Firm wage differentials in a competitive industry: some matched-panel evidence

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Abstract *Studies wage dispersion across firms and time in a specific industry that exhibits competitive features – the Portuguese clothing industry in the 1991-1994 period. By drawing on a large matched employer-employee panel, obtains the following results: the workers' firm affiliation plays an important role in wage determination; there is a sizeable and persistent dispersion of firm-fixed effects, which is also similar for workers of different tenure levels and occupations; workers in high-turnover firms are generally paid less. It is believed that these findings are not consistent with a simple competitive labour market model.*

1. Introduction

How competitive are labour markets? Economists have examined this question at least since the pioneering analysis of Adam Smith. Understandably, this matter is still of interest now, more than 200 years after his work, as our knowledge of the labour market impacts considerably on both theory and policy, in dimensions both directly and indirectly related to labour issues.

With regard to assessing the degree of competitiveness in labour markets, several types of analysis have been attempted. A first type addresses unemployment and, in particular, whether it is best understood as a voluntary or involuntary phenomenon. A second type of analysis concerns the role of profit sharing in the wage determination process. The present paper stems from a third type of approach, which considers industry wage differentials.

This line of research involves studying the role of industry affiliation on wages. It is argued that, if only the workers' human capital influences their productivity, as is assumed by the competitive model, then industry membership should be irrelevant in the wage determination process, once the role of such human capital is accounted for. Exceptions to this result will only occur under specific circumstances, such as compensating differentials, short-run industry shocks or a lack of proper control for differences of workers' characteristics.

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An extensive literature has arisen that addresses this matter (Abowd *et al.*, 1999; Krueger and Summers, 1988). This line of research examines the extent to which industry dummies play a significant (and significantly different) role in wage regressions. The results, if taken at face value, suggest that different industries pay their workers differently. Moreover, such differences are generally stable across time and the rankings of industries in terms of their "pay premium" are similar across countries.

However, a closer look at the currently available evidence reveals that it is largely inconclusive. One reason is that these results are typically not robust to arguments involving unobserved differences across workers correlated with industry affiliation. Therefore, in the end, the findings from this research area are usually consistent with both competitive and non-competitive (e.g. efficiency wages) models, even if papers that favour the latter interpretation probably outnumber the former.

Another reason, overlooked so far, is that there are other factors that may undermine the comparison of wages at different industries. For instance, Neal (1995) presents evidence on the industry-specific nature of workers' skills. He shows that US displaced workers who are re-employed in the same industry as before displacement benefit from their tenure and experience in a similar way to that before displacement. However, these skills play only a small part for those workers who are allocated to a different industry from the firm from which they were displaced.

Neal's results suggest that it is inappropriate to assume that workers with similar characteristics (including tenure level), but different industry affiliations, will still be (near) perfect substitutes. This means that the industry dummies may pick up not only differences in pay policies across industries, but also differences in industry-specific tenure profiles. This would inevitably bias the current inter-industry comparisons[1].

Another piece of criticism stems from Helwege (1992) and his evidence on the industry-specific nature of the occupation structure. According to this author, "the distinction between industry and occupation, for the purpose of estimating wage differentials, is not very clear. For example, if one looks at the banking industry, very large portions of the workers are financial managers. So the estimated industry effect for the banking industry is not very different from the estimated wage coefficient on a dummy variable for financial managers" (p. 77). This again may prevent the identification of the true industry effects in the standard inter-industry wage differentials studies, as a wage regression may find it difficult to separate that effect from the occupation effects.

On top of the two factors, there are several other issues that are likely to operate differently across different industries. Examples are information problems, industry-specific shocks, and compensating differentials. Overall, these factors may prevent a rigorous analysis of industry wage differentials as a tool towards ascertaining the degree of competitiveness of labour markets.

In the light of these reasons, we argue in this paper that the matter of competitiveness of labour markets may be more usefully addressed by focusing on wage differences across firms in a specific industry. By following this approach, one should be implicitly controlling for all the earlier factors. Therefore, a complementary, if not stronger, analysis of the competitive model may be derived[2].

Given this background, this paper seeks to present evidence on the appropriateness of the competitive model by focusing on a specific, very narrowly defined industry. Moreover, given the above-mentioned background of a larger number of papers suggesting that non-competitive forces are prevalent, we load our test against the rejection of the competitive model by studying an industry which one would expect would exhibit competitive properties.

This industry, the clothing industry in Portugal, in the period 1991-1994, is characterised by a large number of features one typically associates with competitive markets. These are: small firms, little scope for unions, a strong export-orientation, little geographical dispersion, overall low wages, and a large degree of homogeneity of the workforce (at least as far as the typical human capital variables are concerned).

In the following sections, we apply a battery of tests on the relationship between firm affiliation and wage determination, in order to try to provide a set of evidence consistent with either a competitive or a non-competitive model. We believe that our results are considerably closer to the latter view, that of non-competitive forces playing a large role in shaping the wage distribution.

With respect to the paper structure, we start by describing the data set used – a matched employer-employee panel – in Section 2. After that, we present in Section 3 the results from wage regressions extended to account for a possible role of firm affiliation and firm characteristics. Section 4 examines the role of firm differentials, in terms of their size, dispersion and correlation in time. Section 5 provides a brief conclusion.

2. The data

The personnel records (Quadros de Pessoal) data set is an employer-based survey on both firm and employee characteristics. This annual survey is run by the Ministry of Employment, in accordance with a law that makes it compulsory for every Portuguese firm to hand out the required data.

These data involve an extensive set of characteristics concerning the firm, establishment (if relevant) and firm's employees. Individual and firm identifiers (the former stemming from the worker's national insurance number) are also available. Furthermore, each set of characteristics of each individual includes a reference to the firm for which the individual is working in each year. By assembling these different pieces of information, a matched employer-employee panel data set can be built[3].

The samples used in this work concern the manufacturing sector, which was subjected to a sampling ratio of approximately 80 per cent, which also over-represented larger firms. Given the large sample ratio, a relatively large number of firms can be followed (in particular, the larger firms), as well as all their workers.

For the reasons mentioned earlier, we consider in this paper the clothing industry, which is a four-digit SIC subset of textiles, clothing and shoes two-digit industry. About 75,000 workers and 2,800 firms are available in each year, on the data sets concerning the clothing industry. Given our interest in building a balanced panel, for reasons discussed later, we consider only firms that are available in all four years (about 600 firms). After setting minimum standards for the quality of data, both at firm and worker level, we draw upon 334 firms and about 30,000 workers per year[4].

We present in Tables I and II some descriptive statistics of this data set, at both the worker and the firm level, respectively. Concerning the former, one may notice the low level of wages, age and schooling exhibited by the clothing workers. For instance, workers receive nominal gross monthly wages of between 55,000 and 73,000 escudos (which range between approximately €424 and €453 per month, in 2001 prices). Workers are, on average, approximately 30 years old, and have completed, also on average, approximately five years of schooling.

Notice also the large proportion of women, of about 90 per cent in all years, and that of a specific occupation, sewing operators, defined at the minimum degree of aggregation (five digits), of at least 50 per cent across the four years addressed. Moreover, two specific geographical areas, the Oporto and Braga *distritos*, which are neighbouring regions in Northern Portugal, always correspond to more than 50 per cent of the workforce considered in this study. These factors are in line with the suggestion of an observably homogeneous set of workers in the clothing industry.

In Table II, we present statistics that concern the firm. These either stem directly from the firm characteristics available in the data set or were computed by the authors. In the latter case, the figures were obtained by aggregating to the firm level the characteristics of the work force at each firm. We find that, broadly speaking, there are no major differences between the two tables. This suggests that worker characteristics do not change considerably with firm size, as Table II corresponds to an unweighted average of worker characteristics across firms.

Three exceptions to this pattern concern wages and equity (per worker), which are larger in Table I, and the Oporto dummy, which is smaller in Table I. This means that, on average, larger firms pay more and have larger levels of equity per worker and are under-represented in the Oporto geographical area. Obviously, the average number of workers per firm is also considerably different between the two tables, although each provides relevant information:

	1991		1992		1993		1994	
	Mean (%)	CV (%)	Mean (%)	CV (%)	Mean (%)	CV (%)	Mean (%)	CV (%)
Wage	54,766	67.7	62,366	72.7	68,158	78.1	72,943	324.7
Age	28.4	33.6	28.9	33.4	29.8	32.6	30.3	31.8
Schooling	5.1	38.8	5.2	38.0	5.2	38.3	5.4	35.9
Experience	16.0	59.6	16.5	58.5	17.4	56.1	17.9	54.3
Tenure	5.6	101.4	6.1	96.2	6.7	89.4	7.0	89.5
Female	90.5		90.6		90.0		89.7	
Hours	178.2	14.7	177.9	13.7	176.2	15.0	175.0	13.5
Oporto	17.8		18.3		18.5		19.0	
Braga	32.6		33.1		32.9		34.3	
Workers	238.5	97.6	229.7	96.9	226.6	97.8	208.6	92.7
Equity	4.8	29.5	5.1	29.0	5.2	28.7	5.5	26.9
Sales	7.7	10.9	7.9	9.6	8.0	8.6	8.0	9.1
Exits			24.9	51.9	30.0	57.4	23.8	60.6
Entrants			27.7	54.9	23.5	56.5	28.2	62.2
Sewing Op.	49.7		52.2		55.7		54.2	
N. Obs.	29,362		29,314		28,819		28,025	

Notes: *Wages* are measured in nominal monthly escudos (divide by 129.3 (140.2, 150.5, 162.5) to obtain figures for 1991 (1992, 1993, 1994) in real 2001 euros); *Experience* is Mincer experience (age-schooling-6); *Hours* refer to monthly number of hours worked; *Oporto* and *Braga* are dummy variables that refer to specific geographical locations ("distritos"); *Workers* refers to number of workers per firm; *Equity* refers to the logarithm of equity per worker (measured in 1,000s of nominal escudos per year); *Sales* refers to the logarithm of sales per worker (measured in 1,000s of nominal escudos per year); *Exits* concerns the percentage of workers who were not affiliated to the same firm in the following year; *Entrants* concerns the percentage of workers who were not affiliated to the same firm in the previous year; *Sewing Op.* refers to a specific occupation, sewing operators, defined at a five-digit level. These variables are derived from a cross-section analysis of all workers available for all firms considered; CV denotes the coefficient of variation

Table I.
Descriptive statistics, workers

whereas Table II says that average firm size is between 92 and 97, Table I indicates that each worker has, on average, between 209 and 239 co-workers.

By comparing the set of workers in each firm in every two subsequent years, we present two measures of worker turnover: "exits" and "entrants". The first refers to the percentage of workers who are not affiliated to the same firm in the following year (in terms of the firm's workforce in the current period of analysis). The second variable, entrants, refers to the percentage of workers who were not affiliated to the same firm in the previous year (in terms of the firm's workforce in the current period of analysis). Although we do not present benchmark figures against which to compare the values obtained here, we believe that these figures are considerably high, given that they range between 24 and 30 per cent. This would suggest that these firms could be characterised by a large degree of turnover[5].

	1991		1992		1993		1994	
	Mean (%)	CV (%)	Mean (%)	CV (%)	Mean (%)	CV (%)	Mean (%)	CV (%)
Wage	48,353	17.3	54,763	19.0	59,889	21.6	67,386	24.4
Age	27.8	15.7	28.3	15.6	29.3	15.5	30.1	15.6
Schooling	5.0	21.4	5.1	18.4	5.1	19.1	5.4	13.0
Experience	15.5	27.8	16.6	26.5	17.5	25.9	18.6	24.5
Tenure	4.5	62.9	5.1	56.0	5.7	52.0	6.1	50.4
Female	90.3		90.3		89.5		89.2	
Hours	177.7	5.4	178.6	5.3	177.5	5.6	175.2	4.9
Oporto	27.4		27.4		27.4		27.4	
Braga	34.3		34.3		34.0		34.0	
Workers	96.5	109.1	96.0	105.1	94.1	106.2	92.0	101.4
Equity	4.4	32.3	4.6	31.4	4.8	31.2	5.0	30.2
Sales	7.6	10.6	7.8	9.6	7.9	9.0	7.9	9.5
Exits			28.0	51.2	31.3	56.4	24.8	62.2
Entrants			31.0	51.2	26.6	55.3	30.0	59.3
N. Obs.	332		332		332		332	

Notes: See Notes in Table I for description of the variables; the variables are now evaluated at the firm level, after aggregating workers according to their firm affiliation

Table II. Descriptive statistics, firms

3. Firm affiliation and firm characteristics

The main concern in our analysis is the role played by firm affiliation in wage determination. In this section, we examine the role of firm effects in individual wages in different years and in wage regressions with different sets of controls (both at the individual and at the firm levels).

The different sets of controls considered are human capital variables (schooling years, a quadratic in experience and tenure, log hours and a gender dummy), occupation controls (11 dummy variables), and firm dummies[6], firm characteristics 1 (log number of hours, log equity per worker, log sales per worker, a dummy for foreign ownership, and two regional dummies), and firm characteristics 2 (average schooling, experience, tenure, hours worked and female workers)[7]. In all cases, the dependent variable is the log of total monthly earnings.

Table III presents the results. Focusing on the first column (1), in which only the above described human capital variables are considered, one finds high R^2 statistics, ranging between 0.39 and 0.45, depending on the year considered. When occupation controls are added to the wage regressions (see column 2), these R^2 statistics increase in all years, ranging between 0.45 and 0.51. A more pronounced increase in the explanatory power of the regressions is obtained when controls for firm affiliation are introduced (column 3), as in this specification the R^2 statistics range between 0.58 and 0.68. Moreover, the joint equality of all firm dummy coefficients was clearly rejected by the F-test performed[8].

Year	N. Obs.	Control variables	Specifications 1	2	3	4	5	6	7
		Human capital	×	×	×	×	×	×	
		Occupations		×	×	×	×	×	
		Firm dummies			×			×	×
		Firm characteristics 1				×	×	×	
		Firm characteristics 2					×		
1991	29,362	R^2	0.45	0.51	0.68	0.58	0.59	0.68	0.29
		F-statistic			23			28	17
1992	29,314	R^2	0.42	0.48	0.67	0.60	0.60	0.67	0.29
		F-statistic			30			30	19
1993	28,819	R^2	0.39	0.45	0.65	0.55	0.56	0.65	0.28
		F-statistic			32			25	20
1994	28,025	R^2	0.39	0.45	0.58	0.50	0.51	0.58	0.19
		F-statistic			23			15	18

Table III.
Wage regressions, 1991-1994 dependent variable: log total monthly earnings

Notes: *Human capital* variables include schooling, experience and its square, tenure and its square, log monthly hours and a female dummy; *Occupation* involves 12 occupation dummies; *Firm characteristics 1* includes log number of workers, log equity per worker, log sales per worker, foreign ownership dummy, and dummies for the two main geographical areas; *Firm Characteristics 2* includes average schooling, experience, tenure, log hours and female ratio of workers at firm; The *F*-statistic corresponds to the test of H_0: firm dummies are all equal

Similar increases are not found in the cases of specifications 4 and 5 (when only firm characteristics are introduced, and not the firm dummies themselves) as the R^2 statistics range between 0.50 and 0.60 only. Moreover, specification 6, which considers both firm effects and firm characteristics (of type 1), does not lead to any increases in explanatory power (the R^2 statistics stay at the same levels as in specification 3). This point is further strengthened by specification 7, which simply considers firm dummies as explanatory variables. In this case, R^2s are relatively high and range between 0.19 and 0.29.

The important message from these results is that firm affiliation plays an important role in wage determination. Observable firm characteristics play a role only to the extent that firm affiliation is not controlled for.

4. Size, dispersion and correlation of firm-fixed effects

In this section, we focus on the nature of the firm-fixed effects obtained from the wage regressions documented in the previous section. In Table IV, we present the weighted and adjusted standard deviation (WASD) statistics, taking into account the coefficients of firm dummies obtained in the wage regressions for each year under different specifications. We find that, for the case of specification 3 (controls for human capital and occupation only), these statistics lie between 0.154 and 0.213.

A benchmark figure, referring to the Portuguese economy as a whole and the year 1992, is presented in Hartog *et al.* (2001). Using the same data set, but

focusing on inter-industry wage differentials, these authors find a WASD statistic of 0.125, whereas our figure for that same year is 0.206. This result suggests that, at least for the clothing industry, the amount of firm wage differentials is greater than that for the economy as a whole.

Another aspect we address concerns the persistence of the firm-fixed effects. The existence of such fixed effects by themselves is not of great relevance; to the extent, that they may be due to spurious, one-off phenomena. We thus examine the question of how rigid these fixed effects are by looking at their time correlation (Table V).

With respect to the results obtained from specification 3, we find that the correlation statistic ranges between 0.58 and 0.70, depending on the pair of years considered[9]. In the case of specification 7, the same statistic ranges between 0.59 and 0.74. These results clearly suggest that there is a high degree of time correlation of firm effects. Firms that pay higher wages in a given period are likely to do the same in some other period, along the 1991-1994 time span covered in the data.

One possible explanation for the sizeable amount of dispersion of firm-fixed effects is that, after a few years, workers become isolated from the labour market, due to information constraints and/or firm-specific skills. In order to examine this interpretation, we replicated our WASD analysis to the subset of

	Specification	
	3	7
1991	0.185	0.226
1992	0.206	0.235
1993	0.213	0.237
1994	0.154	0.181

Notes: Specification 3 includes controls for human capital and occupations plus firm dummies; Specification 7 includes firm dummies only

Table IV. WASD statistics

	1991	1992	1993
Specification 3			
1992	0.65		
1993	0.59	0.70	
1994	0.59	0.58	0.59
Specification 7			
1992	0.74		
1993	0.70	0.71	
1994	0.59	0.65	0.69

Notes: Specification 3 includes controls for human capital and occupations plus firm dummies; Specification 7 includes firm dummies only

Table V. Correlations of firm dummies, 1991-1994

low-tenure workers (defined as those with a maximum of three years of tenure). From Table VI, we find that the dispersion of firm-fixed effects is similar for low-tenure workers and the entire set of workers (the differences with respect to the aggregate WASD statistics are relatively small, ranging between −5.9 and 10.7 per cent).

Finally, in order to deal with the possible impact of compositional biases (Helwege, 1992), we focus our analysis of firm fixed effects dispersion on a specific occupation, sewing operators. We address this occupation, given its strong homogeneity and large share of employment across the firms in the clothing industry. We find that, once again, the dispersion of firm-fixed effects is also similar for sewing operators and the entire set of workers (the differences with respect to the aggregate WASD statistics range between −4.6 and 1.9 per cent).

5. Conclusions

This study seeks to shed some light on the degree of competitiveness of labour markets, by focusing on a new approach that is related to the inter-industry wage differentials literature. In particular, we argue that extra insight on the adequacy of the competitive labour market paradigm may be obtained from a study of a single industry, rather than the comparison of different industries.

We try with this approach to implicitly control for a number of factors that may give rise to biases. These factors are related to the different degrees of unobservable heterogeneity across industries and the imperfect substitutability of similar workers affiliated to different industries. We believe that this analysis allows for a complementary, if not stronger, analysis of the process of wage determination.

Moreover, since our reading of the available empirical evidence is that the non-competitive model is likely to be more prevalent than its competitive counterpart, we have selected an industry that exhibits competitive features, in order to load the test of the competitive model against its rejection.

Indeed, this industry – the Portuguese clothing industry – is characterised by small firms, little scope for unions, a strong export-orientation, little

Table VI.
WASD statistics, specific groups of workers – low-tenure workers and sewing operators

	Low-tenure		Sewing operators	
	WASD	Diff. (%)	WASD	Diff. (%)
1991	0.190	2.4	0.177	−4.6
1992	0.221	7.5	0.203	−1.6
1993	0.236	10.7	0.212	−0.8
1994	0.145	−5.9	0.157	1.9

Notes: Results are based on Specification 3; Diff. refers to percentage change wrt results in Table V

geographical dispersion, low wages, and a large degree of homogeneity of the workforce (at least as far as the typical human capital variables are concerned).

Drawing on a matched employer-employee panel, we apply a battery of tests on the relationship between firm affiliation and wage determination, in order to try to provide a set of evidence consistent with either a competitive or a non-competitive model.

We believe that our findings are not consistent with a simple competitive labour market model. First, we find that firm affiliation plays an important role in wage determination, as these dummies' coefficients are significantly different across firms.

Second, there is a sizeable and persistent dispersion of firm effects. On the one hand, the magnitude of the dispersion of these fixed effects is even higher than that found for the Portuguese economy as a whole. On the other hand, these firm fixed effects exhibit a considerable degree of time persistency, suggesting that they are not one-off and spurious phenomena.

We also show that these high levels of dispersion are similar for low-tenure workers and workers in a specific and very common occupation (sewing operators). One would expect that both categories of workers would be able to compete away any wage differences that may occur across firms: the former because they are in close contact with the labour market and the latter because they are very homogeneous.

As mentioned before, we do not think the evidence presented here is in line with the predictions that stem from a simple competitive approach to labour markets, in particular, that similar workers earn similar wages. Instead, we believe that these results are more in line with a non-competitive model that draws on elements such as oligopsony, efficiency wages or rent sharing. Current research addresses these possibilities in more detail.

Notes

1. As an example, a secretary with ten years of experience in the financial sector would not need to earn the same as another secretary with the same amount of experience in the retail sector, as the skills involved in each industry are different. The law of one price thus does not have to apply.
2. See Leonard (1989), Groshen (1991a,b) and Shippen (1999) for other studies on wage determination within specific industries.
3. The fact that the forms prepared by the Ministry of Employment are filled by the employers should guarantee a high degree of quality and comparability of the data. Furthermore, the record for each establishment, with information on each worker (most notably his or her pay and number of hours of work), is to be displayed in a public place at each establishment. The purpose of this requirement is to allow for inspections by the Ministry of Employment with a view to checking whether labour regulations are being respected (e.g. illegal work or irregular extra time). This requirement should ensure a further layer of quality to the data set.
4. Given that the data set initially over-represented larger firms and that it was now transformed into a balanced panel, the degree by which larger firms are over-represented has increased further.

5. Other factors than those related to the labour market may be driving this result. Taking into account the large share of young women in the samples studied, fertility reasons may also play an important role in these levels of turnover.
6. These are dummy variables for each firm taking value 1 if the worker is affiliated to that firm and value 0 otherwise.
7. These refer to the characteristics of the workforce in each firm.
8. This result holds in other specifications that also consider firm dummies.
9. All correlation coefficients, in this and the specifications presented afterwards, were found to be statistically different at the 5 per cent level.

References

Abowd, J., Kramarz, F. and Margolis, D. (1999), "High wage workers and high wage firms", *Econometrica*, Vol. 67 No. 2, pp. 251-333.

Groshen, E.L. (1991a), "Sources of intra-industry wage dispersion: how much do employers matter", *Quarterly Journal of Economics*, Vol. 106 No. 3, pp. 869-84.

Groshen, E.L. (1991b), "Five reasons why wages vary among employers", *Industrial Relations*, Vol. 30, pp. 350-81.

Hartog, J., Pereira, P.T. and Vieira, J.C. (2001), "Inter-industry wage dispersion in Portugal: high but falling", *Empirica*, Vol. 27 No. 4, pp. 353-64.

Helwege, J. (1992), "Sectoral shifts and inter-industry wage differentials", *Journal of Labor Economics*, Vol. 10 No. 1, pp. 55-84.

Krueger, A.B. and Summers, L.H. (1988), "Efficiency wages and the inter-industry wage structure", *Econometrica*, Vol. 56 No. 2, pp. 259-93.

Leonard, J.S. (1989), "Wage structure in the electronics industry", *Industrial Relations*, Vol. 28, pp. 251-75.

Neal, D. (1995), "Industry-specific human capital: evidence from displaced workers", *Journal of Labor Economics*, Vol. 13 No. 4, pp. 653-77.

Shippen, B.S. (1999), "Unmeasured skills in inter-industry wage differentials: evidence from the apparel industry", *Journal of Labor Research*, Vol. 20 No. 1, pp. 61-169.