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Robert Plasman
Michael Rusinek
François Rycx

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Robert Plasman

Free University of Brussels, DULBEA

Michael Rusinek

Free University of Brussels, DULBEA

François Rycx

*Free University of Brussels, DULBEA
and IZA Bonn*

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IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0
Fax: +49-228-3894-180
Email: iza@iza.org

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ABSTRACT

Wages and the Bargaining Regime under Multi-level Bargaining: Belgium, Denmark and Spain^{*}

Using a unique harmonized matched employer-employee dataset (European Structure of Earnings Survey, 1995), we study the impact of the regime of collective bargaining on wages in the manufacturing sector of three countries that are characterized by a multi-level system of bargaining: Belgium, Denmark and Spain. Our findings show that, compared to multi-employer bargaining, single-employer bargaining has a positive effect both on wage levels and on wage dispersion in Belgium and in Denmark. In Spain, single-employer bargaining also increases wage levels but reduces wage dispersion. Our interpretation is that in Belgium and Denmark, single-employer bargaining is used to adapt pay to the specific needs of the firm while, in Spain, it is mainly used by trade unions in order to compress the wage distribution.

JEL Classification: J31, J51, J52

Keywords: collective bargaining, wage structure

Corresponding author:

François Rycx
Université Libre de Bruxelles
CP 140 – Av. F.D. Roosevelt 50
B-1050 Brussels
Belgium
Email: frycx@ulb.ac.be

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1. Introduction

Institutions constitute an important determinant of the shape of the wage structure. Research in this field mainly relies on cross-country comparisons that show that the more centralized and/or coordinated the wage setting system, the more compressed is the wage distribution (Teulings and Hartog, 1998; Wallerstein, 1999; Blau and Kahn, 2002). This is due to two factors. Within centralized countries, multi-employer agreements set minimum wages that increase wages at the bottom of the wage distribution. In addition, multi-employer bargaining coordinates wage setting so inter-industry and inter-firm wage differentials are lower than in less coordinated systems of collective bargaining. Research into the wage structure effect of the different bargaining regimes *within* countries where multi-employer bargaining is the prevalent bargaining mode, which is the case in most western European countries, is much less extensive and produces more heterogeneous results. Under such setting, most workers, irrespective of their union status, are covered by a nationwide and/or industry-wide multi-employer agreement which sets minimum wages for defined categories of workers. Wage bargaining may also occur at the firm and/or at the establishment level generally to increase wages above the national or industry standards. It is interesting to know the wage structure effect of the different bargaining regimes under multi-level bargaining in a context where many actors (including OECD³ and European Commission⁴) are in favor of giving more weight to single-employer and less to multi-employer bargaining in the process of wage determination.

Previous studies have shown that single-employer bargaining increases wage levels relative to multi-employer bargaining (Dell'Aringa and Lucifora, 1994a; Hartog et al, 2002; Rycx, 2003; Cardoso and Portugal, 2003; Palenzuela and Jimeno, 1996). Findings concerning the effect of the bargaining regime on the dispersion of wages are much more heterogeneous. Theoretically, the dispersion of wages is expected to be higher for workers covered by single-employer agreements because they may increase inter-firm wage differentials by taking into account firm-specific characteristics and local economic conditions. This is what was observed in Sweden by Hibbs and Locking (1996) who found that the sensitivity of wage changes to local market conditions was significantly higher after the move from central to industry and local bargaining in 1982 and that wage dispersion has been increasing since that year. For Belgium, Rycx (2003) found a lower dispersion of inter-industry wage differentials for firms covered only by a multi-employer agreement, compared to firms covered additionally by a single-employer agreement. This finding suggests that rent-sharing or efficiency wage practices are more present when there is a firm-specific agreement and that it increases the dispersion of wages. For Portugal, Cardoso and Portugal (2003) found that the returns to workers' and firms' characteristics are larger when the actual wage is the dependent variable of the earnings equation, compared to the situation where the bargained wage is the dependent variable. They concluded that wage drift works as a mechanism to overcome the constraints imposed by multi-employer bargaining, allowing firms wider scope for action in their wage policy. Other studies exhibit the opposite results. Dell'Aringa and Lucifora (1994b) found that local wage bargaining significantly reduces the wage dispersion across establishments in Italy. They interpreted this result as the sign of a greater desire for wage standardization in establishments covered by a firm collective agreement. Checchi and Pagani (2004) also found that, by reducing the prices of firms' and individuals' characteristics, local bargaining reduces wage inequality in Italy. Other papers have focused on the effect of the

³ OECD (2004).

⁴ European Commission (2004).

bargaining regime on the wage dispersion within firms. According to Rodriguez (2001), the wage structure within the firm is the result of a bargaining process between the union delegation and the employer who have opposite preferences. The utility of trade unions rises with wage level and wage compression, while employers prefer wage dispersion. The wage compression effect of unionism has been widely tested in Anglo-Saxon countries (see for example Freeman, 1980). For Italy, Dell'Aringa and Lucifora (1994b) found that the within-firm wage dispersion decreases significantly as union density rises. A similar result has been found by Rodriguez (2001) for firms covered by a firm agreement in Spain. The employer's preference for wage dispersion within the firm must be linked to the Tournament theory (see Lazear and Rosen, 1981) which predicts that a more dispersed wage structure (e.g. by the introduction of performance pay practices or by raising wage differentials between occupations) may provide incentives for workers to increase their effort. Dell'Aringa and Lucifora (1994b) found no difference in within-firm wage dispersion between firms covered only by a multi-employer agreement and firms covered additionally by a firm-level agreement. Conversely, Dominguez and Rodriguez (2004) found that firm-level collective bargaining reduces the within-firm wage dispersion when compared with industry-level bargaining in Spain. They attributed this result to the action of unions. Finally, Dell'Aringa et al (2004), studying the effect of the bargaining regime on the within-establishment wage inequality in Italy, Spain, Belgium and Ireland, found first a larger within-establishment inequality for establishments covered by a single-employer agreement. However, when a larger set of controls was included, the association was inverted or became statistically insignificant. To sum up, this literature review shows that, compared to multi-employer bargaining, single-employer bargaining may increase or decrease wage dispersion, and this may happen through the modification of inter-firm wage differentials and/or the within-firm wage dispersion. Without multi-country comparison, it is impossible to know if this divergence in results is due to national differences or to the use of different data and methodologies.

In this paper we study the wage structure effect of the different bargaining regimes in the manufacturing sector in Belgium, Denmark and Spain. More precisely, we compare the wage dispersion (standard deviation and inter-deciles wage differentials) and the wage levels between workers covered by a multi-employer agreement and workers covered by a single-employer agreement⁵. We use a unique harmonized multi-country dataset (European Structure of Earnings Survey, 1995) which contains detailed information about wages, workers' and employers characteristics, and the level(s) of collective agreement covering each firm. Although matched employer-employee datasets are now available for a number of individual countries, to the best of our knowledge, the ESES is the only multi-country dataset with matched employer-employee data. This study is the first multi-country comparison of the total effect (on wage level and on wage dispersion, both within and between firms) of the bargaining regime on wages in countries characterized by a multi-level bargaining system.

Section 2 presents the institutional framework in the three countries analyzed. Section 3 shows the data. The methodology and empirical results are presented in section 4. The last section concludes.

⁵ For Belgium and Denmark, single-employer agreements always complement multi-employer agreements. In Spain, the two regimes are mutually exclusive.

2. Institutional framework

The three countries analyzed in this paper have in common that wages may be bargained at more than one level. However, they differ in many other aspects. This section provides a short description of the collective bargaining system in place in those countries. We also link the theoretical arguments presented in the previous section to the country's institutional characteristics in order to derive some expectation about the empirical results.

In Belgium and Denmark, collective bargaining occurs at three levels in a hierarchical way, such that an agreement at one level cannot be less favorable than higher-level agreements. Intersectoral agreements cover the whole country. They set national minimum wages and a margin for wage increases and define the framework for the subsequent bargaining levels. Industry agreements sets industry standards (i.e. minimum wages by category of worker) for most of the employees in the industry concerned. Then, these minimal working conditions may eventually be increased at the level of the firm or establishment by a single-employer agreement. The importance of each level in the wage setting process has varied over time. Until the 1980s, wages were mainly determined by industry agreements. In the late 1960s, single-employer bargaining expanded, mainly because shopfloor labor movements were seeking to gain pay increases in excess of higher-level standard rates (Traxler et al., 2001). The economic crisis that followed the two oil shocks led employers in many countries to call for more flexible working conditions. It led to a second wave of bargaining decentralization in the mid-1980s with decentralization on working time, and to a third wave in the 1990s that was initiated by employers in order to tailor wages more strictly to the performance of the individual firm (Traxler et al, 2001). Because Belgium and Denmark were both small, open economies, they were severely hit by the economic crisis.

In Denmark, there was a shift in many industry agreements from the *standard rate* system, where wages actually earned are those set by the industry collective agreement, to the *minimum pay* system, where only minimum wages are defined at the industry level. Between 1989 and 1995, the percentage of workers covered by the minimum pay system jumped from 30% to 61% (Andersen, 2003). Pay increases at the single-employer level take often the form of a 'pay-sum bargaining': the aggregate size of the pay increase is determined by collective bargaining but its allocation is left to the management (Traxler et al, 2001). In addition, the indexation mechanism was abolished in 1982, which reduced macroeconomic wage increases.

In Belgium, the determination of pay was also shifting from the industry to the single-employer level. An explosion in company agreements took place in the early 1980s. Between 1980 and 1985, the number of firm agreements rose from 341 to 3253. It declined after this period and stabilized around 2000 in the 1990s (Van Ruysseveldt & Visser, 1996). In order to preserve the competitiveness of Belgian firms, the government froze private sector wages for the periods 1981-82 and 1995-96. In 1983, a law stipulated that wage costs could not rise by more than the average increase in the country's major trading partners. The automatic link between prices and wages stayed in place, although the system changed in order to reduce macroeconomic wage increases (e.g. by excluding products like fuel, tobacco and alcohol from the price index). In short, in both countries, macroeconomic wage increases were reduced and there was a shift from multi-employer to single-employer bargaining.

Because single-employer agreements cannot set wages below national and industry standards, wages levels should on average, in both countries, be higher when there is a single-employer

agreement in addition to the multi-employer agreement. We also expect inter-firm wage differentials to be higher for firms covered by a single-employer agreement because they can take into account firm-specific characteristics (e.g. firm size, profit, region) that are generally not among the criteria that define industry and national standards (those criteria are principally age, experience and occupation). Finally, the presence of a firm agreement may be expected to increase the wage dispersion within the firm, because in the 1990s many firm agreements were initiated by employers in order to introduce new flexible pay practices.

In Spain, there was no intersectoral agreement at the time of the survey⁶. Working conditions were either determined by an industry agreement or by a company agreement. Following the 'no competition' principle, the two regimes deal with the same type of subjects and there is no division of responsibility between them (Alarçon, 1997). Therefore, by contrast with Belgium and Denmark, when a firm is covered by a company agreement, it is not constrained by the agreement set at the industry-level⁷. These conditions have been in place since the legalization of collective bargaining in 1958. Until the death of Franco in 1975, collective bargaining was strongly controlled by the government. Industry agreements, that covered most of the workforce, were much less respected than company agreements which were the result of almost free collective bargaining. This is why trade unions (which were illegal during this period⁸) attached much more importance to firm-level bargaining, which was also used as a tool for worker mobilization and for political struggle (Toharia, 1986). The percentage of the workforce covered by company agreements is very stable over time. During the 1990s, while an expansion of single-employer agreements occurred in many countries, the percentage of company agreements slightly decreased in Spain. In 1990, 15% of employees were covered by a company agreement. In 2001, this figure was only 11%. At the same time the percentage of workers covered by industry agreements rose from 85% to 89%. In fact, the call for more pay flexibility gave firms covered by an industry agreement the opportunity to pay wages below industry standards in the case of a company crisis⁹. Therefore, the existence of a company agreement is still associated with a trade union presence within the firm. According to Garcia and Mallo (2002), more than 80% of collective agreements at plant/firm level are initiated by works councils. They conclude that 'the existence of this sort of agreement is a proxy variable for an organized action of workers' representatives'¹⁰. Rodriguez (2001) reports, for the period 1990-94, an average union density rate of 36% in firms covered by a company agreement. This figure must be compared with the national average of 11%¹¹ (OECD, 2004). Another characteristic of company agreements is that they are more often concluded in large firms (Izquierdo et al, 2003), so where unions are traditionally better organized. Because there is a large difference in trade union bargaining power between company agreements and industry agreements, and because those two regimes are mutually exclusive, the wage structure effect of the bargaining regime in Spain somewhat resembles the wage structure effect of unionism in Anglo Saxon countries. We would therefore expect wages to be higher when the firm is covered by a company agreement. We would also expect the within-firm wage dispersion to be lower under the company agreement regime than under the industry agreement regime. Another argument explaining why company agreements

⁶ Intersectoral agreements took place between 1977 and 1986. They were reintroduced in 1997.

⁷ The 1997 intersectoral agreement has improved co-ordination between the different bargaining regimes.

⁸ Collective bargaining took place between employers and works councils.

⁹ The so-called opt-out clauses in place since the 1994 reform.

¹⁰ Garcia and Mallo (2002), p.74.

¹¹ Company agreements cover 15% of workers. According to this, the average union density rate in firms covered by an industry agreement should be 7%.

should decrease the within-firm wage dispersion is pointed out by Dominguez and Rodriguez (2004): union representatives at the industry level bargain without feeling the direct pressure of their affiliates and this may lead them to relax the goal of reducing the dispersion of wages. In firms covered by a company agreement, representatives bargain under the close supervision of their union colleagues, who are primarily low-paid, unskilled workers, so they generally seek to gain higher wage increases than their non-affiliated, skilled colleagues. Inter-firm wage differentials may also be lower under the company agreement regime because of the trade union desire for wage standardization. Moreover, a majority of industry agreements are regional or provincial. In 1995, 59% of all workers covered by a collective agreement were covered by a local, provincial or regional industry agreement while national industry agreements covered only 27% of all workers (Izquierdo et al, 2003). Large firms, which may have establishments in different regions, are often covered by a company agreement. It will set identical working conditions for the different regional establishments. So regional wage differentials may be lower under company agreement than under industry agreement.

3. Data

This study is based upon the 1995 *European Structure of Earnings Survey* (ESES 1995), produced by Eurostat. This unique harmonized survey contains a wealth of information, provided by the management of establishments, both on the characteristics of the latter (e.g. sector of activity, number of workers, region, form of economic control) and on the individuals they employ (e.g. age, level of education, paid hours, gender, occupation). It is representative of all establishments employing at least ten workers and whose economic activities fall within sections C to K of the Nace Rev. 1 nomenclature. Wage data are very reliable (provided by the management) and contain annual bonuses. This last information is relevant to our study because in many single-employer agreements, wage increases are paid through annual bonuses (e.g. 13th month, profit sharing, productivity premium). This dataset provides information on the level(s) of collective agreement covering each establishment. Hence, we are able to distinguish workers covered only by a multi-employer collective agreement, at the multi-industry and/or industry level, and workers covered (in addition to the multi-employer agreement in Belgium and Denmark) by a single-employer agreement, at the level of the firm and/or establishment. We restrict our analysis to the manufacturing sector because we wish to estimate the effects of the bargaining regime on a sample of homogeneous individuals. Indeed, we think that these effects may differ greatly depending on the type of firm, worker, and industry agreement. Moreover, the manufacturing sector is the key bargaining sector in Denmark. Its agreements chart the course for agreements in other sectors (Andersen and Mailand, 2005). We also exclude workers who are not covered by any agreement, as well as agreements that cannot be classified as single or multi-employer agreements¹². Finally, we exclude workers belonging to a category (an occupation or industry) not present in one of the two regimes within a country. In total, this corresponds to a reduction of 7%, 6% and 2% respectively for the Belgian, Danish and Spanish samples.

The descriptive statistics are presented in the appendix. In all three countries, wages are on average significantly higher under single-employer agreements than under multi-employer agreements. The standard deviation of log wages is smaller under single-employer than under multi-employer agreements in Spain. The opposite result is found for Denmark. No

¹² For instance, an industry may contain a single firm. In this case, the collective agreement is both single and multi-employer.

significant difference in standard deviation can be seen for Belgium. Among human capital variables, we note that potential experience is larger under multi-employer bargaining than under single-employer bargaining in all three countries. The level of schooling is higher under single-employer bargaining in Denmark and Spain but the inverse is true for Belgium. Seniority in the company is on average 6 years greater under company agreements than under industry agreements in Spain, while the difference in seniority between the two regimes is much smaller in Belgium (3 years) and in Denmark (less than one year). This is in line with Garcia and Malo (2002) who found that firms with company agreements in Spain had significantly lower quit rates than firms under industry agreement. They interpreted this result as a consequence of a “voice effect”. When workers, by means of works councils or union delegations, have a voice to express discontent, they quit less frequently and job tenure is longer. We also observe that the percentage of female workers is larger under multi-employer bargaining in Belgium and Spain but the inverse is true for Denmark. Concerning job characteristics, there is a very large difference in the percentage of workers employed on fixed term contracts between the two regimes in Spain (10% under firm agreements compared to 26% under industry agreements). This illustrates the fact that, in Spain, working conditions are very different between the two regimes. In Belgium and Denmark, the percentage of workers employed on fixed term contracts does not exceed 3% in both regimes. We can also note that, in all three countries, the percentage of full time workers is larger under single-employer bargaining. In Spain and Belgium, the percentage of workers who have done shift, night or weekend work, and who have done overtime hours, is larger under single-employer bargaining. The inverse is true for Denmark. Concerning firm characteristics, we observe that the number of employees is, on average, significantly larger in firms that sign their own collective agreement in all three countries. This may be due to the fact that workers are generally better organized in large firms. Finally, we see that, in Belgium and Spain, firms are more often publicly owned when there is a single-employer agreement. According to Dominguez and Rodriguez (2004), the proportion of trade union members is greater when the firm is publicly owned in Spain. In our sample, all firms in both regimes are privately owned in Denmark.

4. Estimation

5.1. Estimation procedure

If the bargaining regime has an effect on the wage structure, that is because it affects the prices of firms’ and workers’ characteristics. Therefore, we base our measurements of the wage structure effect of the bargaining regime on the differences in those prices between the two regimes. We begin by estimating separate Mincer-type wage equations by bargaining regimes.

$$\ln W_i^{SE} = X_i^{SE} \beta^{SE} + e_i^{SE} \quad (1)$$

$$\ln W_i^{ME} = X_i^{ME} \beta^{ME} + e_i^{ME} \quad (2)$$

W_i is the wage of the i th worker in each bargaining regime (single-employer bargaining (SE) and multi-employer bargaining (ME)). X is a vector of worker, firm and job characteristics: years of seniority (simple and squared), years of potential experience (simple, squared and

cubed)¹³, logarithm of years of schooling, dummies for gender, for the types of contract (fixed/unlimited, full/part time), if the individual supervises the work of his coworkers, if the individual has done shift, night or weekend work, if the individual has done overtime hours, dummies for occupations, logarithm of the number of employees in the establishment, dummies for the type of economic control, for the region where the establishment is located and dummies indicating the industry. β is the vector of the parameters to be estimated and e_i is the error term. Those wage equations are estimated by ordinary least squares with White (1980) heteroscedasticity consistent standard errors. These coefficient estimates are used in the next stages to estimate the effects of the bargaining regime on the average wage and on the dispersion of wages.

In order to estimate the effect of the bargaining regime on the wage *levels*, we decompose the difference in mean (log) wages between the two regimes into two components.

$$\overline{\ln W_i^{SE}} - \overline{\ln W_i^{ME}} = \hat{\beta}^{ME} (\bar{X}^{SE} - \bar{X}^{ME}) + \bar{X}^{SE} (\hat{\beta}^{SE} - \hat{\beta}^{ME}) \quad (3)$$

where \bar{X}^{SE} and \bar{X}^{ME} are the vectors of mean characteristics respectively across the single-employer and the multi-employer agreement workers. The first component on the right-hand side of the equation is the difference in mean wages that is due to differences in observed characteristics between the two regimes. The second component is the difference in mean wages that is due to differences in the wage equations coefficients between the two regimes. Following Stewart (1987), we consider this last component as the effect of the bargaining regime on average wages. More precisely, it measures the impact on the average wage of the differences in the prices of observed firms' and workers' characteristics between the two regimes. Standard errors from Stewart (1987) are used for the statistical inferences.

$$SE(\hat{\lambda}) = \sqrt{\bar{X}^{SE} V \bar{X}^{SE}} \quad (4)$$

where $V = Var(\hat{\beta}^{SE} - \hat{\beta}^{ME}) = Var(\hat{\beta}^{SE}) + Var(\hat{\beta}^{ME})$

In order to estimate the effect of the bargaining regime on the wage *dispersion*, we use the method of Juhn et al. (1993). This method consists in constructing wage counterfactuals for each individual, and then computing distributional statistics from the counterfactual wage distributions obtained. First, we must express equations (1) and (2) in the following forms:

$$\ln W_i^{SE} = X_i^{SE} \beta^{SE} + F_{SE}^{-1}(\theta_i^{SE}) \quad (5)$$

$$\ln W_i^{ME} = X_i^{ME} \beta^{ME} + F_{ME}^{-1}(\theta_i^{ME}) \quad (6)$$

¹³ Potential experience = Age – years of schooling – 6.

¹⁵ In order to obtain this second wage counterfactual, we must construct $F_{ME}^{-1}(\theta_i^{SE})$ for all workers in the single-employer agreement sample. We followed the imputation method presented in Lemieux (2002). The idea is to first compute the rank θ_i^{SE} from the empirical distribution of the residuals and then select the residual at the same rank in the empirical distribution of residuals in the multi-employer agreement sample. Because the number of observations is not the same in both samples, we discretized the distribution of residuals into 1000 percentiles, and we replaced the actual residual by the average residual in each percentile.

where $F_{SE}^{-1}(\theta_i^{SE}) = e_i^{SE}$ and $F_{ME}^{-1}(\theta_i^{ME}) = e_i^{ME}$; F_{SE}^{-1} and F_{ME}^{-1} are the inverse of the cumulative distribution of the residuals respectively in the single-employer agreement and in the multi-employer agreement sample; θ_i is the rank of the residual of the i^{th} individual in the residual distribution. Then, we construct two types of counterfactual wages for each single-employer agreement worker:

$$\ln W_i^{SE(1)} = X_i^{SE} \beta^{ME} + F_{SE}^{-1}(\theta_i^{SE}) \quad (7)$$

$$\ln W_i^{SE(2)} = X_i^{SE} \beta^{ME} + F_{ME}^{-1}(\theta_i^{SE}) \quad (8)$$

$\ln W_i^{SE(1)}$ is the log wage of the single-employer agreement workers if they were remunerated like the multi-employer agreement worker and is obtained by using the coefficients from the earnings equation estimated in the multi-employer agreement sample; $\ln W_i^{SE(2)}$ is the log wage of the single-employer agreement workers if, in addition, their residuals were distributed as for the multi-employer agreement workers¹⁵. Once we have these four log wage distributions ($\ln w^{SE}$; $\ln w^{ME}$; $\ln w^{SE(1)}$; $\ln w^{SE(2)}$), we can construct distributional statistics for each of them. Consider the statistics G (e.g. G = standard deviation, P90-P10, P50-P10 or P90-P50). The difference in G between single-employer agreements and multi-employer agreements may be decomposed into three components:

$$\begin{aligned} G(\ln w^{SE}) - G(\ln w^{ME}) &= G(\ln w^{SE(2)}) - G(\ln w^{ME}) \\ &\quad + G(\ln w^{SE}) - G(\ln w^{SE(1)}) \\ &\quad + G(\ln w^{SE(1)}) - G(\ln w^{SE(2)}) \end{aligned} \quad (9)$$

The first component on the right-hand side of the equation is the difference in G due to differences in observed and unobserved characteristics; the second is the difference in G due to differences in wage equation coefficients (i.e. the difference in the price of the observed characteristics); the third is the difference in G due to differences in the prices of unobserved characteristics. We define the effect of the bargaining regime on G as the sum of the two last components, so the difference in G that is due to differences in the prices of observed and unobserved characteristics. We estimate the effect of the bargaining regime on the standard deviation, the 90-10, the 90-50 and the 50-10 percentile differentials.

5.2. Estimation results

5.2.1. Wage equations

We begin by analyzing the results of the wage equations estimated separately for workers covered by single-employer bargaining and for workers covered by multi-employer bargaining. They are presented in the appendix. The large R^2 indicates a good goodness of fit and the signs of the coefficients are in line with theoretical expectations. The level of education exercises a significant and positive influence upon wages in all three countries. There is a concave relation between the wages and the prior potential experience of a worker. The relationship between wages and tenure is also in the form of a bell. The dummy variable relating to gender suggests that, *ceteris paribus*, women are paid wages lower than those of men. We also observe a wage differential in favor of individuals managing other employees

(when this variable exists). Finally, there is a positive correlation between wages and the size of the firm.

More interesting are the differences in the coefficients between the two regimes. Among human capital variables, only the return to potential experience exhibits no significant difference between the two regimes for any of the three countries. The return to seniority is smaller under single-employer agreements in Belgium and Spain (by respectively 0.2 and 0.4%). But it is larger by 0.8% under single-employer agreements in Denmark. This is in line with the study by Bingley and Westergaard - Nielsen (2003) who found that the return to tenure has increased since the beginning of the bargaining decentralization movement in the 1990s. Their explanation is that tenure was very low in Denmark, compared to the other OECD countries¹⁶. Employers have taken the opportunity afforded by a more decentralized system to raise the return to tenure in order to increase the attachment of workers to their firms. Decentralized bargaining seems to reward better human capital characteristics in Belgium and Denmark, as shown by the difference in the coefficient of the years of education. The difference is not statistically significant in Spain. The wage penalty for female workers is smaller (by 2%) under single-employer agreements in Spain. The gender wage gap that results from industry bargaining is very wide in Spain (20%, compared to 16% in Belgium and 9% in Denmark). So unions, by means of single-employer agreements, may seek to close this gap. Single-employer agreements increase the gender wage gap in Denmark (by 1%), but the gap under this regime is still lower than in the two other countries. The difference is statistically insignificant in Belgium. An analysis of the effects of the bargaining regimes on wage differentials between occupations reveals interesting results. The occupation of reference is "machine operators and assemblers", the largest blue collar occupational group. In Denmark, 12 occupations increase their position relative to the reference when a single-employer agreement is concluded in addition to the multi-employer agreement. Among those occupations, 8 were already better paid than the reference when only a multi-employer agreement was in place. In addition, most of them are white collar occupations. Inversely, 2 of the 3 occupational groups whose positions worsened under a single-employer agreement are blue collar occupations. Hence, it seems that, in Denmark, single-employer agreements widen the inter-occupation wage differentials and mostly benefit white collar workers. In Spain, on the contrary, single-employer agreements seem to reduce the wage differentials between occupations. The 3 occupational groups that increase their position by switching from multi-employer to single-employer agreements were paid less than or equal to the reference under multi-employer agreements. Inversely, the 4 groups that worsen their position under single-employer agreements were better paid than the reference under multi-employer agreements. 3 of them are white collar occupations. This may be explained by trade unions' actions under company agreements that seek to increase relatively more the wages of their members who are traditionally low paid, unskilled workers. Surprisingly, it seems that, in Belgium also, single-employer agreements reduce the wage differentials between occupations. 5 out of the 6 groups that have improved their position by being covered by a single-employer agreement in addition to the multi-employer agreement were paid less than the reference under multi-employer agreement. The opposite is true for the two groups that have worsened their position. The return to firm size is larger under single-employer agreements than under multi-employer agreements in Belgium and in Denmark. It indicates for those two countries that firm-specific characteristics (at least firm size) are better taken into account under single-

¹⁶ With an average tenure of 7.9 years, Denmark is placed together with the Anglo Saxon countries. Denmark is also in the group with the lowest fraction of those who have more than 10 years of tenure (Bingley and Westergaard-Nielsen, 2003).

employer agreements. The fact that the inverse is found in Spain may be a sign of the union policy of wage standardization between firms. Finally, we observe that in Spain, the wage penalty relative to the reference region “East” is larger under multi-employer agreements than under single-employer agreements in 4 regions. The difference is not statistically significant for the 2 other regions. So regional wage differentials seem to be larger under multi-employer agreements than under single-employer agreements in Spain. This may be explained by the fact that multi-employer agreements are often regional or provincial. On the contrary, single-employer agreements may cover large firms that have establishments in different regions, thus defining identical working conditions for the different regional establishments.

5.2.2. Effect of the bargaining regime on wage levels

[Table 1 about here]

We see from table 1 that wages are on average higher under single-employer agreements than under multi-employer agreements even if we control for differences in observed characteristics. The wage differentials are around 4% without statistically significant differences between the countries. This result is not surprising for Belgium and Denmark because single-employer agreements can only improve the working conditions set at the upper bargaining levels. It is in the range of previous findings for multi-level bargaining systems: 4.4% and 7.5% respectively for blue and white collar workers in Italy (Dell’Aringa and Lucifora, 1994a), 0.5% in the Netherlands (Hartog et al, 2002), 5.1% in Belgium (Rycx, 2003) and 1.6% in Portugal (Cardoso and Portugal, 2003). In Spain, because firm agreements are not constrained by industry agreements, this result may be due to stronger union bargaining power in companies covered by a company agreement than in those covered by an industry agreement. It is line with the wage differential of 5% found by Palenzuela and Jimeno (1996).

5.2.3. Effect of the bargaining regime on wage dispersion

[Table 2 about here]

In Denmark, without controlling for differences in the distribution of characteristics, single-employer agreements increase the standard deviation of wages by 0.030, relative to multi-employer agreements. In Spain and Belgium, single-employer agreements reduce the standard deviation respectively by 0.043 and 0.001. Because, in Denmark, the characteristics under firm agreements are more heterogeneously distributed, the increase in the standard deviation by single-employer agreement becomes slightly smaller (0.022) when differences in characteristics are controlled for. In Belgium and Spain, on the contrary, the distribution of characteristics is more compressed under single-employer agreements than under multi-employer agreements. Consequently, the reduction in the standard deviation of wages by single-employer agreement is smaller in Spain (0.027) when we control for differences in characteristics. In Belgium, when differences in characteristics are controlled for, single-employer agreements increase the standard deviation of wages by 0.004.

The same kind of results are found when we analyze the effect of the bargaining regime on the 90-10 percentile wage differential. Controlling for differences in characteristics, single-

employer agreements increase the 90-10 percentile wage differential by 0.022 and 0.083 respectively in Belgium and in Denmark. In Spain, single-employer agreements reduce the 90-10 percentile wage differential by 0.077. The comparison of the effect of the bargaining regime on the 50-10 and on the 90-50 percentile differentials shows that, in Denmark, this effect is similar (0.042) in the lower-half part and in the upper-half part of the wage distribution. In Belgium, the increase in wage dispersion is only due to an increase (of 0.023) in the upper-half part of the wage distribution. Firm agreements in fact very slightly reduce (by 0.001) the wage dispersion in the lower-half part. This may be linked to the fact that the occupations that see their wages increased under single-employer agreements are mainly low paid occupations. In Spain, almost all of the reduction in the wage dispersion by firm agreement takes place in the lower-half part of the wage distribution (0.071 in the lower part and 0.005 in the upper part). This may mean that the wage gains of being covered by a single-employer agreement benefit most particularly the lowest paid workers, which, again, may be attributed to trade union actions¹⁷.

To sum up, firm agreements, as compared with multi-employer agreements, increase the wage dispersion in Denmark and Belgium and reduce it in Spain. The effects are very small in Belgium. In relative terms, firm agreements increase the standard deviation of wages by 1% and the 90-10 percentile wages differentials by 3%. The effects are greater in Denmark and in Spain. In the former country, single-employer agreements increase the standard deviation by 7% and the 90-10 percentile wages differentials by 12%. In the latter, single-employer agreements reduce the standard deviation by 6% and the 90-10 percentile wages differentials by 7%. The more limited effects in Belgium may be due to the fact that opposite forces cancel each other out. Firm size and education, for instance, have higher returns under firm agreements. It is the opposite for tenure and occupation. Another explanation is the strict control over wage setting by the government. Since 1983, wage cost increases in Belgium cannot exceed the average increase in the country's main trading partners. The automatic indexation of wages and multi-employer wage increases already account for a substantial part of the authorized wage increase. So the small difference in wage dispersion between single and multi-employer agreements can be explained by the fact that Belgian firms have a small degree of freedom for their wage policy.

6. Conclusion

This paper has examined the effect of the bargaining regime on the wage structure in Belgium, Denmark and Spain, using a harmonized matched employer-employee dataset (ESES, 1995). These three countries are characterized by the fact that most workers, irrespective of their union status, are covered by a multi-employer collective agreement.

In Belgium and Denmark, those multi-employer agreements set industry or national standards for specified categories of workers that are defined on the basis of a limited number of criteria such age, experience and occupation. Then, collective bargaining may occur at the single-employer level in order to increase wages above the multi-employer standards. Our estimations show that, in Belgium and Denmark, both the level and the dispersion of wages are higher for workers covered by single-employer agreements, compared to workers covered only by multi-employer agreements. The fact that single-employer agreements increase wage

¹⁷ Another possibility is that wages at the median are lower under company agreements than under industry agreements.

levels is due to the fact that single-employer agreements cannot set worse working conditions than agreements at the higher level. The increase in wage dispersion may come from two sources. First, single-employer agreements may increase inter-firm wage differentials because they take into account firm specificities which are not among the criteria that define multi-employer standards. The comparison of wage equation estimates between the two regimes does indeed show that firm size has a greater effect on wages under single-employer agreements. For Belgium, our results are in line with Rycx (2003) who finds a larger dispersion of inter-industry wage differentials for firms covered by a firm agreement. Second, the presence of a single-employer agreement may increase the within-firm wage dispersion. This is likely because many single-employer agreements signed since the decentralization trend in the 1990s have been initiated by employers in order to introduce more pay flexibility and wider wage differentials into their firms. From the comparison of wage equation estimates, we find larger wage differentials between workers with a different tenure, education level, occupation and gender under single-employer agreements in Denmark. The fact that single-employer agreements seem to have an important positive effect on the within-firm wage dispersion in Denmark may be linked to the generalized practice of pay-sum bargaining. Only the aggregate wage increase at firm-level is the object of collective bargaining. Its allocation among workers is left to the employer who generally prefers a dispersed wage distribution. For Belgium, the effect on the within-firm dispersion is uncertain. Although single-employer agreements increase the return to education, they also reduce the return to tenure and the wage differentials between occupations.

In Spain, single-employer agreements constitute a bargaining regime independent of industry agreements. Following the 'no competition' principle, the two regimes deal with the same types of subject and there is no division of responsibility between them. Therefore, single-employer agreements may set wages above or below industry standards. By contrast with Belgium and Denmark where many single-employer agreements are initiated by the employer, the majority of single-employer agreements in Spain are initiated by works councils or trade union delegations. The average union density in firms covered by a single-employer agreement is much greater than in firms covered by an industry agreement. Therefore, the differences in wage structure between the two bargaining regimes resemble the differences between the union and the non-union sector in Anglo-Saxon countries. Higher wages and lower wage dispersion are found under the single-employer bargaining regime. The lower wage dispersion seems to result from the reduction in the wage dispersion within firms and from the reduction in the inter-firm wage differentials. The comparison of wage equation coefficients between the two regimes indeed show lower wage differentials between occupations, gender, tenure and firm size under the firm agreement regime. The regional dimension of collective bargaining may constitute a complementary explanation to this compression effect. Industry agreements have, on the whole, local (regional or provincial) scope in Spain. On the contrary, one single firm agreement may apply to establishments located in different regions or provinces. So regional or provincial wage differentials may be larger under industry agreements than under single-employer agreements. We do indeed observe that the regional coefficients in the firm agreement wage equation are lower than in the industry agreement wage equation. Our results complete the findings of Dominguez and Rodriguez (2004) who find that firm agreements compress the within-firm wage dispersion in Spain. We conclude that single-employer agreements are mainly used in Denmark and Belgium to adapt pay to the specificities of the firm and to local economic conditions. In Spain, they are mainly used by unions to improve working conditions and to compress the wage distribution.

Future research concerning the effect of the bargaining regime on the wage structure should control for a potential selectivity effect, i.e. for the fact that firms or workers in a particular bargaining regime might not be representative of the overall sample. However, as pointed out by Hartog et al (1997, p.7), this will remain a very difficult task “as long as no (satisfactory) independent variables to control for the endogeneity of the bargaining regime are available”.

References

Alarçon, M.R. (1997), “The 1997 labor reform in Spain: the April agreements”, European Industrial Relations Observatory On-line, <http://www.eiro.eurofound.eu.int/1997/06/feature/es9706211f.html>

Andersen, T.M (2003) “Changes in Danish Labor Market Bargaining. The Prototypical Case of Organized Decentralization?” in Dølvik, E.J. and Engelstad, F. (eds.), *National regimes of collective bargaining in transformation: Nordic trends in a comparative perspective*, Makt- og demokratiutredningens rapportserie, Rapport 54, February 2003.

Andersen, S.K. and Mailand, M. (2005) “The Danish Flexicurity Model. The Role of the Collective Bargaining System”, FAOS.

Bingley, P. and Westergaard-Nielsen, N. (2003), “Returns to tenure: firm and worker heterogeneity”, paper presented at the 2003 Comparative Analysis of Enterprise (Micro) Data Conference Program, London.

Blau, F.D. and Kahn, L.M. (2002), *At Home and Abroad. U.S. Labor-Market Performance in International Perspective*, New York: Russel Sage Foundation.

Cardoso, A. R. and Portugal, P. (2003) “Bargained Wages, Wage Drift and the Design of the Wage Setting System”, IZA Discussion Paper No. 914.

Checchi, D. and Pagani, L. (2004) “The Effects of Unions on Wage Inequality. The Italian Case in the Nineties”, PIEP Working paper, *Centre for Economic Performances, London School of Economics*, London.

Dell’Aringa, C. and Lucifora, C. (1994a) “Collective bargaining and relative earnings in Italy”, *European Journal of Political Economy*, 10: 727-747.

Dell’Aringa, C. and Lucifora, C. (1994b) “Wage Dispersion and Unionism: Do Unions Protect Low Pay?”, *International Journal of Manpower*, 15(2,3): 150-170.

Dell’Aringa, C., Lucifora, C., Orlando, N., Cottini, E. (2004) “Bargaining Structure and Intra-Establishment Pay Inequality in four European Countries: Evidence from Matched Employer-Employee Data”, PIEP working paper, *Centre for Economic Performances, London School of Economics*, London.

Dominguez, J.F.C and Rodriguez-Gutiérrez, C. (2004) “Collective Bargaining and Within-firm Wage Dispersion in Spain”, *British Journal of Industrial Relations*, 42(3): 481-506.

- European Commission (2004), *Industrial Relations in Europe*, Luxembourg: Office for Official Publications of the European Communities.
- Freeman, R. B. (1980) "Unionism and the dispersion of wages", *Industrial and Labor Relations Review*, 34(1): 3-23.
- Garcia-Serrano, C. and Mallo, M.A. (2002) "Worker Turnover, Job Turnover and Collective Bargaining in Spain", *British Journal of Industrial Relations*, 40(1): 69-85.
- Hartog, J., Leuven, E. and Teulings, C. (1997) "Wages and the Bargaining Regime in a Corporatist Setting: the Netherlands", Discussion Paper Series No. 1706, Centre for Economic Policy Research.
- Hartog, J., Leuven, E. and Teulings, C. (2002) "Wages and the Bargaining Regime in a Corporatist Setting: the Netherlands", *European Journal of Political Economy*, 18: 317-331.
- Hibbs, H.A. Jr and Locking, H. (1996) "Wage Compression, Wage Drift and Wage Inflation in Sweden", *Labour Economics*, 3: 109-141.
- Izquierdo, M., Moral, E. and Urtasun, A. (2000) "Collective Bargaining in Spain: An Individual Data Analysis", Documento Occasional No. 0302, Servicio de Estudios, Banco de Espana.
- Juhn, C., Murphy, M. and Pierce, B. (1993) "Wage Inequality and the Rise in Returns to Skills", *The Journal of Political Economy*, 101(3): 410-442.
- Lemieux, T. (2002) "Decomposing Changes in Wage Distributions: A Unified Approach", *Canadian Journal of Economics*, 35(4): 646-688.
- Lazear, E. P. and Rosen, S. (1981) "Rank-Order Tournament as Optimum Labor Contracts", *Journal of Political Economy*, 89: 841-864.
- Madsen, J. S., Andersen, S.K., Due, J. (2001) "From Centralised Decentralisation Towards Multi-Level Regulation. Danish Employment Relations Between Continuity and Change, FAOS working paper No. 032.
- OECD (2004), *Employment Outlook*, Paris: OECD.
- Rodriguez-Gutiérrez, C. (2001) "Wage Dispersion Within Firms and Collective Bargaining in Spain", *Economic Letters*, 72: 381-386.
- Rycx, F. (2003) "Industry Wage Differentials and the Bargaining Regime in a Corporatist Country", *International Journal of Manpower*, 24(4): 347-366.
- Palenzuela, D.R. and Jimeno, J.F. (1996) "Wage Drift in Collective Bargaining at the Firm Level: Evidence From Spain", *Annales d'Economie et de Statistique*, 41/42: 187-206.
- Stewart, M. B. (1987) "Collective Bargaining Arrangements, Closed Shops and Relative Pay", *Economic Journal*, 97(385): 140-156.

Toharia, L. (1986) “Un Fordisme Inachevé, entre Transition Politique et Crise Economique: l’Espagne” in Boyer, R. (ed.), *La Flexibilité du Travail en Europe*, Paris: Editions La Découverte.

Traxler, F., Blaschke, S. and Kittel, B. (2001) *National Labour Relations in Internationalized Markets. A Comparative Study of Institutions, Change, and Performance*, New York: Oxford University Press.

Teulings, C. and Hartog, J. (1998) *Corporatism or Competition? Labour Contracts, Institutions and Wage Structures in International Comparison*, Cambridge: University Press.

Van Ruysseveldt, J. and Visser, J. (1996) “Weak Corporatisms Going Different Ways? Industrial Relations in the Netherlands and Belgium” in Van Ruysseveldt, J. and Visser, J (eds.), *Industrial Relations in Europe. Traditions and Transitions*, London, Thousands Oaks, New Delhi: Sage publications.

White, H. (1980) “A Heteroscedasticity Consistent Covariance Matrix Estimator and a Direct Test for Heteroscedasticity”, *Econometrica*, 48: 817-830.

Wallerstein, M. (1999) “Wage-Setting Institutions and Pay Inequality in Advanced Industrial Societies”, *American Journal of Political Science*, 43(3): 649-80.

**Table 1: Average log wage differential between single-employer and multi-employer agreements
(Standard errors in parentheses)**

Belgium	Denmark	Spain
0.041***	0.031***	0.041***
(0.006)	(0.003)	(0.006)

Source: ESES, 1995; * p < 0.10; ** p < 0.05; *** p < 0.001.

Table 2: Impact of the bargaining regime on several indicators of wage dispersion

	Standard deviation			P90-P10			P50-P10			P90-P50		
	Belgium	Denmark	Spain	Belgium	Denmark	Spain	Belgium	Denmark	Spain	Belgium	Denmark	Spain
1 Single-employer agreement (SE)	0,340	0,328	0,448	0,831	0,800	1,062	0,336	0,300	0,5178	0,495	0,500	0,544
2 Multi-employer agreement (ME)	0,341	0,298	0,491	0,806	0,680	1,173	0,295	0,273	0,4571	0,511	0,407	0,716
3 SE with β of ME	0,338	0,291	0,469	0,817	0,684	1,126	0,343	0,250	0,5967	0,475	0,434	0,530
4 SE with β and residuals of ME	0,336	0,305	0,475	0,809	0,716	1,138	0,337	0,258	0,5890	0,472	0,458	0,549
5 Raw difference (1-2)	-0,001	0,030	-0,043	0,025	0,120	-0,111	0,041	0,027	0,061	-0,016	0,094	-0,172
6 Difference due to X (4-2)	-0,005	0,007	-0,016	0,004	0,037	-0,035	0,042	-0,015	0,132	-0,039	0,052	-0,166
7 Difference due to β (1-3)	0,002	0,037	-0,021	0,014	0,116	-0,065	-0,007	0,050	-0,079	0,020	0,066	0,014
8 Difference due to residuals (3-4)	0,002	-0,015	-0,006	0,008	-0,033	-0,012	0,006	-0,008	0,008	0,003	-0,024	-0,020
9 Net difference (7+8)	0,004	0,022	-0,027	0,022	0,083	-0,077	-0,001	0,042	-0,071	0,023	0,042	-0,005

Source: ESES, 1995

Appendix 1: Descriptive statistics (variables included in the wage equations)

	Belgium				Denmark				Spain			
	ME ^d		SE ^d		ME		SE		ME		SE	
	Mean	Std. dev	Mean	Std. dev	Mean	Std. dev	Mean	Std. dev	Mean	Std. dev.	Mean	Std. dev.
<i>Dependent variable</i>												
Logarithm of gross hourly wage ^a	6,12	0,34	6,34	0,34	4,86	0,30	4,91	0,33	6,98	0,49	7,37	0,45
<i>Independent variables</i>												
Human capital and worker features												
Seniority	9,58	9,07	12,53	9,50	7,66	8,27	6,89	7,48	10,26	9,59	16,09	10,02
Seniority ²	173,93	274,13	247,29	301,48	127,04	238,82	103,44	201,48	197,38	292,12	359,39	343,05
Experience	9,97	8,95	8,54	7,61	13,50	10,09	12,72	9,80	13,38	10,10	11,27	8,21
Experience ²	179,42	287,90	130,80	218,77	284,15	366,71	257,76	349,68	281,18	389,65	194,35	269,55
Experience ³	4204,16	9834,46	2669,62	6745,67	7359,51	13243,09	6525,20	12649,70	7490,90	15119,89	4247,01	9444,88
Logarithm of years of schooling	2,35	0,36	2,33	0,39	2,37	0,23	2,43	0,24	2,06	0,43	2,11	0,48
Female	0,24	0,43	0,15	0,35	0,28	0,45	0,42	0,49	0,25	0,44	0,14	0,35
Job characteristics												
Fixed term contract	0,01	0,12	0,03	0,18	0,02	0,14	0,01	0,12	0,26	0,44	0,10	0,29
Full-time contract	0,95	0,23	0,97	0,18	0,88	0,32	0,92	0,27	0,98	0,15	0,99	0,10
Managing other employees ^b	0,15	0,35	0,15	0,36	0,09	0,29	0,10	0,30	-	-	-	-
Have done shift, night or weekend work	0,17	0,37	0,40	0,49	0,44	0,50	0,32	0,47	0,12	0,32	0,36	0,48
Have done overtime hours	0,09	0,29	0,14	0,35	0,41	0,49	0,33	0,47	0,10	0,31	0,18	0,38
Legislators and senior officials ^b	0,00	0,02	0,00	0,01	0,00	0,00	0,00	0,01	-	-	-	-
Corporate managers	0,03	0,18	0,05	0,22	0,05	0,22	0,05	0,22	0,04	0,19	0,03	0,18
Managers of small enterprises ^b	0,00	0,01	0,00	0,01	0,00	0,03	0,00	0,04	-	-	-	-
Physical, mathematical and engineering science proffs	0,03	0,18	0,05	0,21	0,03	0,17	0,04	0,20	0,02	0,12	0,05	0,21
Life science and health professionals	0,00	0,04	0,00	0,05	0,00	0,05	0,04	0,19	0,00	0,06	0,00	0,06
Teaching professionals	0,00	0,02	0,00	0,02	0,00	0,02	0,00	0,02	0,00	0,01	0,00	0,02
Other professionals	0,01	0,11	0,01	0,09	0,02	0,12	0,03	0,18	0,01	0,11	0,02	0,14
Physical and engineering science associate proffs	0,10	0,30	0,17	0,37	0,06	0,23	0,06	0,23	0,03	0,16	0,06	0,24
Life science and health associate professionals	0,00	0,02	0,00	0,03	0,00	0,04	0,08	0,27	0,00	0,06	0,00	0,05
Teaching associate professionals	0,00	0,01	0,00	0,01	0,00	0,01	0,00	0,00	0,00	0,01	0,00	0,01
Other associate professionals	0,03	0,16	0,01	0,12	0,07	0,26	0,08	0,27	0,06	0,23	0,06	0,24
Office clerks	0,12	0,32	0,14	0,34	0,04	0,20	0,04	0,20	0,10	0,30	0,08	0,27
Customer service clerks	0,00	0,06	0,00	0,05	0,00	0,07	0,00	0,07	0,00	0,06	0,00	0,06

Personal and protective services workers	0,00	0,06	0,00	0,07	0,00	0,05	0,00	0,03	0,00	0,04	0,00	0,06
Models, salespersons and demonstrators	0,03	0,17	0,01	0,11	0,01	0,08	0,01	0,08	0,01	0,11	0,00	0,07
Market-oriented skilled agricultural and fishery workers ^c	-	-	-	-	0,00	0,02	0,00	0,06	-	-	-	-
Extraction and building trade workers	0,04	0,20	0,04	0,19	0,02	0,14	0,02	0,13	0,03	0,18	0,03	0,17
Metal, machinery and related trades workers	0,10	0,30	0,18	0,39	0,14	0,35	0,11	0,31	0,10	0,30	0,17	0,38
Precision, handicraft, printing and related trades workers	0,04	0,19	0,03	0,16	0,02	0,13	0,02	0,13	0,03	0,18	0,01	0,12
Other craft and related trades workers	0,12	0,32	0,02	0,14	0,02	0,14	0,04	0,20	0,08	0,27	0,03	0,17
Stationary plant and related operators	0,03	0,18	0,09	0,29	0,03	0,17	0,06	0,23	0,06	0,24	0,08	0,27
Machine operators and assemblers	0,12	0,32	0,09	0,28	0,37	0,48	0,23	0,42	0,28	0,45	0,25	0,43
Drivers and mobile plant operators	0,05	0,21	0,03	0,17	0,03	0,16	0,01	0,09	0,04	0,18	0,03	0,18
Sales and services elementary occupations	0,01	0,12	0,01	0,11	0,01	0,12	0,03	0,16	0,02	0,12	0,01	0,12
Agricultural, fishery and related laborers ^c	-	-	-	-	0,00	0,02	0,00	0,04	-	-	-	-
Laborers in mining, construction, manufacturing and transp	0,12	0,33	0,06	0,24	0,07	0,26	0,06	0,25	0,10	0,30	0,06	0,24
Firm features												
Logarithm of number of employees	4,57	1,33	6,48	1,57	5,72	1,63	6,19	2,04	4,01	1,23	5,97	1,74
Privately owned enterprise	0,93	0,25	0,85	0,36	1,00	0,03	1,00	0,00	0,99	0,10	0,89	0,31
Mainly state owned enterprise	0,00	0,04	0,06	0,23	0,00	0,03	0,00	0,00	0,00	0,04	0,04	0,19
Fully state owned enterprise	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,07	0,07	0,25
Other type of ownership	0,07	0,25	0,09	0,29	0,00	0,00	0,00	0,00	0,00	0,05	0,00	0,07
Region of establishment												
Brussels	0,07	0,25	0,06	0,24								
Flanders	0,77	0,42	0,69	0,46								
Wallonia	0,16	0,37	0,25	0,43								
North West									0,07	0,26	0,11	0,31
North East									0,13	0,34	0,26	0,44
Madrid									0,12	0,33	0,16	0,37
Center									0,09	0,29	0,10	0,30
West									0,47	0,50	0,26	0,44
South									0,10	0,30	0,10	0,29
Canary Islands									0,01	0,11	0,02	0,13
Number of individuals in the sample	12147		18974		169566		17357		60732		24813	

Source: ESES, 1995; ^a Gross hourly wage in local currency. Includes overtime pay, bonuses for shift, night and/or weekend work and annual bonuses; ^b Variable not present in the Spanish survey; ^c Variable only present in the Danish survey; ^d ME means multi-employer bargaining, SE means single-employer bargaining.

Appendix 2: Wage equation estimation by country and bargaining regime (OLS).
Dependent variable: logarithm of hourly wage

	Belgium			Denmark			Spain		
	ME ^a	SE ^a	SE-ME ^b	ME	SE	SE-ME ¹	ME	SE	SE-ME ¹
Constant	5.232***	5.158***	-0.074*	4.430***	4.164***	-0.267***	5.896***	6.244***	0.349***
Human capital and worker features									
Seniority: simple	0.014***	0.012***	-0.002**	0.003***	0.011***	0.008***	0.022***	0.018***	-0.004***
Seniority: squared/10 ²	-0.018***	-0.010***	0.008**	-0.0003	-0.020***	-0.020***	-0.027***	-0.017***	0.010**
Experience: simple	0.015***	0.013***	-0.001	0.013***	0.013***	0.000	0.020***	0.017***	-0.003
Experience: squared/10 ²	-0.047***	-0.030***	0.017	-0.062***	-0.052***	0.010	-0.061***	-0.054***	0.007
Experience: cubed/10 ⁴	0.058***	0.038*	-0.020	0.094***	0.075***	0.019	0.067***	0.056**	0.011
Logarithm of years of schooling	0.194***	0.233***	0.039***	0.160***	0.229***	0.069***	0.239***	0.221***	-0.018
Female	-0.157***	-0.146***	0.012	-0.093***	-0.104***	-0.010**	-0.200***	-0.179***	0.021**
Job characteristics									
Fixed term contract	-0.116***	-0.069***	0.047**	-0.020***	0.081***	0.101***	-0.117***	-0.216***	-0.098***
Full-time contract	0.026**	-0.021*	-0.047***	-0.127***	-0.155***	-0.028***	-0.011	0.030	0.042
Managing other employees	0.127***	0.148***	0.021**	0.182***	0.166***	-0.016*	-	-	-
Have done shift, night or weekend work	0.033***	0.036***	0.003	0.059***	0.021***	-0.038***	0.067***	0.064***	-0.004
Have done overtime hours	0.003	-0.007	-0.010	-0.041***	-0.019***	0.022***	0.130***	0.144***	0.015
Corporate managers	0.609***	0.587***	-0.022	0.282***	0.358***	0.076***	0.715***	0.768***	0.053
Managers of small enterprises	-	-	-	0.081**	0.161**	0.080	-	-	-
Physical, mathematical and engineering science professionals	0.400***	0.341***	-0.059***	0.272***	0.351***	0.079***	0.483***	0.520***	0.037
Life science and health professionals	0.348***	0.373***	0.025	0.426***	0.444***	0.018	0.422***	0.428***	0.006
Teaching professionals	0.228*	0.283***	0.054	0.137***	0.237***	0.100	0.793***	0.015	-0.778***
Other professionals	0.237***	0.267***	0.031	0.182***	0.396***	0.214***	0.508***	0.431***	-0.077**
Physical and engineering science associate professionals	0.124***	0.153***	0.029**	0.070***	0.092***	0.022**	0.200***	0.173***	-0.027
Life science and health associate professionals	0.133	0.168***	0.034	0.085***	0.066***	-0.018	0.082**	0.105*	0.024
Teaching associate professionals	-	-	-	-	-	-	0.232	0.536***	0.304*
Other associate professionals	0.274***	0.266***	-0.008	0.112***	0.151***	0.039***	0.396***	0.306***	-0.090***
Office clerks	0.173***	0.141***	-0.032***	-0.049***	-0.020*	0.029**	0.112***	0.106***	-0.007
Customer service clerks	0.112***	0.095***	-0.018	-0.061***	-0.021	0.040	0.046**	0.109**	0.063
Personal and protective services workers	-0.019	0.109***	0.128***	-0.041***	0.186**	0.227***	-0.026	0.088	0.114
Models, salespersons and demonstrators	-0.052***	-0.012	0.039*	-0.045***	0.070**	0.115***	0.012	0.158***	0.145***

Market-oriented skilled agricultural and fishery workers	-	-	-	-0.062**	0.026	0.088**	-	-	-
Extraction and building trade workers	0.0004	-0.015	-0.014	0.062***	0.018	-0.043***	0.030***	0.025	-0.005
Metal. machinery and related trades workers	0.009	0.014*	0.005	0.048***	0.086***	0.037***	0.054***	0.049***	-0.006
Precision. handcraft. printing and related trades workers	-0.003	0.007	0.011	0.136***	0.035**	-0.101***	-0.022*	0.015	0.037
Other craft and related trades workers	-0.034***	-0.032**	0.002	0.027***	0.077***	0.050***	-0.020***	-0.044***	-0.024
Stationary plant and related operators	-0.042***	0.037***	0.079***	0.029***	0.065***	0.036***	0.069***	0.033***	-0.036**
Drivers and mobile plant operators	-0.021**	0.011	0.032**	-0.012***	-0.002	0.010	-0.013*	0.031*	0.044**
Sales and services elementary occupations	-0.029	-0.008	0.020	-0.054***	-0.174***	-0.120***	-0.064***	-0.026	0.039
Agricultural. fishery and related laborers	-	-	-	0.008	0.174	0.166	-	-	-
Laborers in mining. construction. manufacturing and transport	-0.029***	0.002	0.032***	-0.010***	-0.009**	0.001	-0.101***	-0.104***	-0.003
Firm features									
Logarithm of number of employees	0.042***	0.056***	0.013***	0.002***	0.012***	0.010***	0.071***	0.043***	-0.028***
Mainly state owned enterprise	0.048	-0.066***	-0.114***	-	-	-	0.140***	0.074***	-0.066**
Fully state owned enterprise	-	-	-	-	-	-	-0.024***	0.026***	0.049
Other type of ownership	-0.003	-0.093***	-0.090***	-	-	-	-0.105***	0.021***	0.126***
Region of establishment									
Flanders	-0.032***	-0.009	0.023*						
Wallonia	-0.019	-0.049***	-0.030**						
North West							-0.145***	-0.113***	0.033**
North East							0.026***	0.017*	-0.008
Madrid							0.013***	0.022*	0.009
Center							-0.119***	-0.056***	0.063***
South							-0.095***	-0.015	0.080***
Canary Islands							-0.197***	-0.050***	0.148***
R ²	0.644	0.634		0.336	0.516		0.577	0.516	
F-test	238.70***	408.60***		1184.32***	342.93***		708.70***	245.18***	
Number of observations	12111	18968		162893	17536		60732	24813	

Source: ESES, 1995; * p < 0.10, ** p < 0.05, *** p < 0.010; ^a ME means multi-employer bargaining, SE means single-employer bargaining; ^b Difference between the estimate from the SE equation (β^{SE}) and the estimate from the ME equation (β^{ME}). Regressions also include 22 industry dummy variables. Reference variables are machine operators and assemblers, privately owned enterprise, manufacture of food products and beverages, Brussels (for Belgium) and East (for Spain).