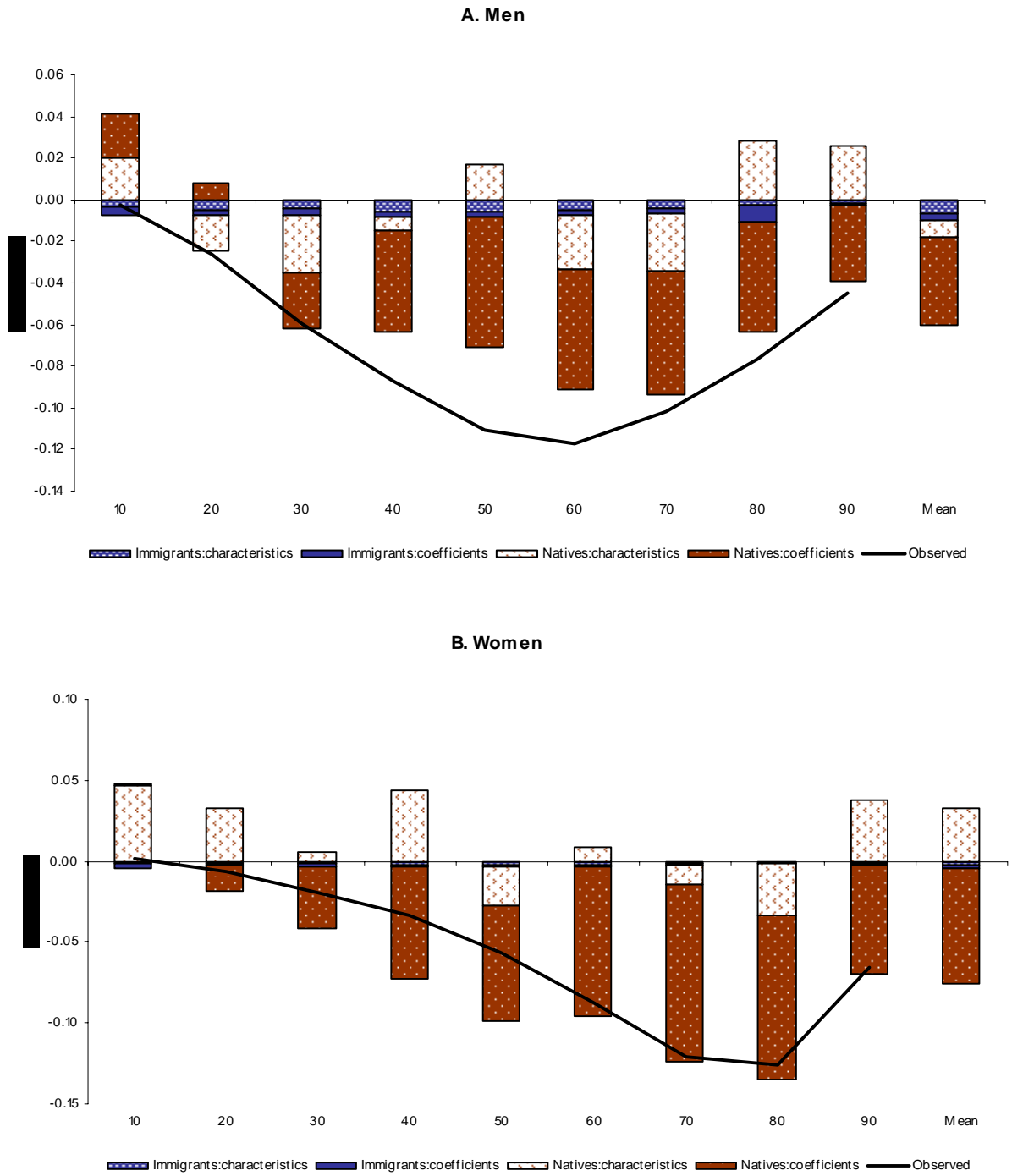
Figure 4b. A breakdown of wage changes by deciles. Model 2

A. Men
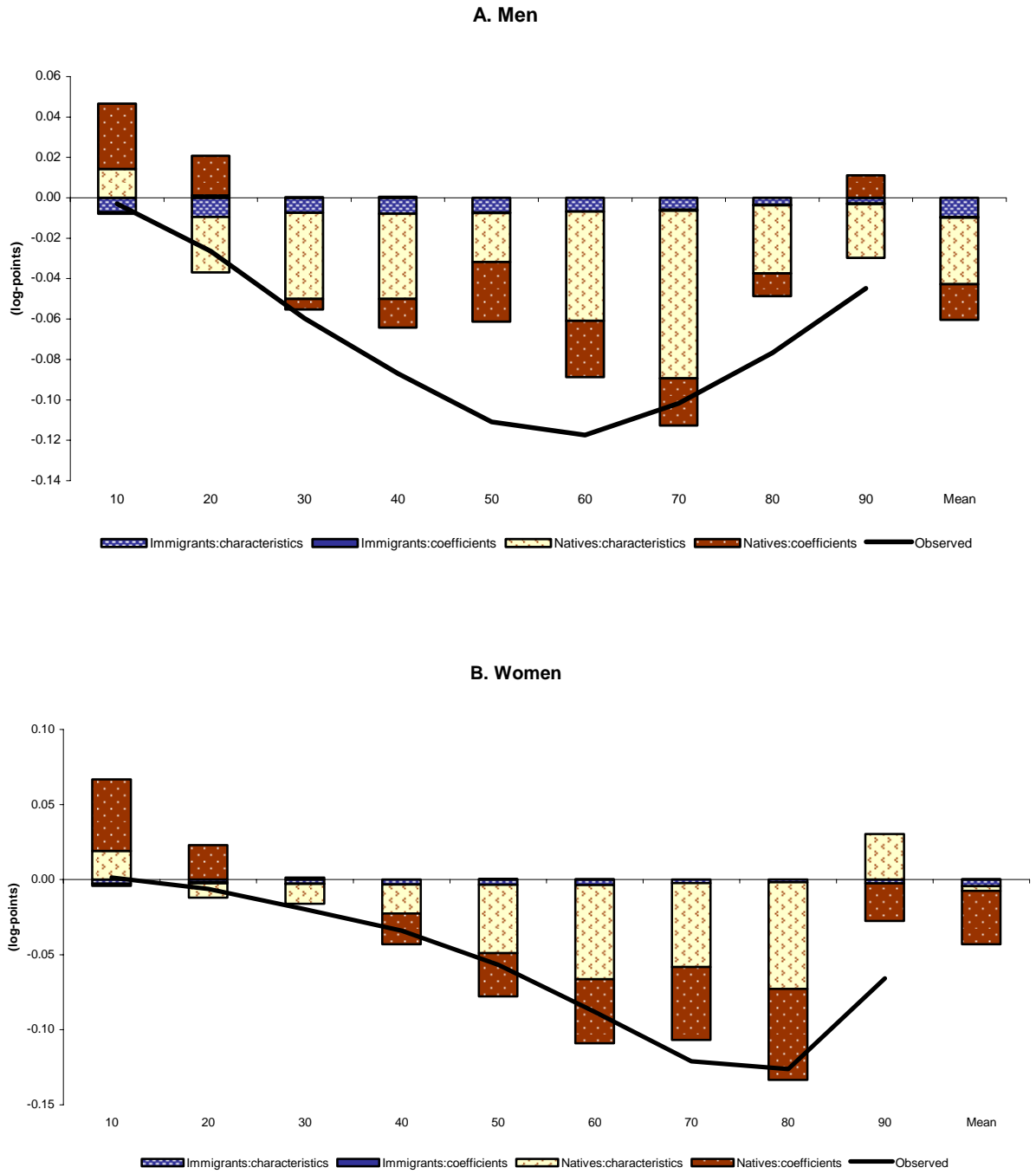
B. Women

Figure 5a. Incidence of immigration and changes in the returns to natives. Model 1
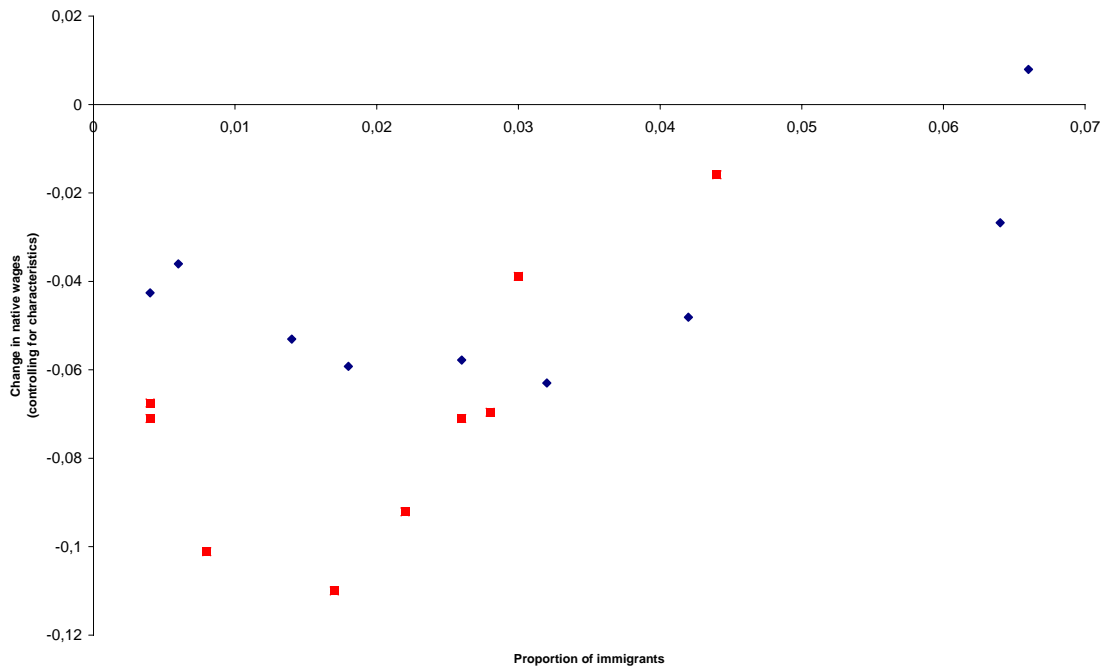
Figure 5b. Incidence of immigration and changes in the returns to natives. Model 2
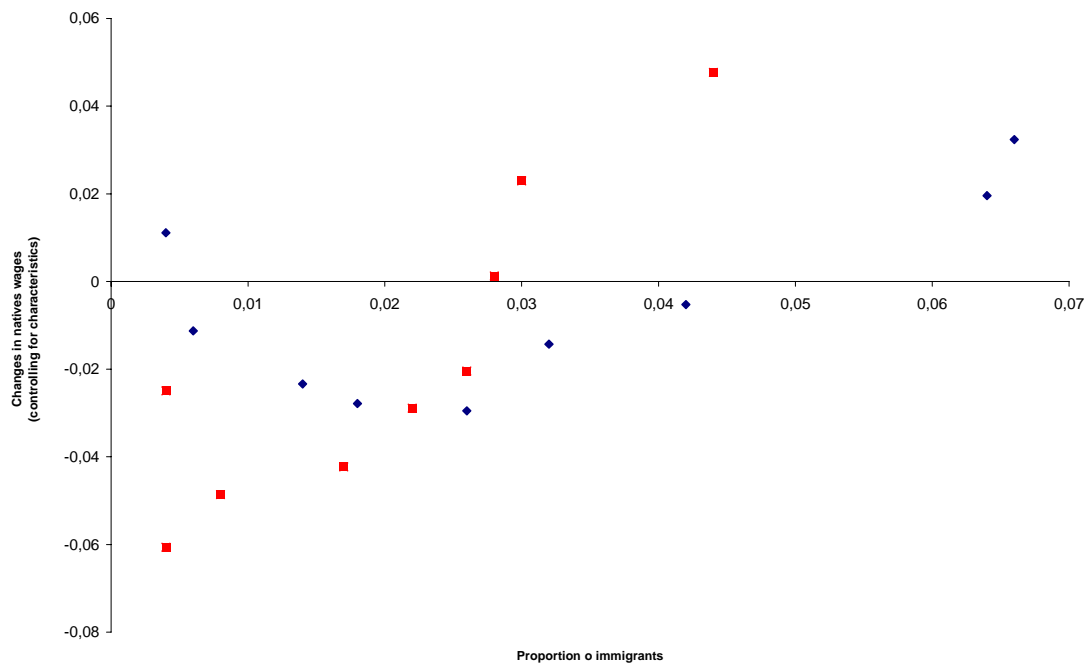
Notes: Blue diamond: Men. Red Square: Women.

5. Concluding remarks

This paper analyses the contribution of immigration to the observed changes in the Spanish wage distribution over the period 1995-2002. During this period, mean real hourly wages barely changed, and wage dispersion remained almost constant, having fallen in the lower half of the distribution and risen in the upper half. We break-down the wage changes observed at each decile of the wage distribution in four terms related to changes in the characteristics and returns of immigrants and natives. The main results are that immigration had a small contribution, relative to changes in the characteristics and specially the returns of natives, on wage changes and that the patterns of changes in the returns of natives does not support the view that immigration negatively affects the evolution of wages.

Some cautions apply, though. First, the SES datasets only covers legal immigration and leaves aside some sectors (noticeably, agriculture and domestic services), where immigrants have a large weight in employment. Secondly, until new waves are released, the period analyzed (1995-2002) excludes the recent years when inwards migration flows to Spain accelerated. Finally, our findings are to be taken as pure accounting results and, hence, cannot be taken as identifying any causal relationship between immigration and wages.

APPENDIX
Quantile wage regressions: Immigrants versus natives

Following Buchinsky (1994) and assuming that (w_i, x_i), i=1,...n, is a sample of the population, the quantile wage regression can be written as:

$$w_i = x_i'\beta^\theta + \varepsilon_i,$$

$$Q^\theta(w_i | x_i) = x_i'\beta^\theta,$$

where $Q^\theta(w_i | x_i)$ refers to the quantile of log wages, w_i, conditional on the vector of characteristics x_i. It is assumed that $Q^\theta(\varepsilon_i | x_i) = 0$.

For computing the relative contribution of differences in characteristics and differences in coefficients to the wage gaps within the quantile regression framework, we follow Albrecht et al's (2003) application of the Machado and Mata (2005) bootstrap method. This procedure is based on computing the characteristics of the individuals who are in each of the deciles of the wage distribution. The steps to compute these characteristics are: i) draw random samples (of 100 with replacement) from the native and immigrant samples, ii) sort the observations by wages in order to get an observation for each percentile, iii) repeat (500 times) this procedure to obtain the average characteristics for each decile.

Once the vector of mean characteristics for each decile has been calculated and using the vector of coefficients previously estimated, we can proceed to decompose the native-immigrant wage gap at each decile. Notice that while the decomposition of the mean wage gap is exact, this does not occur at different quantiles since it includes a residual component.[10] We compute it as follows

$$(\overline{x}_N^\theta - \overline{x}_I^\theta)'\hat{\beta}_N^\theta + \overline{x}_I^\theta{}'(\hat{\beta}_N^\theta - \hat{\beta}_I^\theta) + (\overline{\varepsilon}_N^\theta - \overline{\varepsilon}_I^\theta),$$

where $\hat{\beta}_N^\theta$ and $\hat{\beta}_I^\theta$ are the estimated quantile regression coefficients for the deciles of interest, $\overline{x}_N^\theta$ and $\overline{x}_I^\theta$ are the mean characteristics of natives and immigrants, respectively, at that decile, and $(\overline{\varepsilon}_N^\theta - \overline{\varepsilon}_I^\theta)$ is the unexplained component. A positive (negative) sign on the first term (labelled as *characteristics*) implies that natives have larger (smaller) productive characteristics, evaluated at natives' returns, than immigrants. Similarly, a positive (negative) sign on the second term (labelled as *returns*) implies that market returns to natives' characteristics are higher (lower) than the returns to immigrants' characteristics. In sum, this decomposition is built on the comparison between actual observations and counterfactual ones. Table A.4 shows the results of the decomposition.

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[10] There are several procedures to eliminate the unexplained term in the decomposition (see Garcia et. al, 2001, and Gardeazabal et al., 2002). However, these methods suffer from several problems and are computationally cumbersome.

Table A.1. Summary Statistics.

	2002				1995	
	Men		Women		Men	Women
	Natives	Immigrants	Natives	Immigrants	Natives	Natives
Log Hourly Wage	2.3525	2.0100	2.0564	1.8403	2.4030	2.0951
	0.5114	*0.3468*	*0.4497*	*0.3614*	*0.5251*	*0.4856*
Age	38.0100	33.2841	35.0958	32.5834	39.7482	34.7414
	11.0524	*8.2246*	*10.0765*	*8.1013*	*10.9187*	*9.8543*
Years of schooling	10.5369	8.3863	10.9335	9.0898	10.0283	10.5429
	3.2072	*2.8096*	*3.2771*	*3.0902*	*3.1994*	*2.9867*
Tenure ≤ 3 years	0.4395	0.9243	0.5370	0.9275	0.3090	0.4009
	0.4963	*0.2646*	*0.4986*	*0.2595*	*0.4621*	*0.4901*
Part-time	0.0319	0.0474	0.2244	0.3130	0.0162	0.1064
	0.1758	*0.2126*	*0.4172*	*0.4640*	*0.1261*	*0.3084*
Temporary Contract	0.2454	0.6380	0.2717	0.5144	0.2427	0.3134
	0.4303	*0.4807*	*0.4449*	*0.5001*	*0.4287*	*0.4639*
Professionals	0.0835	0.0143	0.0532	0.0207	0.1012	0.0525
	0.2767	*0.1189*	*0.2244*	*0.1425*	*0.3016*	*0.2231*
Technicians	0.1375	0.0232	0.1571	0.0345	0.1074	0.0938
	0.3444	*0.1504*	*0.3639*	*0.1827*	*0.3096*	*0.2915*
Administrative workers	0.0773	0.0228	0.2181	0.1024	0.1015	0.3161
	0.2670	*0.1492*	*0.4129*	*0.3034*	*0.3020*	*0.4650*
Services and trade workers	0.0729	0.0860	0.1751	0.2785	0.0604	0.1190
	0.2600	*0.2804*	*0.3801*	*0.4485*	*0.2382*	*0.3238*
Skilled manual workers	0.2592	0.3252	0.0528	0.0541	0.2401	0.0900
	0.4382	*0.4686*	*0.2236*	*0.2263*	*0.4272*	*0.2862*
Machinery operators	0.2673	0.1999	0.1312	0.1128	0.2742	0.1649
	0.4426	*0.4000*	*0.3376*	*0.3165*	*0.4461*	*0.3711*
Unskilled workers	0.1023	0.3286	0.2126	0.3970	0.1152	0.1636
	0.3030	*0.4698*	*0.4092*	*0.4896*	*0.3193*	*0.3700*
Extraction industries	0.0187	0.0184	0.0033	0.0000	0.0192	0.0038
	0.1355	*0.1343*	*0.0577*	*0.0000*	*0.1373*	*0.0614*
Manufactures	0.1538	0.1327	0.1981	0.1438	0.1783	0.2747
	0.3608	*0.3393*	*0.3985*	*0.3511*	*0.3827*	*0.4464*
Chemical manufacturing	0.1107	0.0904	0.0658	0.0345	0.1334	0.0912
	0.3137	*0.2868*	*0.2479*	*0.1827*	*0.3400*	*0.2879*
Metal manufacturing	0.1436	0.1092	0.0527	0.0184	0.1460	0.0713
	0.3506	*0.3119*	*0.2233*	*0.1345*	*0.3531*	*0.2574*
Other manufacturing	0.0768	0.0581	0.0394	0.0276	0.0874	0.0462
	0.2662	*0.2339*	*0.1946*	*0.1640*	*0.2824*	*0.2100*
Electricity, water and gas	0.0226	0.0055	0.0093	0.0000	0.0339	0.0135
	0.1486	*0.0741*	*0.0959*	*0.0000*	*0.1809*	*0.1154*
Construction	0.1307	0.2903	0.0204	0.0150	0.0938	0.0211
	0.3371	*0.4540*	*0.1413*	*0.1215*	*0.2916*	*0.1438*
Trade	0.0934	0.0599	0.1816	0.1289	0.0779	0.1627
	0.2910	*0.2374*	*0.3855*	*0.3353*	*0.2681*	*0.3691*
Hotels and restaurants	0.0450	0.0937	0.1221	0.3809	0.0443	0.1099
	0.2072	*0.2915*	*0.3274*	*0.4859*	*0.2059*	*0.3128*
Transports	0.0731	0.0511	0.0444	0.0299	0.0641	0.0470
	0.2603	*0.2202*	*0.2059*	*0.1705*	*0.2450*	*0.2116*
Financial activities	0.0569	0.0040	0.0671	0.0115	0.0759	0.0827
	0.2316	*0.0635*	*0.2502*	*0.1067*	*0.2648*	*0.2754*
Real state	0.0748	0.0867	0.1960	0.2094	0.0458	0.0758
	0.2631	*0.2815*	*0.3970*	*0.4071*	*0.2090*	*0.2647*
Number of observations	92,551	2,721	42,849	869	122,438	37,563

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Table A.2.a. OLS and Quantile Wage Regressions. Model 1, 1995

Variable	OLS	Quantile								
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
					Ntives, Men (n=122,438)					
Age	0.0804	0.0611	0.0654	0.0724	0.0780	0.0838	0.0884	0.0903	0.0893	0.0880
	[0.0008]***	[0.0011]***	[0.0010]***	[0.0009]***	[0.0010]***	[0.0010]***	[0.0010]***	[0.0010]***	[0.0012]***	[0.0014]***
Age^2	-0.0007	-0.0006	-0.0006	-0.0006	-0.0007	-0.0008	-0.0008	-0.0008	-0.0008	-0.0008
	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***
Years of schooling	0.0709	0.0491	0.0615	0.0681	0.0717	0.0731	0.0742	0.0751	0.0759	0.0768
	[0.0004]***	[0.0004]***	[0.0004]***	[0.0004]***	[0.0005]***	[0.0005]***	[0.0005]***	[0.0005]***	[0.0007]***	[0.0008]***
Constant	-0.2736	-0.0875	-0.1832	-0.2964	-0.3529	-0.3867	-0.3915	-0.3375	-0.1971	0.0068
	[0.0161]***	[0.0212]***	[0.0194]***	[0.0173]***	[0.0195]***	[0.0196]***	[0.0204]***	[0.0212]***	[0.0251]***	[0.0299]
					Natives, Women (n=37,563)					
Age	0.0700	0.0649	0.0586	0.0601	0.0639	0.0677	0.0731	0.0797	0.0828	0.0791
	[0.0014]***	[0.0019]***	[0.0016]***	[0.0014]***	[0.0015]***	[0.0016]***	[0.0016]***	[0.0018]***	[0.0022]***	[0.0026]***
Age^2	-0.0007	-0.0007	-0.0006	-0.0006	-0.0006	-0.0006	-0.0007	-0.0007	-0.0008	-0.0007
	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***
Years of schooling	0.0685	0.0484	0.0545	0.0609	0.0666	0.0709	0.0736	0.0749	0.0744	0.0741
	[0.0007]***	[0.0009]***	[0.0007]***	[0.0007]***	[0.0008]***	[0.0009]***	[0.0009]***	[0.0010]***	[0.0013]***	[0.0016]***
Constant	-0.1997	-0.2455	-0.0816	-0.0996	-0.1637	-0.2128	-0.2698	-0.3141	-0.2421	0.0009
	[0.0267]***	[0.0362***]	[0.0290]***	[0.0258]***	[0.0281]***	[0.0309]***	[0.0314]***	[0.0341]***	[0.0425]***	[0.0520]

Standard errors are in parenthesis. *** means statistically significant at a 1% level, ** means statistically significant at a 5% level and * means statistically significant at a 10% level. Source: Structure of Earnings Survey, 1995.

Table A.2.b. OLS and Quantile Wage Regressions. Model 2, 1995

Variable	OLS	Quantile								
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
					Natives, Men (n=122,438)					
Age	0.0398	0.0364	0.0344	0.0345	0.0358	0.0388	0.0413	0.0432	0.0445	0.0423
	[0.0008]***	[0.0011]***	[0.0010]***	[0.0008]***	[0.0009]***	[0.0009]***	[0.0009] **	[0.0009]***	[0.0010]***	[0.0013]***
Age^2	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0004	-0.0004	-0.0004	-0.0004
	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***
Years of schooling	0.0321	0.0235	0.0281	0.0302	0.0316	0.0327	0.0333	0.0330	0.0328	0.0335
	[0.0004]***	[0.0005]***	[0.0005]***	[0.0004]***	[0.0005]***	[0.0005]***	[0.0005]***	[0.0006]***	[0.0007]***	[0.0008]***
Tenure ≤ 3 years	-0.1259	-0.1569	-0.1507	-0.1515	-0.1494	-0.1415	-0.1268	-0.1089	-0.0852	-0.0543
	[0.0038]***	[0.0054]***	[0.0049]***	[0.0042]***	[0.0047]***	[0.0046]***	[0.0042]***	[0.0046]***	[0.0051]***	[0.0061]***
Part-time	-0.0269	-0.2330	-0.1639	-0.1203	-0.0694	-0.0377	-0.0138	0.0361	0.1084	0.2336
	[0.0086]***	[0.0114]***	[0.0105]***	[0.0093]***	[0.0105]***	[0.0105]***	[0.0098]	[0.0108]***	[0.0120]***	[0.0146]***
Temporary Contract	-0.1179	-0.0768	-0.0849	-0.0927	-0.1065	-0.1186	-0.1313	-0.1352	-0.1432	-0.1389
	[0.0041]***	[0.0058]***	[0.0053]***	[0.0045]***	[0.0050]***	[0.0049]***	[0.0045]***	[0.0049]***	[0.0054]***	[0.0064]***
Professionals	0.6148	0.4614	0.5353	0.5734	0.5920	0.6104	0.6401	0.6758	0.7167	0.7743
	[0.0055]***	[0.0074]***	[0.0069]***	[0.0060]***	[0.0067]***	[0.0067]***	[0.0062]***	[0.0068]***	[0.0076]***	[0.0093]***
Technicians	0.3586	0.2553	0.3031	0.3293	0.3434	0.3592	0.3749	0.3982	0.4211	0.4557
	[0.0051]***	[0.0068]***	[0.0062]***	[0.0054]***	[0.0061]***	[0.0061]***	[0.0057]***	[0.0062]***	[0.0069]***	[0.0085]***
Administrative workers	0.1305	0.1006	0.1261	0.1284	0.1270	0.1291	0.1334	0.1484	0.1648	0.1833
	[0.0050]***	[0.0067]***	[0.0062]***	[0.0054]***	[0.0061]***	[0.0061]***	[0.0057]***	[0.0062]***	[0.0069]***	[0.0084]***
Services/trade workers	0.0903	0.0921	0.0986	0.0942	0.0804	0.0745	0.0737	0.0761	0.0917	0.1098
	[0.0061]***	[0.0079]***	[0.0073]***	[0.0064]***	[0.0073]***	[0.0074]***	[0.0069]***	[0.0075]***	[0.0084]***	[0.0102]***
Skilled manual workers	0.0961	0.0786	0.0796	0.0783	0.0802	0.0837	0.0963	0.1080	0.1211	0.1314
	[0.0040]***	[0.0052]***	[0.0049]***	[0.0043]***	[0.0049]***	[0.0049]***	[0.0045]***	[0.0050]***	[0.0055]***	[0.0067]***
Machinery operators	0.0967	0.0889	0.0882	0.0860	0.0854	0.0895	0.0997	0.1131	0.1213	0.1227
	[0.0039]***	[0.0052]***	[0.0048]***	[0.0042]***	[0.0048]***	[0.0048]***	[0.0045]***	[0.0049]***	[0.0054]***	[0.0067]***
Extraction industries	0.2009	0.1384	0.1685	0.1775	0.1823	0.2026	0.2112	0.2283	0.2570	0.2842
	[0.0081]***	[0.0107]***	[0.0099]***	[0.0087]***	[0.0099]***	[0.0099]***	[0.0092]***	[0.0102]***	[0.0113]***	[0.0137]***
Chemical manufacture	0.1271	0.1347	0.1453	0.1546	0.1599	0.1534	0.1434	0.1273	0.1040	0.0741
	[0.0039]***	[0.0051]***	[0.0047]***	[0.0041]***	[0.0047]***	[0.0047]***	[0.0044]***	[0.0049]***	[0.0054]***	[0.0066]***
Metal manufacturing	0.0980	0.1433	0.1436	0.1388	0.1315	0.1186	0.1048	0.0834	0.0625	0.0302
	[0.0038]***	[0.0050]***	[0.0046]***	[0.0041]***	[0.0046]***	[0.0046]***	[0.0043]***	[0.0048]***	[0.0053]***	[0.0065]***
Other manufacturing	0.0357	0.0498	0.0540	0.0543	0.0562	0.0591	0.0552	0.0396	0.0198	-0.0175
	[0.0044]***	[0.0058]***	[0.0054]***	[0.0047]***	[0.0054]***	[0.0054]***	[0.0050]***	[0.0055]***	[0.0062]***	[0.0075]**
Electricity, water, gas	0.3746	0.3873	0.4349	0.4584	0.4607	0.4470	0.4225	0.3811	0.3324	0.2624
	[0.0064]***	[0.0084]***	[0.0078]***	[0.0068]***	[0.0077]***	[0.0078]***	[0.0073]***	[0.0080]***	[0.0089]***	[0.0109]***
Construction	0.1134	0.1622	0.1540	0.1398	0.1285	0.1211	0.1117	0.0922	0.0855	0.0789
	[0.0045]***	[0.0060]***	[0.0055]***	[0.0048]***	[0.0055]***	[0.0055]***	[0.0051]***	[0.0056]***	[0.0062]***	[0.0076]***
Trade	-0.0068	0.0252	0.0101	0.0011	-0.0059	-0.0110	-0.0154	-0.0146	-0.0197	-0.0193
	[0.0048]	[0.0062]***	[0.0058]	[0.0051]	[0.0058]	[0.0058]*	[0.0054]***	[0.0060]**	[0.0067]***	[0.0081]**
Hotels and restaurants	-0.0344	0.0071	0.0034	-0.0007	-0.0114	-0.0169	-0.0206	-0.0346	-0.0557	-0.0884
	[0.0065]***	[0.0085]	[0.0079]	[0.0069]	[0.0079]	[0.0080]	[0.0074]***	[0.0081] **	[0.0091]***	[0.0110]***
Transports	0.1446	0.1699	0.1807	0.1860	0.1847	0.1834	0.1702	0.1381	0.1027	0.0591
	[0.0050]***	[0.0065]***	[0.0060]***	[0.0053]***	[0.0060]***	[0.0060]***	[0.0056]***	[0.0062]***	[0.0069]***	[0.0085]***
Financial activities	0.2803	0.4617	0.3981	0.3465	0.3072	0.2690	0.2441	0.2229	0.2012	0.1670
	[0.0051]***	[0.0066]***	[0.0061]***	[0.0054]***	[0.0061]***	[0.0061]***	[0.0058]***	[0.0064]***	[0.0071]***	[0.0087]***
Real state	0.0155	0.0622	0.0553	0.0436	0.0295	0.0149	0.0055	-0.01	-0.0224	-0.0363

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	[0.0058]***	[0.0077]***	[0.0071]***	[0.0062]***	[0.0071]***	[0.0071]**	[0.0067]	[0.0074]	[0.0083]***	[0.0102]***
Constant	0.8896	0.6556	0.7578	0.8260	0.8738	0.8888	0.9119	0.9602	1.0419	1.2275
	[0.0164]***	[0.0229]***	[0.0208]***	[0.0179]***	[0.0200]***	[0.0200]***	[0.0186]***	[0.0204]***	[0.0229]***	[0.0284]***
Natives, Women (n=37,563)										
Age	0.0365	0.0422	0.0367	0.0348	0.0333	0.0336	0.0339	0.0346	0.0366	0.0395
	[0.0013]***	[0.0019]***	[0.0014]***	[0.0013]***	[0.0013]***	[0.0014]***	[0.0013]***	[0.0016]***	[0.0017]***	[0.0025]***
Age^2	-0.0003	-0.0004	-0.0004	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003
	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***
Years of schooling	0.0229	0.0163	0.0156	0.0173	0.0186	0.0199	0.0212	0.0236	0.0260	0.0285
	[0.0009]***	[0.0012]***	[0.0009]***	[0.0008]***	[0.0008]***	[0.0009]***	[0.0009]***	[0.0011]***	[0.0012]***	[0.0018]***
Tenure ≤ 3 years	-0.1326	-0.1781	-0.1547	-0.1388	-0.1341	-0.1312	-0.1275	-0.1189	-0.0963	-0.0709
	[0.0058]***	[0.0085]***	[0.0065]***	[0.0057]***	[0.0057]***	[0.0062]***	[0.0057]***	[0.0068]***	[0.0075]***	[0.0102]***
Part-time	-0.0062	-0.1174	-0.0678	-0.0575	-0.0435	-0.0304	-0.0125	0.0051	0.0514	0.1414
	[0.0063]***	[0.0089]***	[0.0068]***	[0.0060]***	[0.0061]***	[0.0068]***	[0.0063]**	[0.0076]***	[0.0085]***	[0.0118]***
Temporary Contract	-0.0651	-0.0565	-0.0620	-0.0669	-0.0676	-0.0714	-0.0741	-0.0831	-0.0957	-0.0585
	[0.0060]***	[0.0088]***	[0.0067]***	[0.0059]***	[0.0059]***	[0.0064]***	[0.0059]***	[0.0070]***	[0.0077]***	[0.0105]***
Professionals	0.6235	0.5075	0.5581	0.5807	0.6036	0.6273	0.6438	0.6662	0.6946	0.7213
	[0.0111]***	[0.0161]***	[0.0121]***	[0.0107]***	[0.0107]***	[0.0119]***	[0.0111]***	[0.0135]***	[0.0151]***	[0.0213]***
Technicians	0.3934	0.3272	0.3588	0.3619	0.3681	0.3752	0.3929	0.4000	0.4110	0.4359
	[0.0087]***	[0.0125]***	[0.0094]***	[0.0083]***	[0.0084]***	[0.0093]***	[0.0087]***	[0.0106]***	[0.0119]***	[0.0167]***
Administrative workers	0.1638	0.1570	0.1534	0.1460	0.1520	0.1552	0.1573	0.1594	0.1618	0.1807
	[0.0067]***	[0.0094]***	[0.0072]***	[0.0063]***	[0.0064]***	[0.0071]***	[0.0067]***	[0.0082]***	[0.0092]***	[0.0130]***
Services/trade workers	0.1087	0.1169	0.1083	0.0910	0.0914	0.0977	0.1003	0.1038	0.0989	0.1017
	[0.0075]***	[0.0107]***	[0.0082]***	[0.0072]***	[0.0073]***	[0.0081]***	[0.0075]***	[0.0092]***	[0.0102]***	[0.0143]***
Skilled manual workers	0.0512	0.0793	0.0568	0.0456	0.0402	0.0277	0.0248	0.0285	0.0437	0.0405
	[0.0083]***	[0.0115]***	[0.0088]***	[0.0079]***	[0.0080]***	[0.0089]***	[0.0084]***	[0.0103]***	[0.0115]***	[0.0161]**
Machinery operators	0.0583	0.0632	0.0525	0.0419	0.0374	0.0265	0.0282	0.0265	0.0482	0.0849
	[0.0072]***	[0.0099]***	[0.0076]***	[0.0068]***	[0.0069]***	[0.0077]***	[0.0073]***	[0.0089]***	[0.0101]***	[0.0142]***
Extraction industries	0.1281	0.1456	0.1423	0.1537	0.1825	0.1521	0.2049	0.1718	0.1789	0.1133
	[0.0306]***	[0.0420]***	[0.0324]***	[0.0289]***	[0.0292]***	[0.0326]***	[0.0304]***	[0.0371]***	[0.0413]***	[0.0577]**
Chemical manufacture	0.1995	0.1760	0.1961	0.2161	0.2261	0.2283	0.2364	0.2274	0.2126	0.1912
	[0.0073]***	[0.0101]***	[0.0078]***	[0.0069]***	[0.0070]***	[0.0079]***	[0.0074]***	[0.0090]***	[0.0100]***	[0.0141]***
Metal manufacturing	0.1911	0.1915	0.2204	0.2393	0.2450	0.2411	0.2338	0.2127	0.1821	0.1405
	[0.0079]***	[0.0108]***	[0.0084]***	[0.0075]***	[0.0076]***	[0.0085]***	[0.0080]***	[0.0098]***	[0.0109]***	[0.0153]***
Other manufacturing	0.1232	0.0864	0.1189	0.1347	0.1590	0.1590	0.1605	0.1587	0.1387	0.0907
	[0.0094]***	[0.0128]***	[0.0100]***	[0.0089]***	[0.0090]***	[0.0100]***	[0.0094]***	[0.0115]***	[0.0128]***	[0.0178]***
Electricity, water, gas	0.3210	0.2498	0.2960	0.3390	0.3677	0.3686	0.4087	0.4222	0.4001	0.3376
	[0.0167]***	[0.0230]***	[0.0178]***	[0.0158]***	[0.0160]***	[0.0179]***	[0.0167]***	[0.0204]***	[0.0228]***	[0.0317]***
Construction	0.1518	0.1554	0.1921	0.1929	0.2084	0.1967	0.1741	0.1575	0.1380	0.0934
	[0.0137]***	[0.0188]***	[0.0145]***	[0.0129]***	[0.0131]***	[0.0146]***	[0.0137]***	[0.0167]***	[0.0187]***	[0.0260]***
Trade	0.0272	0.0190	0.0372	0.0500	0.0465	0.0363	0.0313	0.0193**	0.0082	0.0094
	[0.0067]***	[0.0094]**	[0.0071]***	[0.0063]***	[0.0064]***	[0.0071]***	[0.0067]***	[0.0083]***	[0.0093]***	[0.0132]***
Hotels and restaurants	0.0789	0.1158	0.1183	0.1144	0.1066	0.0858	0.0755	0.0553	0.0409	0.0142
	[0.0077]***	[0.0107]***	[0.0082]***	[0.0073]***	[0.0074]***	[0.0083]***	[0.0078]***	[0.0095]***	[0.0106]***	[0.0149]***
Transports	0.2447	0.2032	0.2056	0.2263	0.2453	0.2692	0.2965	0.3288	0.3142	0.2566
	[0.0098]***	[0.0133]***	[0.0103]***	[0.0092]***	[0.0094]***	[0.0105]***	[0.0099]***	[0.0121]***	[0.0137]***	[0.0193]***
Financial activities	0.3686	0.3930	0.4189	0.4310	0.4396	0.4165	0.3970	0.3752	0.3639	0.3345
	[0.0082]***	[0.0113]***	[0.0087]***	[0.0077]***	[0.0079]***	[0.0088]***	[0.0083]***	[0.0102]***	[0.0114]***	[0.0161]***
Real state	0.0455	0.0548	0.0533	0.0613	0.0572	0.0504	0.0453	0.0344	0.0492	0.0512
	[0.0082]***	[0.0111]***	[0.0087]***	[0.0077]***	[0.0077]***	[0.0088]***	[0.0083]***	[0.0102]***	[0.0114]***	[0.0160]***
Constant	0.8439	0.5014	0.7126	0.7993	0.8723	0.9188	0.9574	0.9901	1.0109	1.0412
	[0.0273]***	[0.0401]***	[0.0301]***	[0.0265]***	[0.0264]***	[0.0292]***	[0.0271]***	[0.0329]***	[0.0366]***	[0.0516]***

See notes in Table above.

Table A.3.a. OLS and Quantile Wage Regressions. Model 1. Men, 2002

Variable	OLS	Quantile								
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
					Natives (n=92,551)					
Age	0.0457	0.0304	0.0304	0.0322	0.0346	0.0374	0.0423	0.0467	0.0528	0.0616
	[0.0009]***	[0.0011]***	[0.0010]***	[0.0009]***	[0.0010]***	[0.0010]***	[0.0011]***	[0.0012]***	[0.0013]***	[0.0016]***
Age^2	-0.0003	-0.0003	-0.0002	-0.0002	-0.0002	-0.0002	-0.0003	-0.0003	-0.0004	-0.0005
	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***
Years of schooling	0.0693	0.0368	0.0473	0.0567	0.0639	0.0686	0.0717	0.0746	0.0764	0.0797
	[0.0004]***	[0.0005]***	[0.0004]***	[0.0004]***	[0.0005]***	[0.0005]***	[0.0006]***	[0.0007]***	[0.0007]***	[0.0009]***
Constant	0.4158	0.7092	0.7048	0.6459	0.5919	0.5537	0.5079	0.4844	0.4622	0.4327
	[0.0169]***	[0.0208]***	[0.0179]***	[0.0172]***	[0.0193]***	[0.0200]***	[0.0211]***	[0.0246]***	[0.0273]***	[0.0336]***
					Immigrants (n=2,721)					
Age	0.0145	0.0233	0.0176	0.0147	0.012	0.0186	0.0084	0.0110	0.0109	-0.0021
	[0.0052]***	[0.0087]***	[0.0057]***	[0.0048]***	[0.0044]***	[0.0045]***	[0.0052]	[0.0056]**	[0.0068]	[0.0102]
Age^2	-0.0001	-0.0003	-0.0002	-0.0001	-0.0001	-0.0002	-0.0001	-0.0001	-0.0001	0.0001
	[0.0001]*	[0.0001]**	[0.0001]**	[0.0001]***	[0.0001]***	[0.0001]***	[0.0001]	[0.0001]	[0.0001]	[0.0001]
Years of schooling	0.0335	0.0072	0.0098	0.0105	0.0119	0.0168	0.0243	0.0327	0.0408	0.0562
	[0.0023]***	[0.0039]*	[0.0024]***	[0.0020]***	[0.0018]***	[0.0019]***	[0.0023]***	[0.0027]***	[0.0035]***	[0.0059]***
Constant	1.3891	1.1747	1.3405	1.4545	1.5614	1.464	1.6433	1.599	1.6058	1.8275
	[0.0926]***	[0.1585]***	[0.1017]***	[0.0857]***	[0.0777]***	[0.0799]***	[0.0937]***	[0.1017]***	[0.1247]***	[0.1912]***

Standard errors are in parenthesis. *** means statistically significant at a 1% level, ** means statistically significant at a 5% level and * means statistically significant at a 10% level. Source: Structure of Earnings Survey, 2002.

Table A.3.b. OLS and Quantile Wage Regressions. Model 2. Men, 2002

Variable	OLS	Quantile								
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
					Natives (n=92,551)					
Age	0.0163	0.0127	0.0106	0.0099	0.0101	0.0114	0.0130	0.0162	0.0201	0.0241
	[0.0008]***	[0.0010]***	[0.0009]***	[0.0008]***	[0.0009]***	[0.0009]***	[0.0009]***	[0.0011]***	[0.0011]***	[0.0015]***
Age^2	-0.0001	-0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001	-0.0001	-0.0001
	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]**	[0.0000]	[0.0000]**	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***
Years of schooling	0.0240	0.0148	0.0182	0.0200	0.0220	0.0236	0.0243	0.0255	0.0274	0.0271
	[0.0005]***	[0.0006]***	[0.0005]***	[0.0005]***	[0.0006]***	[0.0005]***	[0.0006]***	[0.0007]***	[0.0008]***	[0.0010]***
Tenure ≤ 3 years	-0.1779	-0.1394	-0.1495	-0.1623	-0.1750	-0.1813	-0.1908	-0.1902	-0.1856	-0.1762
	[0.0032]***	[0.0042]***	[0.0038]***	[0.0034]***	[0.0037]***	[0.0035]***	[0.0036]***	[0.0042]***	[0.0044]***	[0.0058]***
Part-time	-0.0768	-0.2352	-0.1658	-0.1356	-0.0961	-0.0735	-0.0513	-0.0277	-0.0021	0.1002
	[0.0070]***	[0.0087]***	[0.0081]***	[0.0073]***	[0.0079]***	[0.0077]***	[0.0081]***	[0.0093]***	[0.0101]	[0.0133]***
Temporary Contract	-0.0643	-0.0564	-0.0526	-0.0521	-0.0536	-0.0622	-0.0636	-0.0679	-0.0672	-0.0612
	[0.0036]***	[0.0047]***	[0.0043]***	[0.0039]***	[0.0042]***	[0.0040]***	[0.0042]***	[0.0048]***	[0.0051]***	[0.0066]***
Professionals	0.7135	0.5189	0.5886	0.6389	0.6658	0.6921	0.7305	0.7730	0.8202	0.9227
	[0.0067]***	[0.0085]***	[0.0079]***	[0.0071]***	[0.0077]***	[0.0074]***	[0.0077]***	[0.0089]***	[0.0096]***	[0.0126]***
Technicians	0.4152	0.2531	0.3020	0.3377	0.3778	0.4114	0.4335	0.4591	0.4967	0.5528
	[0.0055]***	[0.0070]***	[0.0065]***	[0.0059]***	[0.0063]***	[0.0061]***	[0.0063]***	[0.0073]***	[0.0079]***	[0.0104]***
Administrative workers	0.1581	0.1148	0.1228	0.1253	0.1359	0.1460	0.1528	0.1641	0.1872	0.2282
	[0.0060]***	[0.0076]***	[0.0071]***	[0.0064]***	[0.0069]***	[0.0067]***	[0.0069]***	[0.0080]***	[0.0085]***	[0.0110]***
Services/trade workers	0.1688	0.1253	0.1307	0.1384	0.1399	0.1559	0.1621	0.1661	0.1745	0.2102
	[0.0066]***	[0.0081]***	[0.0075]***	[0.0068]***	[0.0075]***	[0.0073]***	[0.0076]***	[0.0088]***	[0.0094]***	[0.0122]***
Skilled manual workers	0.1287	0.1055	0.1001	0.0977	0.1017	0.1072	0.1159	0.1299	0.1495	0.1705
	[0.0046]***	[0.0057]***	[0.0054]***	[0.0048]***	[0.0053]***	[0.0051]***	[0.0053]***	[0.0061]***	[0.0066]***	[0.0086]***
Machinery operators	0.1304	0.1077	0.1045	0.105	0.1104	0.1221	0.1297	0.1434	0.1561	0.1714
	[0.0046]***	[0.0058]***	[0.0054]***	[0.0049]***	[0.0053]***	[0.0051]***	[0.0053]***	[0.0061]***	[0.0066]***	[0.0087]***
Extraction industries	0.1881	0.1393	0.1636	0.1703	0.1771	0.1739	0.1840	0.2044	0.2303	0.2681
	[0.0092]***	[0.0114]***	[0.0107]***	[0.0097]***	[0.0105]***	[0.0102]***	[0.0107]***	[0.0124]***	[0.0134]***	[0.0176]***
Chemical manufacturing	0.1577	0.1543	0.1534	0.1640	0.1755	0.1801	0.1765	0.1690	0.1544	0.1283
	[0.0047]***	[0.0058]***	[0.0054]***	[0.0049]***	[0.0053]***	[0.0052]***	[0.0054]***	[0.0063]***	[0.0068]***	[0.0090]***
Metal manufacturing	0.1054	0.135	0.1342	0.1364	0.1364	0.1338	0.1212	0.1055	0.0879	0.0607
	[0.0044]***	[0.0054]***	[0.0051]***	[0.0046]***	[0.0050]***	[0.0049]***	[0.0051]***	[0.0059]***	[0.0064]***	[0.0084]***
Other manufacturing	0.0635	0.0786	0.0716	0.0731	0.0872	0.0999	0.0951	0.0898	0.0652	0.0200
	[0.0053]***	[0.0065]***	[0.0061]***	[0.0055]***	[0.0060]***	[0.0058]***	[0.0061]***	[0.0071]***	[0.0076]***	[0.0100]**
Electricity, water, gas	0.3392	0.2837	0.3145	0.3545	0.3742	0.3928	0.3895	0.3893	0.3571	0.3275
	[0.0085]***	[0.0105]***	[0.0098]***	[0.0089]***	[0.0097]***	[0.0094]***	[0.0099]***	[0.0115]***	[0.0124]***	[0.0164]***
Construction	0.1354	0.1390	0.1426	0.1445	0.1467	0.1493	0.1439	0.1367	0.1314	0.1355
	[0.0049]***	[0.0062]***	[0.0057]***	[0.0052]***	[0.0056]***	[0.0054]***	[0.0057]***	[0.0065]***	[0.0070]***	[0.0091]***
Trade	0.0116	0.0116	0.0141	0.0156	0.0173	0.0141	0.0168	0.0147	0.0106	-0.0057
	[0.0052]**	[0.0064]*	[0.0060]**	[0.0054]***	[0.0059]***	[0.0058]**	[0.0060]***	[0.0070]**	[0.0075]	[0.0099]
Hotels and restaurants	-0.0665	-0.025	-0.0292	-0.0363	-0.0403	-0.0511	-0.064	-0.0665	-0.0847	-0.1337
	[0.0074]***	[0.0091]***	[0.0085]***	[0.0077]***	[0.0084]***	[0.0083]***	[0.0087]***	[0.0100]***	[0.0108]***	[0.0140]***
Transports	0.1518	0.1124	0.1451	0.1660	0.1804	0.1832	0.1823	0.1714	0.1531	0.1071
	[0.0054]***	[0.0066]***	[0.0062]***	[0.0056]***	[0.0061]***	[0.0060]***	[0.0063]***	[0.0073]***	[0.0078]***	[0.0103]***
Financial activities	0.3767	0.4871	0.4821	0.4645	0.4390	0.4105	0.3840	0.3517	0.3152	0.2839
	[0.0062]***	[0.0078]***	[0.0072]***	[0.0065]***	[0.0071]***	[0.0069]***	[0.0072]***	[0.0084]***	[0.0091]***	[0.0120]***
Real state	0.0107	0.0177	0.0299	0.0365	0.0354	0.0291	0.0202	0.0142	-0.0026	-0.0118
	[0.0056]*	[0.0070]**	[0.0065]***	[0.0059]***	[0.0064]***	[0.0062]***	[0.0065]***	[0.0076]*	[0.0082]	[0.0109]
Constant	1.390	1.2349	1.337	1.4052	1.4439	1.4662	1.5042	1.509	1.5095	1.5717
	[0.0166]***	[0.0208]***	[0.0194]***	[0.0175]***	[0.0189]***	[0.0184]***	[0.0192]***	[0.0224]***	[0.0242]***	[0.0320]***

	Immigrants(n=2,721)									
Age	0.0087	0.0103	0.0079	0.0047	0.0094	0.0082	0.0077	0.0106	0.0021	0.0014
	[0.0045]*	[0.0068]	[0.0052]	[0.0041]	[0.0050]*	[0.0040]**	[0.0062]	[0.0057]*	[0.0069]	[0.0064]
Age^2	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	0.0000	0.0000
	[0.0001]	[0.0001]	[0.0001]	[0.0001]	[0.0001]*	[0.0001]*	[0.0001]	[0.0001]	[0.0001]	[0.0001]
Years of schooling	0.0118	0.0035	0.0062	0.0045	0.0061	0.0069	0.0103	0.0131	0.0185	0.0232
	[0.0022]***	[0.0040]	[0.0027]**	[0.0020]**	[0.0025]**	[0.0020]***	[0.0031]***	[0.0028]***	[0.0033]***	[0.0030]***
Tenure ≤ 3 years	-0.1776	-0.1556	-0.1293	-0.1425	-0.1260	-0.1451	-0.1670	-0.2060	-0.2187	-0.2630
	[0.0226]***	[0.0371]***	[0.0267]***	[0.0204]***	[0.0253]***	[0.0200]***	[0.0313]***	[0.0288]***	[0.0352]***	[0.0333]***
Part-time	-0.1165	-0.3212	-0.3167	-0.1403	-0.1275	-0.089	-0.0645	-0.0758	-0.0253	0.0319
	[0.0266]***	[0.0423]***	[0.0309]***	[0.0238]***	[0.0298]***	[0.0237]***	[0.0370]*	[0.0345]**	[0.0416]	[0.0410]
Temporary Contract	-0.0230	-0.0129	-0.0112	-0.0206	-0.0251	-0.0182	-0.0059	-0.0146	-0.0009	-0.0075
	[0.0134]*	[0.0230]	[0.0159]	[0.0121]*	[0.0150]*	[0.0119]	[0.0186]	[0.0172]	[0.0210]	[0.0200]
Professionals	1.1159	0.8817	0.8692	0.8421	0.9483	1.1816	1.1394	1.2496	1.2996	1.5811
	[0.0509]***	[0.0827]***	[0.0610]***	[0.0463]***	[0.0569]***	[0.0449]***	[0.0697]***	[0.0643]***	[0.0762]***	[0.0673]***
Technicians	0.5184	0.2654	0.2187	0.3624	0.4749	0.5173	0.5217	0.5796	0.6292	0.8001
	[0.0408]***	[0.0686]***	[0.0372]***	[0.0372]***	[0.0457]***	[0.0360]***	[0.0562]***	[0.0517]***	[0.0644]***	[0.0593]***
Administrative workers	0.0241	0.0181	-0.0170	0.0017	0.0424	0.0459	0.0845	0.0749	0.0833	0.0605
	[0.0389]	[0.0628]	[0.0453]	[0.0349]	[0.0428]	[0.0340]	[0.0541]	[0.0508]	[0.0627]	[0.0622]
Services/trade workers	-0.0265	-0.0416	-0.0628	-0.0764	-0.0521	-0.0024	0.0011	-0.0115	-0.0206	-0.0009
	[0.0292]	[0.0511]	[0.0371]*	[0.0272]***	[0.0330]	[0.0259]	[0.0402]	[0.0377]	[0.0470]	[0.0485]
Skilled manual workers	0.0955	0.0686	0.0749	0.087	0.0922	0.0999	0.1058	0.1216	0.1204	0.1091
	[0.0141]***	[0.0233]***	[0.0164]***	[0.0126]***	[0.0158]***	[0.0126]***	[0.0198]***	[0.0184]***	[0.0223]***	[0.0216]***
Machinery operators	0.0882	0.0465	0.0489	0.0559	0.0647	0.0706	0.1025	0.1369	0.1233	0.1036
	[0.0170]***	[0.0281]*	[0.0199]**	[0.0153]***	[0.0190]***	[0.0151]***	[0.0237]***	[0.0220]***	[0.0267]***	[0.0253]***
Extraction industries	0.1941	0.1685	0.1020	0.1006	0.1231	0.1357	0.1550	0.1786	0.2258	0.3985
	[0.0430]***	[0.0714]**	[0.0504]**	[0.0386]***	[0.0480]**	[0.0380]***	[0.0595]***	[0.0558]***	[0.0686]***	[0.0615]***
Chemical manufacturing	0.1373	0.1592	0.1092	0.1036	0.1321	0.1208	0.1385	0.1272	0.1583	0.1121
	[0.0236]***	[0.0382]***	[0.0273]***	[0.0213]***	[0.0264]***	[0.0210]***	[0.0329]***	[0.0306]***	[0.0375]***	[0.0359]***
Metal manufacturing	0.0900	0.1462	0.1041	0.0970	0.0877	0.0786	0.0669	0.0711	0.0243	0.0682
	[0.0229]***	[0.0384]***	[0.0269]***	[0.0206]***	[0.0256]***	[0.0204]***	[0.0319]**	[0.0296]**	[0.0362]	[0.0346]**
Other manufacturing	0.0861	0.059	0.0387	0.0328	0.0437	0.0576	0.0642	0.0975	0.0564	0.0836
	[0.0273]***	[0.0449]	[0.0320]	[0.0246]	[0.0306]	[0.0243]**	[0.0381]*	[0.0354]***	[0.0433]	[0.0417]**
Electricity, water, gas	0.1894	-0.0357	0.0356	0.0136	0.0966	0.0774	0.1352	0.2461	0.391	0.3976
	[0.0752]**	[0.1064]	[0.0653]	[0.0653]	[0.0829]	[0.0649]	[0.0998]	[0.0925]***	[0.1178]***	[0.0984]***
Construction	0.1745	0.2118	0.1877	0.1738	0.1597	0.1489	0.1475	0.1685	0.1246	0.1295
	[0.0199]***	[0.0336]***	[0.0233]***	[0.0178]***	[0.0223]***	[0.0177]***	[0.0278]***	[0.0256]***	[0.0311]***	[0.0300]***
Trade	-0.0243	-0.0721	-0.0791	-0.0233	-0.0381	-0.0041	-0.0092	0.0415	0.0134	-0.0378
	[0.0278]	[0.0434]*	[0.0314]**	[0.0246]	[0.0310]	[0.0247]	[0.0387]	[0.0358]	[0.0439]	[0.0435]
Hotels and restaurants	0.0623	0.1196	0.1099	0.0952	0.0878	0.0634	0.0460	0.0598	0.0318	-0.0326
	[0.0307]**	[0.0559]**	[0.0396]***	[0.0287]***	[0.0349]**	[0.0273]**	[0.0423]	[0.0396]	[0.0484]	[0.0503]
Transports	0.0712	0.0896	0.1106	0.0763	0.0922	0.0749	0.0523	0.0613	0.0517	0.0013
	[0.0292]**	[0.0473]*	[0.0341]***	[0.0261]***	[0.0325]***	[0.0259]***	[0.0409]	[0.0382]	[0.0472]	[0.0450]
Financial activities	0.1852	-0.1334	0.4261	0.2340	0.2271	0.1747	0.2020	0.3828	0.1866	-0.1635
	[0.0907]**	[0.1486]	[0.1031]***	[0.0703]***	[0.0977]**	[0.0771]**	[0.1214]*	[0.1002]***	[0.1115]*	[0.1351]
Real state	0.0421	-0.0013	-0.0007	0.0144	0.033	0.0528	0.0921	0.1056	0.0647	0.0377
	[0.0248]*	[0.0409]	[0.0290]	[0.0222]	[0.0276]	[0.0220]**	[0.0344]***	[0.0319]***	[0.0390]*	[0.0376]
Constante	1.7450	1.4725	1.590	1.7409	1.6924	1.7739	1.7971	1.8205	2.0325	2.1615
	[0.0856]***	[0.1333]***	[0.0997]***	[0.0776]***	[0.0951]***	[0.0763]***	[0.1190]***	[0.1100]***	[0.1326]***	[0.1230]***

See notes in Table 2a.

Table A.4.a. OLS and Quantile Wage Regressions. Model 1. Women, 2002

Variable	OLS	Quantile								
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Natives (n=42,849)										
Age	0.0264	0.0264	0.0301	0.0332	0.036	0.0391	0.0416	0.0447	0.0524	0.0264
	[0.0017]***	[0.0014]***	[0.0014]***	[0.0012]***	[0.0014]***	[0.0016]***	[0.0017]***	[0.0021]***	[0.0028]***	[0.0017]***
Age^2	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0004	-0.0004	-0.0004	-0.0004	-0.0003
	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***
Years of schooling	0.0341	0.0395	0.0457	0.0531	0.0598	0.0664	0.073	0.0792	0.0835	0.0341
	[0.0007]***	[0.0006]***	[0.0006]***	[0.0005]***	[0.0007]***	[0.0008]***	[0.0008]***	[0.0011]***	[0.0015]***	[0.0007]***
Constant	0.6876	0.7368	0.6832	0.6108	0.5510	0.4879	0.4367	0.3998	0.3526	0.6876
	[0.0296]***	[0.0255]***	[0.0254]***	[0.0219]***	[0.0264]***	[0.0294]***	[0.0319]***	[0.0410]***	[0.0567]***	[0.0296]***
Immigrants (n=869)										
Age	0.0184	0.0318	0.0123	0.0026	0.0100	0.0165	0.0157	0.0163	0.0157	0.0309
	[0.0097]*	[0.0146]**	[0.0087]	[0.0093]	[0.0088]	[0.0083]**	[0.0103]	[0.0114]	[0.0156]	[0.0227]
Age^2	-0.0002	-0.0004	-0.0001	0.0000	-0.0001	-0.0002	-0.0002	-0.0002	-0.0001	-0.0003
	[0.0001]	[0.0002]**	[0.0001]	[0.0001]	[0.0001]	[0.0001]	[0.0001]	[0.0002]	[0.0002]	[0.0003]
Years of schooling	0.0384	0.0266	0.017	0.0167	0.0136	0.0168	0.0237	0.0303	0.0465	0.065
	[0.0037]***	[0.0055]***	[0.0032]***	[0.0035]***	[0.0034]***	[0.0032]***	[0.0040]***	[0.0045]***	[0.0064]***	[0.0115]***
Constant	1.0729	0.6564	1.2027	1.4326	1.4103	1.3173	1.3418	1.3209	1.2478	0.9457
	[0.1687]***	[0.2585]**	[0.1517]***	[0.1611]***	[0.1540]***	[0.1440]***	[0.1783]***	[0.1968]***	[0.2698]***	[0.4194]**

Standard errors are in parenthesis. *** means statistically significant at a 1% level, ** means statistically significant at a 5% level and * means statistically significant at a 10% level. Source: Structure of Earnings Survey, 2002.

Table A.4.b. OLS and Quantile Wage Regressions. Model 2. Women, 2002

Variable	OLS	Quantile								
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Natives (n=92,551)										
Age	0.0186	0.0175	0.0162	0.0159	0.0159	0.0162	0.0164	0.0183	0.0176	0.0170
	[0.0011]***	[0.0017]***	[0.0013]***	[0.0011]***	[0.0012]***	[0.0011]***	[0.0013]***	[0.0013]***	[0.0014]***	[0.0021]***
Age^2	-0.0002	-0.0002	-0.0002	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***	[0.0000]***
Years of schooling	0.0181	0.0114	0.0122	0.0134	0.0146	0.0155	0.0167	0.0181	0.0205	0.0247
	[0.0007]***	[0.0010]***	[0.0008]***	[0.0006]***	[0.0007]***	[0.0007]***	[0.0008]***	[0.0008]***	[0.0009]***	[0.0014]***
Tenure ≤ 3 years	-0.1523	-0.1217	-0.1214	-0.1239	-0.1329	-0.1427	-0.1473	-0.157	-0.1621	-0.1831
	[0.0039]***	[0.0062]***	[0.0046]***	[0.0038]***	[0.0042]***	[0.0039]***	[0.0046]***	[0.0045]***	[0.0048]***	[0.0069]***
Part-time	-0.0254	-0.0832	-0.0547	-0.0428	-0.0349	-0.0260	-0.0184	-0.0114	-0.0003	0.0363
	[0.0042]***	[0.0064]***	[0.0048]***	[0.0041]***	[0.0045]***	[0.0042]***	[0.0050]***	[0.0049]**	[0.0053]	[0.0077]***
Temporary Contract	-0.057	-0.0642	-0.0623	-0.0614	-0.0533	-0.0514	-0.0493	-0.0462	-0.045	-0.0367
	[0.0041]***	[0.0064]***	[0.0048]***	[0.0040]***	[0.0045]***	[0.0042]***	[0.0050]***	[0.0049]***	[0.0052]***	[0.0076]***
Professionals	0.6665	0.4695	0.5077	0.5504	0.6017	0.6568	0.6968	0.7567	0.7965	0.8598
	[0.0094]***	[0.0147]***	[0.0109]***	[0.0092]***	[0.0101]***	[0.0095]***	[0.0114]***	[0.0113]***	[0.0123]***	[0.0183]***
Technicians	0.3622	0.2474	0.2641	0.2870	0.3152	0.3448	0.3688	0.3959	0.432	0.4813
	[0.0066]***	[0.0107]***	[0.0078]***	[0.0065]***	[0.0071]***	[0.0067]***	[0.0080]***	[0.0080]***	[0.0087]***	[0.0129]***
Administrative workers	0.1132	0.0901	0.0793	0.0788	0.0865	0.0963	0.1011	0.1067	0.1105	0.1222
	[0.0058]***	[0.0091]***	[0.0067]***	[0.0056]***	[0.0062]***	[0.0058]***	[0.0070]***	[0.0070]***	[0.0076]***	[0.0113]***
Services/trade workers	0.1028	0.0441	0.0449	0.0537	0.0695	0.0871	0.1020	0.1173	0.1237	0.1435
	[0.0059]***	[0.0094]***	[0.0069]***	[0.0058]***	[0.0063]***	[0.0060]***	[0.0072]***	[0.0071]***	[0.0078]***	[0.0115]***
Skilled manual workers	0.0687	0.0558	0.0486	0.0505	0.0532	0.0657	0.0708	0.0811	0.0934	0.1068
	[0.0085]***	[0.0133]***	[0.0098]***	[0.0082]***	[0.0091]***	[0.0086]***	[0.0103]***	[0.0102]***	[0.0112]***	[0.0166]***
Machinery operators	0.0764	0.0768	0.0510	0.0472	0.0532	0.059	0.0644	0.070	0.0859	0.1043
	[0.0066]***	[0.0104]***	[0.0077]***	[0.0064]***	[0.0071]***	[0.0067]***	[0.0081]***	[0.0080]***	[0.0088]***	[0.0130]***
Extraction industries	0.1607	0.1632	0.1453	0.1417	0.1698	0.1614	0.1923	0.2084	0.1933	0.2224
	[0.0274]***	[0.0413]***	[0.0310]***	[0.0263]***	[0.0292]***	[0.0276]***	[0.0331]***	[0.0325]***	[0.0353]***	[0.0520]***
Chemical manufacturing	0.2294	0.1859	0.2064	0.2224	0.2370	0.2444	0.2494	0.2528	0.2643	0.2545
	[0.0072]***	[0.0109]***	[0.0082]***	[0.0070]***	[0.0077]***	[0.0073]***	[0.0088]***	[0.0087]***	[0.0094]***	[0.0139]***
Metal manufacturing	0.1761	0.2047	0.1984	0.1979	0.2032	0.2132	0.2123	0.2112	0.1983	0.1643
	[0.0078]***	[0.0117]***	[0.0087]***	[0.0075]***	[0.0083]***	[0.0079]***	[0.0095]***	[0.0095]***	[0.0104]***	[0.0154]***
Other manufacturing	0.1413	0.1523	0.1408	0.1426	0.1447	0.1564	0.1621	0.1739	0.1824	0.1410
	[0.0087]***	[0.0131]***	[0.0098]***	[0.0084]***	[0.0092]***	[0.0088]***	[0.0105]***	[0.0104]***	[0.0113]***	[0.0167]***
Electricity, water, gas	0.3178	0.2195	0.2542	0.2759	0.3172	0.3379	0.3612	0.3793	0.4119	0.4336
	[0.0169]***	[0.0257]***	[0.0192]***	[0.0163]***	[0.0180]***	[0.0170]***	[0.0205]***	[0.0202]***	[0.0220]***	[0.0323]***
Construction	0.0861	0.1069	0.1358	0.1288	0.1274	0.1205	0.1164	0.1076	0.099	0.0529
	[0.0118]***	[0.0179]***	[0.0134]***	[0.0114]***	[0.0126]***	[0.0120]***	[0.0144]***	[0.0143]***	[0.0156]***	[0.0232]**
Trade	0.0613	0.0821	0.0785	0.0812	0.0767	0.073	0.0678	0.0613	0.0574	0.0310
	[0.0060]***	[0.0095]***	[0.0070]***	[0.0058]***	[0.0064]***	[0.0061]***	[0.0073]***	[0.0072]***	[0.0079]***	[0.0119]***
Hotels and restaurants	0.0656	0.088	0.0825	0.0947	0.0971	0.0918	0.0839	0.0734	0.0683	0.0412
	[0.0068]***	[0.0105]***	[0.0078]***	[0.0066]***	[0.0073]***	[0.0069]***	[0.0083]***	[0.0082]***	[0.0090]***	[0.0132]***
Transports	0.1932	0.1448	0.1708	0.1842	0.1998	0.2057	0.2120	0.2147	0.2306	0.2517
	[0.0087]***	[0.0131]***	[0.0098]***	[0.0083]***	[0.0092]***	[0.0088]***	[0.0106]***	[0.0105]***	[0.0115]***	[0.0171]***
Financial activities	0.4303	0.3968	0.4315	0.4557	0.4811	0.4923	0.4972	0.4987	0.4823	0.4479
	[0.0077]***	[0.0117]***	[0.0087]***	[0.0074]***	[0.0082]***	[0.0078]***	[0.0094]***	[0.0094]***	[0.0103]***	[0.0154]***
Real state	0.0434	0.0384	0.0512	0.0639	0.0593	0.0577	0.0470	0.0397	0.0412	0.0328
	[0.0060]***	[0.0091]***	[0.0067]***	[0.0057]***	[0.0063]***	[0.0060]***	[0.0073]***	[0.0074]***	[0.0081]***	[0.0122]***
Constant	1.2616	1.0763	1.1942	1.2476	1.2856	1.3216	1.358	1.3752	1.4393	1.5368
	[0.0226]***	[0.0354]***	[0.0262]***	[0.0221]***	[0.0242]***	[0.0228]***	[0.0274]***	[0.0270]***	[0.0295]***	[0.0440]***

					Immigrants(n=2,721)					
Age	0.0197	0.0250	0.0179	0.0114	0.0114	0.0141	0.0213	0.0139	0.0101	0.0225
	[0.0086]**	[0.0082]***	[0.0102]*	[0.0101]	[0.0085]	[0.0082]*	[0.0094]**	[0.0073]*	[0.0108]	[0.0179]
Age^2	-0.0002	-0.0004	-0.0002	-0.0001	-0.0001	-0.0002	-0.0003	-0.0002	-0.0001	-0.0003
	[0.0001]*	[0.0001]***	[0.0001]	[0.0001]	[0.0001]	[0.0001]	[0.0001]**	[0.0001]	[0.0002]	[0.0003]
Years of schooling	0.0074	0.0093	0.0033	0.0047	0.0049	0.0054	0.0069	0.0062	0.0055	0.0053
	[0.0041]*	[0.0041]**	[0.0051]	[0.0051]	[0.0041]	[0.0040]	[0.0044]	[0.0032]*	[0.0047]	[0.0072]
Tenure ≤ 3 years	-0.2532	-0.1353	-0.1026	-0.1358	-0.1508	-0.2251	-0.2139	-0.2214	-0.2573	-0.3524
	[0.0428]***	[0.0384]***	[0.0523]*	[0.0544]**	[0.0426]***	[0.0413]***	[0.0470]***	[0.0333]***	[0.0495]***	[0.0704]***
Part-time	-0.0860	-0.2140	-0.1459	-0.1110	-0.0755	-0.0755	-0.0759	-0.0752	-0.0473	0.0140
	[0.0239]***	[0.0251]***	[0.0307]***	[0.0295]***	[0.0237]***	[0.0233]***	[0.0260]***	[0.0188]***	[0.0278]*	[0.0440]
Temporary Contract	-0.0154	-0.0417	-0.0506	-0.0527	-0.0189	-0.0195	0.0098	0.0166	0.0363	0.0550
	[0.0214]	[0.0205]**	[0.0264]*	[0.0262]**	[0.0212]	[0.0210]	[0.0234]	[0.0172]	[0.0253]	[0.0400]
Professionals	0.8738	0.5844	0.9333	0.9466	0.8976	0.8244	0.8374	0.9825	0.9063	1.3145
	[0.0827]***	[0.0769]***	[0.1017]***	[0.1012]***	[0.0793]***	[0.0775]***	[0.0908]***	[0.0675]***	[0.0984]***	[0.1321]***
Technicians	0.4799	0.2370	0.3376	0.4033	0.4047	0.4602	0.4825	0.5619	0.5441	0.8683
	[0.0655]***	[0.0650]***	[0.0808]***	[0.0808]***	[0.0663]***	[0.0641]***	[0.0690]***	[0.0505]***	[0.0736]***	[0.1082]***
Administrative workers	0.0909	0.1123	0.1176	0.1129	0.0853	0.0681	0.0685	0.0421	0.0825	0.1853
	[0.0406]**	[0.0413]***	[0.0530]**	[0.0512]**	[0.0409]**	[0.0398]*	[0.0443]	[0.0325]	[0.0477]*	[0.0715]***
Services/trade workers	0.0270	0.0436	0.0555	0.0368	0.0358	0.0263	-0.0143	-0.0045	0.0046	0.0566
	[0.0288]	[0.0283]	[0.0362]	[0.0349]	[0.0286]	[0.0283]	[0.0321]	[0.0234]	[0.0351]	[0.0555]
Skilled manual workers	0.0421	0.1595	0.1196	0.1122	0.0789	0.0406	0.0134	-0.0317	-0.0393	-0.0099
	[0.0519]	[0.0512]***	[0.0638]*	[0.0600]*	[0.0503]	[0.0502]	[0.0558]	[0.0422]	[0.0607]	[0.0869]
Machinery operators	0.0344	0.0861	0.035	0.0421	0.0228	-0.0066	-0.0043	0.0269	-0.0237	0.1145
	[0.0414]	[0.0397]**	[0.0478]	[0.0488]	[0.0400]	[0.0405]	[0.0454]	[0.0332]	[0.0502]	[0.0853]
Chemical manufacturing	0.1827	0.1539	0.2044	0.1809	0.2284	0.2040	0.2591	0.2013	0.1990	0.1047
	[0.0619]***	[0.0653]**	[0.0765]***	[0.0752]**	[0.0619]***	[0.0606]***	[0.0682]***	[0.0504]***	[0.0708]***	[0.1094]
Metal manufacturing	0.1043	-0.1696	0.2500	0.2527	0.2753	0.2677	0.2010	0.1906	0.1299	0.0459
	[0.0802]	[0.0683]**	[0.0964]***	[0.0923]***	[0.0779]***	[0.0777]***	[0.0864]**	[0.0630]***	[0.0853]	[0.1410]
Other manufacturing	0.0606	0.0290	0.0556	0.1008	0.1194	0.0908	0.1375	0.0594	0.0450	-0.0724
	[0.0661]	[0.0652]	[0.0802]	[0.0814]	[0.0626]*	[0.0645]	[0.0703]*	[0.0538]	[0.0763]	[0.1218]
Construction	0.2791	0.2445	0.2613	0.3090	0.2833	0.2455	0.2138	0.2833	0.1964	0.3381
	[0.0879]***	[0.0814]***	[0.1008]***	[0.0997]***	[0.0806]***	[0.0842]***	[0.0955]**	[0.0665]***	[0.0995]**	[0.1594]**
Trade	0.0140	-0.0203	-0.0124	0.0107	0.0656	0.0500	0.0237	0.0184	-0.0114	0.0344
	[0.0429]	[0.0401]	[0.0505]	[0.0501]	[0.0415]	[0.0422]	[0.0477]	[0.0357]	[0.0537]	[0.0869]
Hotels and restaurants	0.1155	0.1526	0.1762	0.1602	0.1766	0.1558	0.1699	0.1138	0.0287	0.0367
	[0.0396]***	[0.0385]***	[0.0483]***	[0.0466]***	[0.0385]***	[0.0389]***	[0.0438]***	[0.0327]***	[0.0478]	[0.0774]
Transports	-0.0080	-0.0124	-0.0415	0.0239	0.0354	0.0801	0.0708	0.0023	-0.0215	0.1074
	[0.0678]	[0.0525]	[0.0826]	[0.0792]	[0.0663]	[0.0653]	[0.0749]	[0.0545]	[0.0831]	[0.1283]
Financial activities	0.1658	0.1957	0.1072	0.0660	0.0771	0.0205	0.1623	0.0962	0.1424	0.1737
	[0.1024]	[0.1040]*	[0.1018]	[0.1223]	[0.0990]	[0.0929]	[0.1073]	[0.0841]	[0.1268]	[0.2063]
Real state	0.0632	0.1349	0.1228	0.1086	0.1333	0.1275	0.1052	0.0528	-0.0354	-0.0227
	[0.0418]	[0.0400]***	[0.0506]**	[0.0494]**	[0.0407]***	[0.0410]***	[0.0457]**	[0.0337]	[0.0506]	[0.0844]
Constant	1.5348	1.0563	1.2332	1.4518	1.4836	1.5834	1.503	1.7293	1.9403	1.8569
	[0.1582]***	[0.1588]***	[0.1887]***	[0.1857]***	[0.1552]***	[0.1529]***	[0.1739]***	[0.1340]***	[0.1970]***	[0.3223]***

See notes in Table 3a.

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