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José A. Cabral Vieira
Ana Rute Cardoso
Miguel Portela

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José A. Cabral Vieira
University of the Azores

Ana Rute Cardoso
IZA Bonn, University of Minho and CEPR

Miguel Portela
Tinbergen Institute and University of Minho

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IZA

P.O. Box 7240
D-53072 Bonn
Germany

Tel.: +49-228-3894-0
Fax: +49-228-3894-210
Email: iza@iza.org

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ABSTRACT

Recruitment and Pay at the Establishment Level: Gender Segregation and the Wage Gap in Portugal*

This paper aims at quantifying the trend in worker segregation at the establishment level and its impact on wages in Portugal over a fifteen year period. We concentrate on the gender dimension, to answer the questions: have changes in recruitment policies at the establishment level resulted in higher gender segregation in the labour market? What is the impact of segregation on wages? Is that impact different for men and women? A large linked employer-employee data set is used. Systematic and random components of segregation are computed. We use standard wage decomposition techniques to evaluate the impact of the composition of the labour force at the establishment level on wages. Results reveal a high degree of systematic gender segregation. A higher proportion of females in the establishment lowers females' wages while, on the contrary, it raises males' wages. Between mid-80s and late-90s, the contribution of the gender composition of the workforce within the establishment to the wage gap increased, though fluctuating within that period. The evidence gathered lends support to the taste-based model of employer behaviour.

JEL Classification: J31, D21, J7

Keywords: systematic segregation, random segregation, gender, wage inequality

Corresponding author:

Ana Rute Cardoso
IZA
P.O.Box 7240
53072 Bonn
Germany
Tel.: +49 228 3894 508
Fax: +49 228 3894 180
E-mail: cardoso@iza.org

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1 Introduction

The composition of the labour force differs widely across employers. Two main lines of reasoning have been followed to explain that pattern: taste-based or quality-sorting recruitment. In the first case, preferences by employers (or co-workers or customers) will lead an employer into recruiting particular types of workers, but not others. Becker (1971) has set the stage for this analysis, under the heading discrimination in the labour market. The other line of reasoning distinguishes workers by their *quality* or productivity, to stress sorting effects, according to which similar workers will be matched together in firms, if their skills are complements in the production process. A good version of this type of models is presented in Kremer (1993). Both theories predict that workers with different attributes will be segregated into different workplaces.

Employment segregation will be a source of wage differentials between groups of workers, to the extent that different firms pay different wages. The two theories mentioned diverge, however, on the implications of segregation for wage setting. Nevertheless, while gender segregation along occupation or industry lines has been subject to wide scrutiny, less attention has been devoted to the impact of inter-employer gender segregation on wages. Studies evaluating the impact of the degree of femaleness of the establishment on the wages paid have in general found that inter-establishment gender segregation accounts for a substantial share of the wage gap (see Carrington and Troske (1995, 1998), Yoon *et al* (2003), Reilly and Wirjanto (1999), Groshen (1991), Pfeffer and Davis-Blake (1987) and, for earlier awareness on this pattern, McNulty (1967) and Buckley (1971)).

This paper aims at quantifying the trend in worker segregation across establishments and its impact on wages in Portugal over a fifteen year period. We concentrate on the gender dimension, to answer the questions: have changes in recruitment policies at the establishment level resulted in higher gender segregation in the labour market? What was the impact of segregation on the wages paid? Is that impact different for men and women and, if so, does it lend support to the

taste-based or the quality-sorting model?

The aim is also to contribute to a better understanding of the Portuguese gender wage gap, which revealed a hump-shaped pattern from 1985 to 1999, reaching a peak in 1991.

The study relies on a large linked employer-employee data set gathered by the Ministry of Employment, based on an inquiry that every establishment with wage-earners is legally obliged to fill in. Each year, around two million workers and 200 thousand establishments are covered. Data on the worker include age, tenure with the current firm, schooling, gender, occupation, monthly wages and hours worked. Information on the firm and the establishment include their size, industry and region. Whereas public administration and domestic service are not covered and the coverage of agriculture is low, for manufacturing and the services private sector, the inquiry is in fact a census of the Portuguese economy. The legal request for the data to be permanently displayed in a public space in the establishment contributes to its reliability, and it should reduce measurement errors.

We evaluate worker segregation across establishments as departures from the segregation that would prevail if workers were randomly assigned to establishments, instead of departures from perfect integration, if groups were proportionately represented in each establishment. In fact, Carrington and Troske (1997) have proven that, in particular in the presence of small units, different groups of workers will never be evenly distributed across establishments, even if the allocation is determined on a random basis. We therefore compute random and systematic segregation, using both the Gini and the dissimilarity indeces.

The impact of the degree of femaleness of the establishment on wages will be quantified using the Oaxaca and Cotton-Neumark procedures for wage decomposition.

The paper is organised as follows. Section 2 briefly presents trends in female employment in Portugal. Section 3 analyses systematic gender segregation across establishments. Section 4 discusses the impact of gender segregation on wages, whereas concluding comments are presented in section 5.

2 Trends in female employment in Portugal

Female employment has been steadily increasing in the Portuguese economy. Whereas it accounted for 32% of total employment in manufacturing and the services in 1985, by 1999 it had risen to 43%. The composition of female employment underwent changes as well. The share of employed women holding a University diploma increased during that period from 3% to 9%, while the share holding a High-School diploma increased from 11% to 19%. Changes in the composition of male employment have been slower, since those values were, respectively, 4%, 7%, 11% and 16%.

Raw data points to a certain degree of gender segregation at the establishment level (see tables 4 and 5 in appendix). While in the sample of females the average share of women in the establishment is 56% to 65%, in the sample of males the values range from 20% to 25% – females tend to have predominantly female co-workers, and males tend to have predominantly male co-workers.

Economic growth and increasing integration of women into the labour market did not lead in Portugal to a systematic decline in the gender pay gap. In fact, the gap measured as the difference between the mean values of log-wages in each group increased from 1985 to 1991, to decline afterwards. Furthermore, empirical evidence has shown that even after controlling for several worker and employer attributes, the Portuguese wage gap is significant and persistent (Kiker and Santos (1991), Vieira (1999)).

3 Gender segregation at the establishment level: systematic and random components

To evaluate total segregation in the labour force, the Gini and the dissimilarity indeces, respectively G and D, have been used (see Hutchens (2001) for a discussion

of their properties).[1]

$$D = \sum_{i=1}^{T} \frac{1}{2} |w_i - m_i| \tag{1}$$

where w_i and m_i are the establishment i's share of female and male employees in the sample, respectively, and T is the number of establishments in the sample.

$$G = 1 - \sum_{i=1}^{T} w_i \left(m_i + 2 \sum_{j=i+1}^{T} m_j \right) \tag{2}$$

with the calculation being performed in the data sorted by w_i/m_i. Both indices are bounded between 0 and 1, with 0 corresponding to maximum evenness (perfect integration), and 1 to maximum unevenness.

However, segregation will never reach the value 0, in particular if the economy is made up of small units, even if workers are randomly allocated to establishments, as proven by Carrington and Troske (1997). One should therefore quantify the degree of systematic segregation existing in the sample, evaluated as departures from random segregation (the one that would result from pure chance in the allocation of workers to establishments), instead of departures from absolute evenness.

To compute random segregation, we consider the original number of females and males and the original establishment size in the sample. Then, workers are randomly reallocated to establishments and the segregation indeces are computed[2]. After 100 replications of this procedure, the average segregation index reached is the random segregation. To obtain the standard errors of the indeces (total, random and systematic), we use a bootstrap technique as in Carrington and Troske (1998)[3].

The systematic Gini segregation coefficient is computed as follows (Carrington and Troske (1997)):

$$\hat{G} = \begin{cases} \frac{G-G^*}{1-G^*} \text{ if } G \geq G^* \\ \frac{G-G^*}{G^*} \text{ if } G < G^* \end{cases}, \tag{3}$$

[1]Firms with one worker or similarly tiny ones would blur the analysis of segregation and therefore, throughout the paper, the analysis is restricted to establishments with at least 5 workers.

[2]We use the uniform distribution to generate random numbers that sort workers, before they are matched to the original array of employers (keeping the original number of positions available in each employer). Using a random number generator, we guarantee that the reallocation does not follow a systematic pattern. The procedure used also guarantees that the data set has exactly the original structure (establishment size and gender composition of the workforce).

[3]Taking 100 samples of 10 percent from the original data.

where $\hat{G} \in [-1, 1]$. If actual segregation exceeds random segregation ($G > G^*$), then $\hat{G}$ quantifies excess segregation over that dictated by chance, expressed in percentage of the maximum segregation that could occur ($1 - G^*$). When $G < G^*$, we face a situation in which there is excess *impartiality* in the distribution of gender across establishments, that is, not even random allocation would be able to obtain that balance in the distribution of individuals. As this index assesses random deviation, its interpretation is not based on the quota of minorities nor on the size of the units. However, as the size of units increases, the modified segregation index, $\hat{G}$, tends toward the value of the original index, G. The same procedure applies to the dissimilarity index.

	Total Segregation		Random Segregation		Systematic Segregation	
	dissimilarity	Gini	dissimilarity	Gini	dissimilarity	Gini
1985	0.553 (0.016)	0.732 (0.016)	0.121 (0.005)	0.190 (0.007)	0.492 (0.017)	0.670 (0.019)
1987	0.552 (0.016)	0.737 (0.014)	0.123 (0.005)	0.193 (0.006)	0.489 (0.018)	0.674 (0.016)
1989	0.556 (0.016)	0.739 (0.012)	0.126 (0.004)	0.197 (0.006)	0.491 (0.017)	0.674 (0.014)
1991	0.553 (0.014)	0.736 (0.011)	0.129 (0.004)	0.200 (0.005)	0.487 (0.015)	0.670 (0.014)
1993	0.548 (0.012)	0.733 (0.012)	0.135 (0.004)	0.210 (0.005)	0.478 (0.012)	0.662 (0.014)
1995	0.559 (0.012)	0.741 (0.009)	0.138 (0.006)	0.214 (0.005)	0.488 (0.012)	0.670 (0.011)
1997	0.564 (0.009)	0.744 (0.010)	0.141 (0.004)	0.218 (0.005)	0.493 (0.010)	0.672 (0.013)
1999	0.563 (0.009)	0.742 (0.007)	0.144 (0.004)	0.223 (0.006)	0.489 (0.010)	0.668 (0.009)

Table 1: GENDER SEGREGATION AT THE ESTABLISHMENT LEVEL. Note: Bootstrap standard errors in parenthesis. Source: Computations based on Portugal, MSST (1985 to 1999).

Gender segregation across establishments in the Portuguese labour market is high and has been relatively stable between 1985 and 1999 (see table 1). We observe a slight increase in the random segregation, which can be explained by the change in the dimension of establishments[4] and in the female participation in the labour market.

Systematic segregation, when measured by the Gini coefficient, has been stable around 67% during this period. The dissimilarity index reveals as well stability, around the value 49%. This suggests a very high level of segregation when compared to the USA manufacturing, since Carrington and Troske (1998) have reported values of 33% and 45%, respectively for the dissimilarity and the Gini in-

[4]The average establishment size in the population under study decreased from 31 to 22 workers over the period.

dex. The values for Portugal are however remarkably in line with those presented for the Korean economy by Yoon *et al* (2003).

4 The impact of gender segregation on wages

To analyse the impact of gender segregation at the establishment level on wages, consider regressions of the type:

$$W_{gi} = \beta_g X_{gi} + \eta_{gi} \tag{4}$$

where subscript $g = (m, f)$ indicates the gender, W_{gi} is the log wage of worker i, X_{gi} denotes a set of individual and job related characteristics, which includes the proportion of females in the establishment; β_g denotes the regression coefficients and η_{gi} is a random error term assumed to satisfy the usual properties. Hourly wages were computed as monthly wages divided by the number of hours worked. Tables 4 and 5 in appendix list all the variables included and their descriptive statistics.

From OLS estimation of equations (4) it follows that:

$$\bar{W}_m - \bar{W}_f = (\bar{X}_m - \bar{X}_f)\hat{\beta}_m + (\hat{\beta}_m - \hat{\beta}_f)\bar{X}_f \tag{5}$$

which is the Oaxaca (1973) male-based decomposition. The first term on the right hand side indicates the portion of the wage gap attributable to differences between sexes in the mean values of productive and job related characteristics (i.e. differences in endowments); the second term represents the portion attributable to differences in prices of those characteristics (often referred to as discrimination). The idea of the first term is to value the difference in endowments at the wage rate that would prevail in the economy in the absence of discrimination (the non-discriminatory wage structure, following the reasoning by Becker (1971)). Oaxaca suggested using alternatively male or female wages as that reference wage distribution, to define a range within which the values of the components would fall.

Cotton (1988) and Neumark (1988) choose instead the computation of a specific point within that range, by considering the non-discriminatory wage structure ($\hat{\beta}^*$)

as the weighted average of the female and male wage structures, with weights equal to their employment shares. The wage decomposition would therefore be defined as follows:

$$\bar{W}_m - \bar{W}_f = (\bar{X}_m - \bar{X}_f)\hat{\beta}^* + (\hat{\beta}_m - \hat{\beta}^*)\bar{X}_m + (\hat{\beta}^* - \hat{\beta}_f)\bar{X}_f \tag{6}$$

Differing from Oaxaca's proposal, the last two terms measure the male advantage and the female disadvantage in coefficients (i.e. the extent to which the returns to productive and other characteristics differ from the non-discriminatory returns). These two terms are then used as measures of the extent of labour market discrimination.

It therefore follows that the contribution of the proportion of female workers at the establishment level (P) to the gender gap is given, under the Oaxaca method, by

$$(\bar{P}_m - \bar{P}_f)\hat{\beta}_{mP} + (\hat{\beta}_{mP} - \hat{\beta}_{fP})\bar{P}_f \tag{7}$$

or by

$$(\bar{P}_m - \bar{P}_f)\hat{\beta}^* + (\hat{\beta}_{mP} - \hat{\beta}^*)\bar{P}_m + (\hat{\beta}^* - \hat{\beta}_{fP})\bar{P}_f \tag{8}$$

under the Cotton-Neumark approach.

4.1 Higher concentration of women in the establishment: lower wages for women, but higher for men

The proportion of females in the establishment workforce has a negative impact on females' wages, with the coefficient being statistically different from zero in every year. Conversely, the higher the proportion of females in the establishment, the higher males' wages (except in 1999) (see tables 6 and 7 in appendix). This is a striking result, since the previous available evidence had revealed that the femaleness of the establishment depressed the wages of both men and women (see Carrington and Troske (1998) or Reilly and Wirjanto (1999)).

The taste-based discrimination and the quality-sorting theories reach different predictions regarding wage gaps. According to the sorting theory, the wages of

different groups of workers within a firm will be positively correlated. The discrimination theory, on the other hand, allows for the wages of men working with women to be higher than the wages of other men, to compensate them for the "disutility" of having female co-workers.

The evidence that a higher proportion of females in the establishment lowers wages for women but raises wages for men would therefore lend support to discrimination type of models, but not to sorting theories. It should however be pointed out that a test of this theory along the gender dimension is a narrow angle to view such theories.

4.2 Segregation and the wage gap

The contribution of the concentration of females at the establishment level to the gender wage differential is quite significant, varying from 11% in 1985 and 1995 to 25% in 1999 (see the last column in table 2).

The role of prices has been prominent (see table 3). The Oaxaca methodology indicates that, concerning the proportion of females at the establishment level, the contribution of the endowment component is negative (except in 1999). In fact, given that the share of females has a positive impact on males wages (the reference wage distribution considered) and that women on average work in establishments with a higher proportion of females, the endowment component would raise females wages, reducing the gender wage gap. However, this is offset by the effect of differences in prices (i.e. coefficients) associated with the femaleness of the establishment (precisely because they are positive for men and negative for women, as previously reported). This price component accounts for 15% of the observed gap in 1985 and 21% in 1999, fluctuating during the period in-between.

The decomposition based on the Cotton-Neumark methodology reveals that, for the group of all the variables, differences in endowments, the male advantage and the female disadvantage contribute positively to the observed gender gap, which is in line with the results of Gyimah-Brempong *et al* (1992). The contribution of the female disadvantage is larger than the contribution of the male advantage.

Method.	Oaxaca (1973)			Cotton (1988), Neumark (1988)				
	endow.	prices	total	endow.	male adv.	fem. dis.	total	Pf/gap
1985								
all var.	0.1108	0.1465	0.2573	0.1112	0.0465	0.0997	0.2574	
Pf	-0.0108	0.0389	0.0281	-0.0028	0.0044	0.0264	0.0281	10.9
1987								
all var.	0.0944	0.1566	0.2510	0.0974	0.0486	0.1049	0.2510	
Pf	-0.0132	0.0524	0.0391	-0.0021	0.0061	0.0351	0.0391	15.6
1989								
all var.	0.0911	0.1787	0.2698	0.0992	0.0544	0.1162	0.2698	
Pf	-0.0113	0.0789	0.0675	0.0063	0.0099	0.0513	0.0675	25.0
1991								
all var.	0.0952	0.1942	0.2894	0.1054	0.0617	0.1224	0.2894	
Pf	-0.017	0.0838	0.0668	0.0027	0.0114	0.0528	0.0668	23.1
1993								
all var.	0.0911	0.1958	0.2869	0.1012	0.0643	0.1214	0.2869	
Pf	-0.0102	0.0782	0.0681	0.0085	0.0110	0.0485	0.0681	23.7
1995								
all var.	0.1013	0.1631	0.2644	0.1047	0.0619	0.0979	0.2644	
Pf	-0.0108	0.0389	0.0281	-0.0037	0.0079	0.0238	0.0281	10.6
1997								
all var.	0.0943	0.1615	0.2558	0.0986	0.0619	0.0953	0.2558	
Pf	-0.0059	0.0479	0.0420	0.0064	0.0073	0.0283	0.0420	16.4
1999								
all var.	0.0944	0.1641	0.2585	0.0990	0.0642	0.0952	0.2585	
Pf	0.0051	0.0542	0.0593	0.0193	0.0086	0.0314	0.0593	22.9

Table 2: MALE/FEMALE LOG-WAGE DECOMPOSITIONS. Source: Computations based on Portugal, MSST (1985 to 1999).

With respect to the proportion of females in the establishment, most of the observed gender gap is due to the female disadvantage component, rather than to the male advantage or to differences in endowments, whose contributions to the gap are fairly low. Indeed, female underpayment accounts for 10% to 19% of the gender pay gap, whereas male overpayment accounts for 2% to 4% of that gap. This finding is at odds with the results of Rilley and Wirjanto (1999), who found a negative contribution of the female disadvantage, suggesting that the impact of the femaleness of the establishment to the observed gender wage gap operated mainly through males' wage advantage.

In synthesis, for the Portuguese case, segregation remained at stable levels from 1985 to 1999, but nevertheless the degree of femaleness of the establishment

	Oaxaca (1973)				Cotton (1988) and Neumark (1988)					
	all variables		prop. females		all variables			prop. females		
	end.	prices	end.	prices	end.	male ad.	fem. dis.	end.	male ad.	fem. dis.
1985	43.1	56.9	-4.2	15.1	43.2	18.1	38.7	-1.1	1.7	10.3
1987	37.6	62.4	-5.3	20.9	38.8	19.4	41.8	-0.8	2.4	14.0
1989	33.8	66.2	-4.2	29.2	36.8	20.2	43.1	2.3	3.7	19.0
1991	32.9	67.1	-5.9	29.0	36.4	21.3	42.3	0.9	3.9	18.2
1993	31.8	68.2	-3.6	27.3	35.3	22.4	42.3	3.0	3.8	16.9
1995	38.3	61.7	-4.1	14.7	39.6	23.4	37.0	-1.4	2.2	9.0
1997	36.9	63.1	-2.3	18.7	38.5	24.2	37.3	2.5	2.9	11.1
1999	36.5	63.5	2.0	21.0	38.3	24.8	36.8	7.5	3.3	12.1

Table 3: CONTRIBUTIONS TO THE OBSERVED GENDER WAGE GAP (%). Source: Computations based on Portugal, MSST (1985 to 1999).

tended to become more relevant accounting for wage differences across gender, mainly through its price component.

5 Conclusion

This paper analysed gender segregation at the establishment level over fifteen years in Portugal, and its impact on wages and the gender wage gap. A large employer-employee matched data set has been used.

Results point to the existence of a remarkable level of systematic gender segregation at the establishment level, much higher than previously reported for the USA.

A higher proportion of females in the establishment lowers females' wages and, on the contrary, it raises males' wages. The latter is a striking outcome, which contrasts with the evidence available for other countries and lends support to the taste-based model of employer behaviour. Furthermore, the gender composition of the workforce within the establishments accounted for 11% of the observed gender wage gap in 1985 and 23% in 1999, fluctuating in-between. Most of the gap associated with the composition of the labour force can be attributed to the wage premium/penalty resulting form the femaleness of the establishment. These values seem particularly high and show that gender segregation of the workforce at the establishment level must be taken into account when analysing the gender

wage gap and deciding on policy measures.

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	1985	1987	1989	1991	1993	1995	1997	1999
Ln hourly wage	5.2596	5.5933	5.8110	6.1595	6.3603	6.4971	6.5818	6.7216
Education	5.5132	5.6484	5.9063	6.1435	6.3539	6.6805	7.0088	7.3542
Experience	26.208	26.127	25.507	25.387	25.294	24.810	24.298	24.204
Experience squared	848.27	840.94	810.48	807.32	801.6	777.17	756.13	753.48
Tenure	10.006	10.1162	9.4890	9.2806	9.1149	8.9454	8.5275	8.4567
Tenure squared	178.10	183.91	175.58	175.83	170.14	165.72	158.41	158.44
Ln firm size	4.6677	4.5950	4.4681	4.3857	4.2385	4.0938	4.0590	4.0027
Lisbon	0.4251	0.4103	0.4007	0.3997	0.3948	0.3805	0.3798	0.3804
Proportion of females	0.1997	0.2052	0.2145	0.2228	0.2295	0.2363	0.2404	0.2463
Occupations:								
Managers, higher clericals	0.0111	0.0103	0.0113	0.0119	0.0113	0.0311	0.0357	0.0401
Clerical staff	0.0895	0.0883	0.0936	0.0982	0.1007	0.1161	0.1152	0.1269
Commercial staff	0.1357	0.1329	0.1274	0.1248	0.1244	0.1329	0.1248	0.1231
Security and other services	0.0585	0.0588	0.056	0.0568	0.0586	0.0701	0.0715	0.0697
Farmers, agricult. workers	0.0024	0.002	0.0026	0.0023	0.0021	0.0029	0.0035	0.0033
Production workers (group 1)	0.2931	0.2892	0.2861	0.2921	0.2868	0.2933	0.2953	0.2923
Production workers (group 2)	0.1738	0.1718	0.1629	0.1651	0.1603	0.1793	0.1812	0.1759
Production workers (group 3)	0.2118	0.2215	0.2353	0.2201	0.2286	0.1367	0.1363	0.1336
Industries:								
Textiles, clothing, footwear	0.0919	0.0949	0.0938	0.0898	0.0848	0.083	0.078	0.0708
Wood, cork	0.0461	0.046	0.0448	0.0408	0.0407	0.0476	0.0465	0.0441
Paper, print, publish.	0.0272	0.0271	0.0266	0.0263	0.0249	0.0251	0.0238	0.023
Chemical products	0.0480	0.0468	0.0438	0.0368	0.0346	0.0285	0.0255	0.0262
Non-metal minerals	0.0430	0.0406	0.0387	0.0398	0.0382	0.0346	0.0325	0.0336
Primary metals	0.0210	0.0203	0.0176	0.0144	0.013	0.0088	0.0081	0.0077
Machinery, equipment	0.1315	0.1239	0.124	0.1176	0.119	0.1075	0.1125	0.1102
Elect., gas, water	0.0214	0.0214	0.0157	0.0181	0.0173	0.0168	0.0161	0.0141
Construction	0.1247	0.1257	0.1363	0.1449	0.1488	0.1574	0.1665	0.1634
Wholesale	0.0903	0.0904	0.0893	0.0924	0.0922	0.0865	0.0835	0.0847
Retail	0.0474	0.0491	0.054	0.0563	0.0592	0.0874	0.0884	0.0902
Rest., cafes, hotels	0.0309	0.0321	0.0332	0.0336	0.0351	0.0399	0.0389	0.0387
Transportation	0.1083	0.1117	0.1014	0.1096	0.106	0.1002	0.0971	0.0982
Banking, insurance	0.0555	0.0541	0.0601	0.0584	0.0601	0.0595	0.0523	0.0484
Services to firms	0.0176	0.0182	0.0219	0.0261	0.0282	0.0045	0.0048	0.0056
Social, personal serv.	0.0440	0.0463	0.0484	0.0480	0.0506	0.0675	0.0832	0.1008

Table 4: SAMPLE MEAN VALUES (MALES). Source: Computations based on Portugal, MSST (1985 to 1999).

	1985	1987	1989	1991	1993	1995	1997	1999
Ln hourly wage	5.0022	5.3423	5.5412	5.8701	6.0735	6.2327	6.3260	6.4631
Education	5.4763	5.7060	6.0359	6.3121	6.5439	7.0174	7.3776	7.7936
Experience	22.168	22.272	21.626	21.267	21.240	21.278	21.125	21.118
Experience squared	627.35	631.66	603.7	588.88	588.39	592.58	592.64	597.43
Tenure	8.9576	9.0402	8.3458	7.8066	7.5880	7.7406	7.4244	7.2951
Tenure squared	136.07	143.12	135.83	129.95	124.24	127.21	123.15	122.81
Ln firm size	4.6199	4.5449	4.4241	4.3596	4.2646	4.1835	4.1423	4.1082
Lisbon	0.4018	0.3948	0.3790	0.3733	0.3709	0.3621	0.3588	0.3702
Proportion of females	0.5639	0.5767	0.5956	0.6082	0.6185	0.6341	0.6455	0.6505
Occupations:								
Managers, higher clericals	0.0127	0.0139	0.0166	0.0171	0.0202	0.0305	0.0351	0.0405
Clerical staff	0.0677	0.0704	0.0742	0.0793	0.0814	0.0718	0.0721	0.0814
Commercial staff	0.2124	0.2019	0.1968	0.1894	0.1852	0.2145	0.2067	0.2125
Security and other services	0.0768	0.0817	0.0825	0.0861	0.0967	0.1400	0.1624	0.1713
Farmers, agricult. workers	0.0016	0.0012	0.0023	0.0018	0.0014	0.0016	0.0021	0.0018
Production workers (group 1)	0.2469	0.2506	0.2541	0.2649	0.2512	0.2427	0.2388	0.2219
Production workers (group 2)	0.1249	0.1143	0.0954	0.0812	0.0707	0.0943	0.0797	0.0697
Production workers (group 3)	0.2507	0.2575	0.2681	0.2685	0.2824	0.1886	0.1871	0.1848
Industries:								
Textiles, clothing, footwear	0.3288	0.3287	0.3279	0.3210	0.3017	0.2858	0.2633	0.2366
Wood, cork	0.027	0.0248	0.0234	0.0224	0.0222	0.0261	0.0258	0.0252
Paper, print, publish.	0.0216	0.0217	0.02	0.018	0.0172	0.0178	0.0159	0.0157
Chemical products	0.0396	0.0363	0.0318	0.0275	0.0248	0.0198	0.0167	0.0177
Non-metal minerals	0.0248	0.0233	0.0222	0.0245	0.024	0.0238	0.0223	0.0226
Primary metals	0.0049	0.0041	0.0035	0.0028	0.0024	0.0016	0.0014	0.0016
Machinery, equipment	0.0689	0.0657	0.0600	0.0633	0.0627	0.0674	0.0684	0.0716
Elect., gas, water	0.0068	0.0069	0.0045	0.0050	0.0046	0.0042	0.0043	0.0037
Construction	0.0129	0.0117	0.0141	0.0161	0.0162	0.0157	0.0167	0.0171
Wholesale	0.0687	0.0654	0.0643	0.0648	0.0647	0.0594	0.0579	0.0587
Retail	0.0627	0.0651	0.0679	0.0716	0.0785	0.0948	0.1043	0.1118
Rest., cafes, hotels	0.0534	0.0542	0.0563	0.0574	0.063	0.0715	0.0710	0.0684
Transportation	0.0585	0.0582	0.0534	0.0524	0.0489	0.0433	0.0407	0.0388
Banking, insurance	0.0421	0.0402	0.0447	0.0419	0.0436	0.0440	0.0396	0.0398
Services to firms	0.0139	0.0162	0.0210	0.0256	0.0284	0.0046	0.0048	0.0056
Social, personal serv.	0.0916	0.1112	0.1238	0.1275	0.1441	0.1683	0.1984	0.2217

Table 5: SAMPLE MEAN VALUES (FEMALES). Source: Computations based on Portugal, MSST (1985 to 1999).

	1985		1987		1989		1991	
	coeff.	t-value	coeff.	t-value	coeff.	t-value	coeff.	t-value
Intercept	4.4763	1010.9	4.7145	1056.4	4.9234	1042.7	5.3015	1066.8
Education	0.0506	290.6	0.0552	305.2	0.0623	331.8	0.0656	328.1
Experience	0.0268	197.6	0.0287	204.3	0.0296	207.3	0.0281	182.3
Experience sq./100	-0.0353	-162.0	-0.0374	-165.0	-0.0383	-164.0	-0.0362	-142.6
Tenure/10	0.1036	86.4	0.1047	85.5	0.1033	81.0	0.0982	68.8
Tenure squared/100	-0.0129	-36.3	-0.0122	-33.3	-0.0118	-30.0	-0.0103	-23.3
Ln firm size	0.0575	245.2	0.0604	250.2	0.0551	216.9	0.0543	188.4
Region: Lisbon	0.0726	98.2	0.0686	89.4	0.0763	93.7	0.0985	109.9
Proportion of females	0.0296	13.7	0.0356	16.1	0.0297	13.2	0.0441	18.1
Occupation(9 categories)	yes	yes	yes	yes	yes	yes	yes	yes
Industry (17 categories)	yes	yes	yes	yes	yes	yes	yes	yes
Adjusted R2	0.6234		0.6373		0.5995		0.5596	
F-statistic	49927		51571		44192		37456	
Sigma	0.3104		0.3174		0.3424		0.3780	
Observ.	862137		860395		889362		885135	

	1993		1995		1997		1999	
	coeff.	t-value	coeff.	t-value	coeff.	t-value	coeff.	t-value
Intercept	5.4926	1058.2	5.9543	1088.1	6.0823	1139.7	6.2650	1220.0
Education	0.0682	331.8	0.0474	216.9	0.0456	223.3	0.0459	243.8
Experience	0.0279	172.7	0.0272	176.1	0.0269	182.8	0.0254	193.0
Experience sq./100	-0.0350	-130.6	-0.0363	-141.1	-0.0357	-143.7	-0.0336	-151.5
Tenure/10	0.1015	64.6	0.1052	67.9	0.1304	89.0	0.1420	105.2
Tenure squared/100	-0.0134	-27.3	-0.0125	-25.8	-0.0188	-41.2	-0.0203	-48.1
Ln firm size	0.0554	185.4	0.0570	191.8	0.0584	212.7	0.0569	215.4
Region: Lisbon	0.1104	116.3	0.1037	112.3	0.0923	102.8	0.0934	112.8
Proportion of females	0.0262	10.4	0.0344	14.7	0.0147	6.6	-0.0127	-6.4
Occupation(9 categories)	yes	yes	yes	yes	yes	yes	yes	yes
Industry (17 categories)	yes	yes	yes	yes	yes	yes	yes	yes
Adjusted R2	0.5444		0.6041		0.5951		0.6343	
F-statistic	34186		41458		42779		48645	
Sigma	0.3947		0.3787		0.3771		0.3526	
Observ.	868326		859522		923256		947959	

Table 6: Ordinary least squares regressions (males). Source: Computations based on Portugal, MSST (1985 to 1999).

	1985		1987		1989		1991	
	coeff.	t-value	coeff.	t-value	coeff.	t-value	coeff.	t-value
Intercept	4.5373	517.8	4.7177	598.4	4.9534	642.1	5.2926	701.9
Education	0.0475	178.1	0.0564	203.0	0.0610	229.3	0.0662	235.6
Experience	0.0155	81.8	0.0166	87.7	0.0175	99.5	0.0161	89.4
Experience sq./100	-0.0192	-59.6	-0.0199	-61.7	-0.0202	-65.2	-0.0180	-54.8
Tenure/10	0.1209	72.0	0.1213	72.8	0.1186	71.3	0.1169	64.8
Tenure squared/100	-0.0216	-38.8	-0.0199	-35.5	-0.0195	-32.0	-0.0173	-26.2
Ln firm size	0.0458	138.6	0.0486	147.3	0.0444	133.3	0.0443	126.4
Region: Lisbon	0.0764	70.4	0.0679	62.3	0.0660	61.0	0.0795	69.4
Proportion of females	-0.0393	-17.6	-0.0552	-24.3	-0.1027	-45.1	-0.0936	-38.6
Occupation(9 categories)	yes	yes	yes	yes	yes	yes	yes	yes
Industry (17 categories)	yes	yes	yes	yes	yes	yes	yes	yes
Adjusted R2	0.6594		0.6498		0.6355		0.5864	
F-statistic	26711		27544		27130		23685	
¡	0.2730		0.2827		0.2979		0.3319	
Observ.	402523		424697		477440		507748	

	1993		1995		1997		1999	
	coeff.	t-value	coeff.	t-value	coeff.	t-value	coeff.	t-value
Intercept	5.4427	675.2	5.8800	756.4	6.0455	834.8	6.2469	931.2
Education	0.0710	246.4	0.0434	170.1	0.0411	177.0	0.0423	213.5
Experience	0.0166	87.2	0.0176	98.3	0.0183	109.6	0.0169	126.2
Experience sq./100	-0.0182	-52.2	-0.0228	-68.3	-0.0243	-78.6	-0.0215	-88.8
Tenure/10	0.1297	63.3	0.1284	67.8	0.1368	79.6	0.1482	105.2
Tenure squared/100	-0.0228	-30.9	-0.0221	-33.5	-0.0236	-39.9	-0.0254	-52.7
Ln firm size	0.0473	135.3	0.0548	164.7	0.0532	174.7	0.0440	172.4
Region: Lisbon	0.0927	75.8	0.0769	68.4	0.0715	66.8	0.0637	72.5
Proportion of females	-0.1003	-38.7	-0.0283	-12.0	-0.0596	-26.8	-0.0960	-50.7
Occupation(9 categories)	yes	yes	yes	yes	yes	yes	yes	yes
Industry (17 categories)	yes	yes	yes	yes	yes	yes	yes	yes
Adjusted R2	0.5631		0.6317		0.6118		0.6833	
F-statistic	22708		29610		31207		37252	
Sigma	0.3573		0.3392		0.3383		0.2937	
Observ.	524732		562909		634009		675553	

Table 7: Ordinary least squares regressions (females). Source: Computations based on Portugal, MSST (1985 to 1999).

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