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Industry wage differentials and the bargaining regime in a corporatist country

Industry wage
differentials

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Abstract This paper examines the role of the bargaining regime in bringing about inter-industry wage differentials in the Belgian private sector. Empirical findings, based on the 1995 Structure of Earnings Survey, emphasise that sectors offering high/low wages are similar for workers covered by different bargaining regimes, even when controlling for individual characteristics, working conditions and firm size. Moreover, results show that, ceteris paribus, the dispersion of inter-industry wage differentials is higher when wages are collectively renegotiated at the firm level, and workers covered by a company collective agreement (CA) earn 5.1 per cent more than their opposite numbers whose wages are solely covered by national and/or sectoral CAs.

1. Introduction

According to the standard Walrasian (competitive) model of the labour market, where the equilibrium wage is determined through marginal productivity, two agents with identical productive characteristics necessarily receive the same wages. However, the so-called compensating differences may occur between similar individuals placed in different working conditions. Indeed, the disutility undergone by one individual following the performance of a task in an unfavourable situation may lead to wage compensation. This simple description of the wage determination process has been challenged by the pioneering observations of Slichter (1950) and more recently by Dickens and Katz (1987), Krueger and Summers (1987, 1988), and Katz and Summers (1989). These authors demonstrated that pay differentials existed in the USA between workers with the same observable individual characteristics and working conditions employed in different sectors. Since then, similar results have been obtained for numerous industrialised countries (Arai *et al.*, 1996; Ferro-Luzzi, 1994;

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Hartog *et al.*, 1997a; Lucifora, 1993; Vainiomäki and Laaksonen, 1995). Accordingly, the existence of sectoral effects has become an accepted fact in the economic literature. There is, moreover, general agreement on the fact that these effects are persistent, strongly correlated between countries (Helwege, 1992) and on a variable scale among the industrialised countries. Certain studies (Edin and Zetterberg, 1992; Hartog *et al.*, 1997a; Teulings and Hartog, 1998; Zweimüller and Barth, 1994) in addition suggest that sectoral effects are significantly weaker in strongly corporatist countries.

Various reasons may explain these inter-industry wage differentials. They may, of course, reflect the fact that the non-observed individual characteristics of the employees are not distributed randomly among industries. In this case, the best paid sectors would simply be those in which the non-observed quality of the labour force is the highest. However, they may equally stem from the specific characteristics of the employers in each sector. Gibbons and Katz (1992) support the existence of significant sectoral effects on workers' wages. Their study, relating to the USA, in fact indicates that workers changing from one industry to another claw back a significant part of the inter-industry wage differential after their move. Conversely, Abowd *et al.* (1999) and Goux and Maurin (1999) show that, in the case of France, the non-observed productive capacities of workers account for a substantial part of the inter-industry wage differentials. In sum, there is no consensus regarding the exact scale of the inter-industry wage differentials. However, their existence highlights the influence of the characteristics of the employers in each sector on workers' wages.

Economic theories supporting the existence of an effect of the employers' characteristics on wages have proliferated over recent years (e.g. efficiency wage theory, insider-outsider theory). They provide a very interesting framework for analysis for anyone trying to gain an understanding of why, in equilibrium, two agents with identical productive characteristics, placed in the same working conditions, may be paid differently. Among these, the rent-sharing theory suggests that because of their bargaining power, unions can obtain a wage differential for their members which is greater than the competitive level. According to this theory, inter-industry wage disparities would therefore result in part from the heterogeneity of the bargaining power of the unions in the various industries.

There is a growing body of literature which confirms that the bargaining regimes which coexist within a country (e.g. the existence of unionised and non-unionised sectors) have a significant impact on inter/intra-industry wage disparities (Fortin and Lemieux, 1997; Freeman, 1980, 1982; Gosling and Machin, 1995; Hirsch, 1982; Metcalf, 1982; Stewart, 1991) as well as wage levels (Andrews *et al.*, 1998; Barth *et al.*, 1994; Booth, 1995; Dell'Aringa and Lucifora, 1994; Hartog *et al.*, 1997b; Hildreth, 1999; Pencavel, 1991; Robinson, 1989; Robinson and Tomes, 1984; Stewart, 1987). However, it relates almost exclusively to the Anglo-Saxon countries.

In this paper, we examine the role of unions in bringing about inter-industry wage differentials in Belgium. The existence of inter-industry wage differentials in the Belgian private sector has been recently highlighted by Rycx (2002). The author shows that their structure is comparable with that observed in the other industrialised countries and that they result in part from the characteristics of the employers in each sector. Moreover, findings support the hypothesis of a negative relation between the dispersion of inter-industry wage differentials and the degree of corporatism of the industrialised countries.

The assessment of how unions affect the structure of wages in Belgium, however, is yet to be performed. Unlike in the USA or Canada, the distinction between the unionised and the non-unionised sectors has no meaning in Belgium. The point is that virtually all workers are covered by a collective labour agreement. The bargaining regime is therefore more reflected in terms of the level of wage negotiations. We thus distinguish primarily between the two types of establishments: one is those covered only by national and/or sectoral collective agreements (CAs), and the other is those in which wages are renegotiated collectively in-house.

This paper explores the following questions.

- Can we observe inter-industry wage differentials for every bargaining regime?
- Are the sectors offering high/low wages similar in the case of workers covered by different bargaining regimes?
- Is the dispersion in inter-industry wage differentials higher when wages are covered by a company CA?
- What is the wage gap between workers covered by different bargaining regimes and from where does it come?

The remainder of this paper is organised as follows. Section 2 summarises the main features of wage bargaining in the Belgian private sector, Section 3 describes the database, in Section 4 we present the methodology and the empirical findings and provide a brief conclusion in Section 5.

2. Wage bargaining in the Belgian private sector

In the countries of North America the legal provisions offer workers the possibility of voting for or against their companies joining a union in elections supervised by the public authorities. This means that the union can earn the exclusive right to represent all the workers, whether union members or not, in bargaining with the employers. Yet, as the majority of the CAs are negotiated at the level of the individual companies, the institutional system leads to a clear distinction between the unionised establishments, in other words those which are subject to a CA, and the non-unionised establishments. Hence, the rate of unionisation provides a good approximation of the coverage rate/the bargaining regime.

In Belgium, as in the majority of European countries, the situation is very different. The point is that wage bargaining in the Belgian private sector occurs at three levels: the national (inter-professional) level, the sectoral level, and the company level. They generally occur every two years on a pyramidal basis. In principle, they are inaugurated by a national CA defining a minimum level in wage terms. This national agreement can be improved within every sector of activity. Then we have the company negotiations where the sectoral CAs may be renegotiated, except where there is a so-called imperative clause. However, these cannot give rise to a CA which would run counter to the sectoral and/or national agreements. In other words, the wage bargained at the firm level can only be greater than or equal to the wage set at the national and/or industry level.

Belgium is characterised, in addition, by a coverage rate of about 90 per cent (OECD, 1997). This stems from the fact that non-unionised workers, like employers who are not members of an employers' organisation, are generally covered by a collective labour agreement. The point is that Article 19 of the law dated 5 December 1968 specifies that a CA is automatically binding upon the signatory organisations, employers who are members of those organisations or who have personally concluded the agreement, employers joining those organisations after the date of the conclusion of the agreement and, finally, all workers, whether unionised or not, who are employed by an employer so bound. Moreover, most of the sectoral CAs have been rendered obligatory by Royal Decree. This means that they apply compulsorily to all companies in the sector and to their workers, whether or not they are members of the signatory organisations (employers' organisations or unions).

To sum up, unlike in the USA or Canada, the bargaining regime in companies in the Belgian private sector does not derive directly from the latter's union membership. It is reflected more through the level of wage bargaining. The heart of the wage bargaining lies at the sectoral level in Belgium. However, in certain cases, sectoral agreements are renegotiated (improved) within the individual companies.

3. Description of the database

The present study is based upon the 1995 Structure of Earnings Survey, carried out by Statistics Belgium. This survey was conducted using a representative sample of 145,107 individuals working for 6,015 establishments. It covers the Belgian establishments employing at least ten workers and whose economic activities fall within sections C to K of the NACE nomenclature. This corresponds to approximately 1.5 million workers. The survey contains a wealth of information, provided by the management of the establishments, both on the characteristics of the latter (e.g. sector of activity, region, size of the establishment, level of wage bargaining) and on those of the individuals working there (e.g. gender, age, experience, seniority, education, wages, number of working hours paid, occupation). The simultaneous use of data relating to

wages and levels of education nevertheless yields a representative sub-sample of 81,562 individuals working for 4,092 establishments (Demunter, 2000; Rycx, 2002). After the exclusion of individuals for whom one of the variables used entailed a missing or incorrect observation, the number of individuals in the sample falls by approximately 2.1 per cent to 79,835 units. Finally, the exclusive selection of establishments which are at least 50 per cent owned by the private sector brings the sample to 67,023 individuals. This selection is justified by the fact that the wages are determined in different ways in the public and private sectors. Considering establishments where economic and financial control is primarily in public hands would in fact be liable to skew our results.

In order to gain the best picture of the influence of the bargaining regime on the structure of wages in Belgium, we have split our sample into two categories. These contain the following establishments: one is those covered only by national and/or sectoral CAs and other is those where wages are renegotiated collectively within the individual companies. Notice that the exclusion of the individuals for which this variable was badly recorded brought the definitive sample to 61,580 units.

Table I sets out the means (standard deviations) of selected variables for the two bargaining regimes. We note a clear-cut difference between the

	Overall sample	Bargaining regime ^a	
		Only national and/or sectoral CA	Company CA
Gross hourly wage (in BEF) ^b	484.50 (223.26)	455.56 (226.27)	522.50 (213.38)
Seniority in the current company (years)	10.03 (9.10)	8.44 (8.60)	12.12 (9.32)
Prior experience (years) ^c	9.36 (8.45)	10.53 (9.03)	7.83 (7.35)
Size of the establishment ^d	537 (1,192.30)	223 (547.84)	950 (1,610.57)
Hours ^e	159 (29.84)	158 (31.74)	160 (27.13)
Female (yes)	30.9	33.6	27.4
Overtime paid (yes)	7.6	5.7	10.1
Bonuses for shift work, night work and/or weekend work (yes)	15.9	9.2	24.8
Number of observations in the sample (proportions in weighted sample)	61,580	34,774 (0.57)	26,806 (0.43)

Notes: The descriptive statistics refer to the weighted sample; ^aCA means collective (wage) agreement; ^bIncludes overtime paid and bonuses for shift work, night work and/or weekend work. Pay for holiday, 13th month, arrears, advances, travelling expenses etc. are excluded. €1 = 40.3399 BEF; ^cExperience accumulated on the labour market before the last job; ^dNumber of workers; ^eNumber of hours paid in the reference period, including overtime paid

Table I.
Means (standard
deviations) of
selected variables

characteristics of the firms covered by a company CA and those not so covered. The point is that companies within which wages are collectively renegotiated are significantly larger, gross hourly wages are higher, workers have more seniority, the number of hours paid is greater and the proportion of workers being paid a bonus for overtime or shift work, night work and/or weekend work is higher. Conversely, the prior experience of the workers and the proportion of women are lower here. Table I shows, in addition, that 57 per cent of the workers in the (weighted) sample are only covered by the national and/or sectoral CAs (see Appendix 1, Table AI, for a more detailed description).

4. Bargaining regimes and wage differentials

The methodology adopted to estimate inter-industry wage differentials is consistent with that of Krueger and Summers (1988). It rests upon the estimation of the following semi-logarithmic wage equation:

$$\ln w_i = \alpha + \sum_{j=1}^J \beta_j X_{j,i} + \sum_{k=1}^K \psi_k Y_{k,i} + \sum_{l=1}^L \delta_l Z_{l,i} + \varepsilon_i \quad (1)$$

where w_i represents the gross hourly wage of the individual i ($i = 1, \dots, N$); X is the vector of the individual characteristics of the workers and their working conditions (seven indicators showing the highest completed level of education; seniority within the current company and its square; a dummy variable controlling for entrants, i.e. individuals with no seniority; prior experience, its square and its cube; sex; number of hours paid; a dummy for extra paid hours; 23 occupational dummies; two regional dummies indicating where the establishment is located; four dummies for the type of contract; an indicator showing whether the individual is paid a bonus for shift work, night-time and/or weekend work and a dichotomic variable indicating whether the individual supervises other workers); Y comprises dummy variables relating to the sectoral affiliation of the individuals (nomenclature with 43 and 174 branches); Z contains an employer's characteristic (the size of the establishment); α is the constant; β , ψ and δ are the parameters to be estimated and ε_i is an error term (see Appendix 1, Table AI, for a detailed description of the variables). The wage equations have been estimated by applying ordinary least squares to the weighted sample.

Technically, the computation of inter-industry wage differentials first of all involves calculating the average wage differential of all the sectors compared to the reference:

$$\pi = \sum_{k=1}^K \bar{p}_k \hat{\psi}_k \quad (\text{for } k = 1, \dots, K) \quad (2)$$

where

$$\bar{p}_k = \frac{1}{N} \sum_{i=1}^N p_{k,i} \quad (\text{for } k = 1, \dots, K+1)$$

and then applying the formulae below:

$$\begin{cases} d_k = \hat{\psi}_k - \pi & (\text{for } k = 1, \dots, K) \\ d_{K+1} = -\pi \end{cases} \quad (3)$$

The standard deviation of the inter-industry wage differential (d_k s), adjusted for sampling error and weighted by the sectoral employment shares (further referred to in the text as weighted adjusted standard deviation (WASD) is computed as follows:

$$WASD(d_k) = \sqrt{\sum_{k=1}^{K+1} \bar{p}_k \left(d_k - \frac{\sum_{k=1}^{K+1} d_k}{K+1} \right)^2 - \frac{\sum_{k=1}^{K+1} \text{var}(\hat{d}_k)}{K+1} + \frac{\sum_{k=1}^{K+1} \sum_{l=1}^{K+1} \text{cov}(\hat{d}_k, \hat{d}_l)}{(K+1)^2}} \quad (4)$$

4.1 Inter-industry wage differentials per bargaining regime

Table II presents the inter-industry wage differentials and their dispersion for a NACE two-digit nomenclature (see Appendix 2, Table AII, for the estimates of the wage equations)[1]. Results show that, for every bargaining regime, wage differentials exist between workers employed in different sectors, even after controlling for individual characteristics, working conditions and firm size. These differentials are significant both in individual terms (with the exception of one sector) and globally at the 5 per cent threshold. We further note that the hierarchy of the sectors in terms of wages is similar to the one we obtain for the aggregate sample. Among the best paid sectors we find electricity, gas, steam and hot water supply, financial intermediaries (excluding insurance and pension funding), post and telecommunications, and manufacture of coke, refined petroleum and nuclear fuel. Furthermore, it is in the traditional sectors (hotels and restaurants, the textile industry and retailing), that wages are lowest.

The hypothesis according to which the hierarchy of the wage differentials is similar for both bargaining regimes is confirmed by Table III. In fact we see that the Pearson and Spearman correlation coefficients between the wage differentials estimated for each bargaining regime reach almost 0.700, with a probability of being zero or less than 1 per cent.

This result underlines the existence of a sectoral effect on the workers' wages, irrespective of the bargaining regime considered. In other words, the

Industry (NACE two-digit)	Bargaining regime ^a		
	Overall sample	Only national and/or sectoral CA	Company CA
Other mining and quarrying (14)	0.019	0.038	-0.013
Manufacture of food products and beverages (15)	-0.008	-0.013	0.001
Manufacture of tobacco products (16)	0.021	0.022	0.038
Manufacture of textiles (17)	-0.079	-0.069	-0.086
Manufacture of wearing apparel; dressing and dyeing of fur (18)	-0.107	-0.107	-0.047
Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear (19)	-0.028	-0.010	-0.243
Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials (20)	-0.037	-0.025	-0.046
Manufacture of pulp, paper and paper products (21)	0.068	0.000	0.067
Publishing, printing and reproduction of recorded media (22)	0.087	0.097	0.079
Manufacture of coke, refined petroleum products and nuclear fuel (23)	0.160	0.251	0.077
Manufacture of chemicals and chemical products (24)	0.103	0.048	0.098
Manufacture of rubber and plastic products (25)	-0.002	0.027	-0.021
Manufacture of other non-metallic mineral products (26)	0.021	0.033	0.017
Manufacture of basic metals (27)	0.025	0.000	0.003
Manufacture of fabricated metal products, except machinery and equipment (28)	-0.005	0.019	-0.033
Manufacture of machinery and equipment n.e.c. (29)	-0.042	-0.020	-0.063
Manufacture of office machinery and computers (30)	0.019	0.016	-
Manufacture of electrical machinery and apparatus n.e.c. (31)	-0.021	0.009	-0.041
Manufacture of radio, television and communications equipment and apparatus (32)	0.013	0.085	-0.047
Manufacture of medical, precision and optical instruments, watches and clocks (33)	0.021	0.065	-0.004
Manufacture of motor vehicles, trailers and semi-trailers (34)	-0.033	0.010	-0.069
Manufacture of other transport equipment (35)	0.017	0.025	0.033
Manufacture of furniture; manufacturing n.e.c. (36)	-0.062	-0.047	-0.076
Recycling (37)	-0.047	-0.054	0.145
Electricity, gas, steam and hot water supply (40)	0.227	0.243	0.425
Construction (45)	0.002	0.019	-0.047
Sale, maintenance and repair of motor vehicles and motor-cycles; retail sale of automotive fuel (50)	-0.040	-0.033	-0.044
Wholesale trade and commission trade, except motor vehicles and motor-cycles (51)	-0.012	0.003	-0.071
Retail trade, except for motor vehicles and motor-cycles; repair of personal and household goods (52)	-0.110	-0.136	-0.080
Hotels and restaurants (55)	-0.095	-0.085	-0.134

(continued)

Table II.
Inter-industry wage
differentials and
their dispersion

Industry (NACE two-digit)	Bargaining regime ^a			Industry wage differentials
	Overall sample	Only national and/or sectoral CA	Company CA	
Land transport; transport via pipelines (60)	-0.050	-0.032	-0.119	355
Water transport (61)	0.178	0.171	0.271	
Air transport (62)	0.103	0.067	0.105	
Supporting and auxiliary transport activities; activities of travel agencies (63)	0.027	0.049	-0.003	
Post and telecommunications (64)	0.256	0.284	0.096	
Financial intermediation, except insurance and pension funding (65)	0.110	0.125	0.113	
Insurance and pension funding, except compulsory social security (66)	0.053	0.114	0.044	
Activities auxiliary to financial intermediation (67)	0.018	0.032	0.021	
Real estate activities (70)	0.036	0.006	-	
Renting of machinery and equipment without operator and of personal and household goods (71)	-0.031	0.001	-0.039	
Computer and related activities (72)	0.003	0.020	0.016	
Research and development (73)	0.041	0.035	0.048	
Other business activities (74)	0.012	0.013	0.009	
<i>R</i> ² adjusted	0.702	0.710	0.677	
<i>F</i> -test relative to the estimated relation	25,506	15,277	10,191	
<i>F</i> -test relative to the sectoral dummies	1,983	1,245	1,022	
Weighted adjusted standard deviation (WASD) of the inter-industry differentials	0.073	0.083	0.074	
Number of sectors	43	43	41	
Number of observations in the sample	61,580	34,774	26,806	

Notes: ^aCA means collective (wage) agreement. All the estimates are at least significant at the level of 5 per cent, except those in italics. They were estimated from a wage equation including the vectors *X* (individual characteristics and working conditions), *Y* (43 sectoral dummies) and *Z* (size of the establishments)

Table II.

Bargaining regimes ^a	Company CA
Only national and/or sectoral CA	0.675**/0.699**

Notes: ^aCA means collective (wage) agreement.; Pearson/Spearman correlation coefficients; * $p < 0.05$, ** $p < 0.01$

Table III.
Correlation between the inter-industry wage differentials

sectors offering high/low wages are similar for workers covered by different bargaining regimes. This is explained by the relative homogeneity of the organisational and technological characteristics of the establishments within each sector of activity. In addition, this result might be due to a phenomenon of mimetism (Dickens, 1986): companies in which wages are not renegotiated collectively might be patterning their wage policy on those which do operate

such an arrangement, in order to attract the best workers, to show their staff that they are being treated fairly and to curb the rate of manpower rotation.

4.2 Dispersion of inter-industry wage differentials

Should we infer from these results that the bargaining regime has no influence on the structure of wages in a corporatist country? The analysis of the dispersion of the inter-industry wage differentials refutes this hypothesis. Table II reveals, in fact, that the weighted adjusted standard deviation (WASD) of the wage differentials is lower when wages are collectively renegotiated at the firm level[2]. Indeed, the latter reaches 0.083 when there is only a national and/or sectoral CA and 0.074 when wages are covered by a company CA.

This result needs to be analysed in more detail. Indeed, it seems reasonable to assume that collective renegotiation of wages at the firm level intensifies the correlation between the economic situation of the establishments (e.g. productivity, market share, prices) and the level of wages therein. Hence, we would expect the dispersion of inter-industry wage differentials to be wider among firms covered by a company CA.

From where does this puzzle come? Table IV presents the top and bottom ten sectors according to their wage differentials (after controlling for individual characteristics, working conditions and firm size). It shows also the proportion of workers solely covered by national and/or sectoral CAs within these sectors.

If we explore Table IV, we note that in the high-wage sectors (e.g. post and telecommunications, electricity, gas, steam and hot water supply, water transport, manufacture of coke, refined petroleum products and nuclear fuel) and even more in the low-wage sectors (e.g. retail trade, manufacture of wearing apparel, dressing and dyeing of fur, hotels and restaurants, manufacture of textiles) most workers are solely covered by national and/or sectoral CAs. To put it differently, workers whose wages are covered by a company CA appear to be more concentrated in sectors offering relatively homogeneous wage premiums. As a result, Table IV suggests that it is because of the asymmetrical sectoral distribution of employment shares (\hat{p}_k) in both sub-sample of firms that the WASD of inter-industry wage differentials is found to be lower when wages are renegotiated at the firm level.

This explanation is backed up and taken further by Table V. Indeed, results[3] show that:

- the standard deviation of the inter-industry wage differentials prior to weighting (and adjustment) is significantly higher when wages are renegotiated at the firm level; and
- the WASD of the inter-industry wage differentials among the firms covered by a company CA would have been larger than in those not so covered, if the distribution of sectoral employment had been the same as in the latter.

Rank	Industry	Inter-industry wage differentials	Per cent workers solely covered by a national and/or sectoral CA	Industry wage differentials
1	Post and telecommunications	+ 0.256	0.92	357
2	Electricity, gas, steam and hot water supply	+ 0.227	1.00	
3	Water transport	+ 0.178	0.87	
4	Manufacture of coke, refined petroleum products and nuclear fuel	+ 0.160	0.64	
5	Financial intermediation, except insurance and pension funding	+ 0.110	0.20	
6	Manufacture of chemicals and chemical products	+ 0.103	0.14	
7	Air transport	+ 0.103	0.39	
8	Publishing, printing and reproduction of recorded media	+ 0.087	0.81	
9	Manufacture of pulp, paper and paper products	+ 0.068	0.12	
10	Insurance and pension funding, except compulsory social security	+ 0.053	0.27	
34	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	- 0.037	0.85	
35	Sale, maintenance and repair of motor vehicles and motor cycles; retail sale of automotive fuel	- 0.040	0.72	
36	Manufacture of machinery and equipment n.e.c.	- 0.042	0.41	
37	Recycling	- 0.047	0.91	
38	Land transport; transport via pipelines	- 0.050	0.81	
39	Manufacture of furniture; manufacturing n.e.c.	- 0.062	0.67	
40	Manufacture of textiles	- 0.079	0.74	
41	Hotels and restaurants	- 0.095	0.73	
42	Manufacture of wearing apparel; dressing and dyeing of fur	- 0.107	0.88	
43	Retail trade, except for motor vehicles and motor cycles; repair of personal and household goods	- 0.110	0.54	

Note: The inter-industry wage differentials have been estimated from the aggregate sample controlling for individual characteristics, working conditions and firm size (see Table I, column 1)

Table IV.
Top/bottom ten industry wage differentials and the bargaining regime

In sum, although we found that the WASD of inter-industry wage differentials is smaller when wages are covered by a company CA, Table V shows that the reverse result would have appeared if the distribution of sectoral employment had been the same across bargaining regimes.

It is not easy to compare our results with those of other studies, because the latter relate essentially to the Anglo-Saxon countries and therefore refer to a very different industrial relations systems. However, the literature does show that the unions significantly reduce the inter-industry and inter/intra-establishment wage

Table V.
Dispersion of
inter-industry wage
differentials

Specification (NACE two-digit industries)	Bargaining regime ^a		
	Only national and/or sectoral CA		Company CA
WASD of inter-industry wage differentials (reference)	0.083	>	0.074
Standard deviation of inter-industry wage differentials (no weighting/adjustment)	0.086	<	0.109
WASD of inter-industry wage differentials computed with sectoral employment shares of the first sub-sample of firms ^b	0.083	<	0.100

Notes: ^aCA stands for collective (wage) agreement; ^bThe first sub-sample of firms includes those solely covered by national and/or sectoral CA

differentials (Fortin and Lemieux, 1997; Freeman, 1980, 1982; Gosling and Machin, 1995; Hirsch, 1982; Metcalf, 1982; Stewart, 1991). Our results corroborate these findings, for they illustrate that, *ceteris paribus*, the dispersion of inter-industry wage differentials is higher when collective bargaining is more decentralised.

4.3 Wages levels

What about the influence of bargaining regime on the level of wages? To answer this question, we have applied the decomposition procedure developed by Blinder (1973) and Oaxaca (1973), who showed that the difference between the average hourly wage (in logarithms) of workers covered by a different bargaining regime can be broken down as follows:

$$\bar{W}_d - \bar{W}_{nd} = (\bar{V}_d - \bar{V}_{nd})' \hat{\beta}_{nd} + \bar{V}_d' (\hat{\beta}_d - \hat{\beta}_{nd}) \quad (5)$$

where the indices d and nd refer, respectively, to a discriminatory and a non-discriminatory wage structure, \bar{W} represents the average (Napierian logarithm) of the hourly wage, \bar{V} is a vector containing an intercept and the average values or frequencies of occurrence of the individual characteristics of the workers, their working conditions, their sectoral affiliation (three-digit nomenclature) and the size of their establishment. The coefficients $\hat{\beta}$ are obtained by estimating the following wage equation: $W_I = \beta_I V_I + \varepsilon_I$, with $I = \{d, nd\}$ and ε an error term.

We have chosen a non-discriminatory wage structure of the workers (solely) covered by a national and/or sectoral CA. This choice is justified by the following facts:

- the heart of the collective bargaining is at the sectoral level in Belgium;
- this bargaining regime covers the greatest number of individuals.

We thus arrive at the following:

$$\bar{W}_c - \bar{W}_s = (\bar{V}_c - \bar{V}_s)' \hat{\beta}_s + \bar{V}_c' (\hat{\beta}_c - \hat{\beta}_s) \quad (6)$$

where the indices c and s , respectively, identify the workers covered by a company CA and those not so covered. The left-hand term in equation (6) measures the overall wage gap (in logarithms) between individuals covered by different bargaining regimes. The first right-hand term indicates the proportion of that wage gap which is explained by differences in terms of the individual characteristics, working conditions, sectoral affiliation and the size of the company. The second right-hand term reflects the unexplained part of the wage gap. It measures the influence of the bargaining regime on the level of wages.

Table VI sets out the results of the Oaxaca-Blinder decomposition. This shows that the wage gap stands at 14.7 per cent between the workers (solely) covered by the national and/or sectoral CAs and workers whose wages are renegotiated within their establishment. Approximately 65 per cent of this wage gap results from the individual characteristics of the workers, their working conditions, their sectoral affiliation and the size of their establishment. In other words, results indicate that, all other things being equal, workers covered by a company CA earn 5.1 per cent more than their opposite numbers who are (solely) covered by the national and/or sectoral CAs.

In an international perspective, our results support the hypothesis that the sensitivity of wages to the bargaining regime is significantly lower in corporatist countries[4]. Indeed, as shown in Table VII, the estimated union-non-union wage gap is over 20 per cent in Canada (Robinson, 1989; Robinson and Tomes, 1984), between 15 and 17 per cent in Australia (Christie, 1992) and approximately 15 per cent in the USA (Booth, 1995; Pencavel, 1991). The studies on the UK, for their part, reveal the existence of a union wage gap which stands between 8 and 12 per cent (Andrews *et al.*, 1998) with sizeable differences depending on the bargaining regime considered (Stewart, 1987).

The results in the case of continental Europe are rare. Dell'Aringa and Lucifora (1994), however, report a union wage gap of 4.4 per cent for unskilled workers and 7.5 per cent for skilled workers in the metal-mechanical industry in Italy. In The Netherlands this effect would be smaller than 5 per cent (Hartog *et al.*, 1997b). Finally, according to Barth *et al.* (1994), Norwegian workers

Bargaining regime ^a	Overall ^b	Wage gap Explained	Unexplained
Company CA vs only national and/or sectoral CA	14.7 per cent (100)	9.6 per cent (65.4)	5.1 per cent (34.6)

Notes: ^aCA means collective (wage) agreement; ^bMeasured by the following expression: $[(\bar{W}_c - \bar{W}_s) / \bar{W}_s] * 100$, where \bar{W} corresponds to the mean wage in BEF

Table VI.
Decomposition of
the bargaining
regime wage gap

Country	Influence of the bargaining regime on the wage level in per cent	Degree of corporatism	
		Calmfors and Driffill ^a	Bruno and Sachs ^b
The Netherlands	4 ^c	10	14
Belgium	5.1 ^d	9	8
Italy	4.4-7.5 ^e	5	4
Norway	7.5 ^f	15	13
UK	8-12 ^g	6	6
USA	15 ^h	2	1
Australia	15-17 ⁱ	8	3
Canada	20 and more ^j	1	2

Notes: ^aReversed Calmfors and Driffill (1988) corporatism index. 16 = highly corporatist country; ^bReversed Bruno and Sachs (1985) corporatism index. 16 = highly corporatist country; ^cHartog *et al.* (1997b); ^dOwn calculations (see Table VI); ^eDell'Aringa and Lucifora (1994); ^fBarth *et al.* (1994); ^gAndrews *et al.* (1998) and Stewart (1987); ^hBooth (1995) and Pencavel (1991); ⁱChristie (1992); ^jRobinson (1989) and Robinson and Tomes (1984)

Table VII.
Bargaining regimes
and wage levels:
a comparison

covered by a company CA would, *ceteris paribus*, earn 7.5 per cent more than their opposite numbers (solely) covered by a national CA.

5. Conclusion

In this paper, we have investigated the role of unions in bringing about inter-industry wage differentials in the Belgian private sector. Unlike in the countries of North America, the distinction between unionised and non-unionised firms has no meaning in Belgium. The point is that virtually all workers are covered by a collective labour agreement. The bargaining regime is therefore reflected more in terms of the level of wage bargaining. We thus distinguish between the two types of establishments:

- (1) those solely covered by national and/or sectoral CAs; and
- (2) those in which wages are collectively renegotiated at the firm level.

The empirical evidence reported in this paper emphasises the existence of a sectoral effect on workers' wages, irrespective of the bargaining regime considered. In other words, we found that sectors offering high/low wages are similar for workers covered by different bargaining regimes, even when controlling for individual characteristics, working conditions and firm size. This result is explained by the relative homogeneity of the organisational and technological characteristics of the establishments within each sector of activity. In addition, it might be due to a phenomenon of mimetism (Dickens, 1986): companies in which wages are not renegotiated collectively might be patterning their wage policy on those which do operate such an arrangement, in order to attract the best workers, to show their staff that they are being treated fairly and to curb the rate of manpower rotation.

Nevertheless, our findings do show that the bargaining regime has a significant impact upon the structure of wages in Belgium. Indeed, we note that, *ceteris paribus*, the dispersion of inter-industry wage differentials is higher when wages are covered by a company CA. This finding is in line with the other studies (Fortin and Lemieux, 1997; Freeman, 1980, 1982; Gosling and Machin, 1995; Hirsch, 1982; Metcalf, 1982; Stewart, 1991) which suggest that inter/intra-industry wage differentials are higher when wage setting is more decentralised. Moreover, our results indicate that the bargaining regime has a significant influence on the level of wages and that, *ceteris paribus*, workers covered by a company CA earn 5.1 per cent more than their opposite numbers who are (solely) covered by national and/or sectoral CAs. From an international perspective, this finding supports the hypothesis that the sensitivity of wages to the bargaining regime is significantly lower in corporatist countries.

Future research concerning the impact of the bargaining regime on inter-industry wage differentials in the Belgian private sector should rely on a longitudinal database in order to control for the non-observed individual characteristics of the workers. Indeed, these characteristics might modify our results if it emerged that they were not distributed randomly between sectors and/or bargaining regimes. Unfortunately, at the moment such a database does not exist. In addition, future analysis should try to control for a potential firm selectivity effect, i.e. for the fact that firms in a particular bargaining regime might not be representative of the overall sample of firms. However, as pointed out by Hartog *et al.* (1997b, 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".

Notes

1. An identical analysis was carried out for three-digit industries. The results arising from this, available on request, support and refine our conclusions.
2. This result is supported by an analysis carried out for three-digit industries.
3. Similar results were found for three-digit industries.
4. The concept of corporatism, borrowed from political science, resembles the level of centralisation of collective bargaining as well as the degree of co-ordination between the social partners. However, as this concept has not been defined in one single way, there are differences in opinion as to the relative position of the industrialised countries on the scale of corporatism. The Scandinavian countries and Austria are nevertheless always in the category of strongly corporatist countries, whereas the USA and Canada are invariably at the bottom of the ranking. Depending on the authors, Belgium is ranked intermediate or high on the scale of corporatism. For a comparison of these classifications see OECD (1997).

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Appendix 1

Table AI.
Description and means (standard deviations) of selected variables^a

Variables	Overall sample	Bargaining regime ^b	
		Only national and/or sectoral CA	Company CA
<i>Gross hourly wage:</i> (in BEF) includes overtime paid and bonuses for shift work, night work and/or weekend work. Pay for holiday, 13th month, arrears, advances, travelling expenses etc. are excluded.	484.50 (223.26)	456.56 (226.27)	522.50 (213.38)
<i>Seniority in the company:</i> (years)	10.03 (9.10)	8.44 (8.60)	12.12 (9.32)
<i>Prior experience:</i> experience accumulated on the labour market before the last job (years)	9.36 (8.45)	10.53 (9.03)	7.83 (7.35)
<i>Size of the establishment:</i> number of workers	537 (1,192.30)	222.60 (547.84)	949.72 (1,610.57)
<i>Hours:</i> number of hours paid, including overtime paid	159 (29.84)	158 (31.74)	160 (27.13)
<i>Female</i> (yes)	30.9	33.6	27.4
<i>Education:</i>			
Primary or no degree: 0-6 years (reference)	9.6	9.4	10.0
Lower secondary: 9 years	24.1	25.2	22.6
General upper secondary: 12 years	18.3	18.4	18.1
Technical/Artistic/Prof. upper secondary: 12 years	25.5	25.2	25.9
Higher non-university short type, higher artistic training: 14 years	13.7	13.4	14.2
University and non-university higher education, long type: 16 years	8.3	7.9	8.7
Postgraduate: 17 years or more	0.5	0.6	0.4
<i>Region:</i> geographic location of the establishment:			
Brussels (reference)	17.1	16.8	17.3
Wallonia	19.1	16.8	22.2
Flanders	63.8	66.4	60.5
<i>Supervises the work of his or her co-workers</i> (yes)	16.4	15.2	17.9
<i>Contract:</i>			
Unlimited-term employment contract (reference)	96.9	97.3	96.5
Limited-term employment contract	2.5	2.1	3.0
Apprentice/trainee contract	0.1	0.2	0.1
Other	0.5	0.5	0.5
<i>Bonus for shift work, night work and/or weekend work</i> (yes)	15.9	9.2	24.8
<i>Overtime paid</i> (yes)	7.6	5.7	10.1
Number of observations in the sample	61,580	34,774	26,806

Note: ^aThe descriptive statistics refer to the weighted sample. Descriptive statistics relative to the sectoral affiliation of the workers and occupations are available on request; ^b CA means collective (wage) agreement

Explanatory variables ^a	Overall sample	Bargaining regime ^b	
		Only national and/or sectoral CA	Company CA
Constant	5.565** (1,340.58)	5.545** (1,084.39)	5.608** (781.62)
<i>Education</i> (Ref.: Primary or no degree)			
Lower secondary	0.051** (64.57)	0.042** (39.15)	0.069** (57.47)
General upper secondary	0.136** (148.02)	0.117** (95.35)	0.167** (121.70)
Technical/Artistic/Prof. upper secondary	0.128** (150.04)	0.112** (98.52)	0.146** (115.81)
Higher non-university short type, higher artistic training	0.222** (210.69)	0.217** (153.76)	0.225** (145.22)
University and non-university higher education, long type	0.389** (314.03)	0.382** (228.24)	0.389** (214.78)
Postgraduate	0.526** (174.38)	0.519** (139.12)	0.508** (101.52)
<i>Prior experience</i>			
Simple	0.016** (109.56)	0.017** (91.29)	0.015** (64.24)
Squared/10 ²	-0.036** (-37.56)	-0.043** (-35.84)	-0.033** (-18.97)
Cubed/10 ³	0.024** (13.75)	0.033** (15.63)	0.024** (6.79)
<i>Seniority in the company</i>			
Simple	0.017** (212.17)	0.016** (160.25)	0.017** (138.62)
Squared/10 ²	-0.017** (-67.77)	-0.015** (-46.41)	-0.018** (-47.37)
Dummy = 1 if the individual has no seniority	-0.007** (-3.31)	-0.005** (-2.12)	-0.008 (-1.73)
Female (Yes)	-0.123** (-229.95)	-0.122** (-174.08)	-0.120** (-147.61)
<i>Region</i> (Ref.: Brussels)			
Wallonia	-0.041** (-54.17)	-0.058** (-56.53)	-0.017** (-15.39)
Flanders	-0.043** (-69.32)	-0.063** (-76.38)	-0.045 (-0.46)
Supervises the work of his or her co-workers (Yes)	0.105** (161.42)	0.095** (108.16)	0.120** (125.32)
Hours	-0.006** (-7.841)	0.001 (1.29)	-0.019** (-14.56)

Table AII.
Results of the wage
equations

(continued)

Explanatory variables ^a	Overall sample	Bargaining regime ^b	
		Only national and/or sectoral CA	Company CA
Bonus for shift work, night work and/or weekend work (Yes)	0.055** (84.71)	0.052** (50.66)	0.059** (69.79)
Overtime paid (Yes)	0.029** (35.89)	0.036** (29.65)	0.020** (-14.56)
<i>Contract</i> (Ref.: Unlimited-term employment contract)			
Limited-term employment contract	-0.035** (-25.84)	-0.057** (-29.56)	-0.017** (-9.24)
Apprentice/trainee contract	-0.568** (-102.94)	-0.397** (-65.65)	-1.232** (-97.09)
Other employment contract	-0.018** (-6.15)	-0.055** (-14.01)	0.039** (8.78)
Size of the establishment	0.030** (171.09)	0.023** (90.67)	0.037** (143.27)
R^2 adjusted	0.702	0.710	0.677
F -test	25,506**	15,277**	10,191**
Number of observations	61,580	34,774	26,806

Notes:* $p < 0.05$, ** $p < 0.01$; t -statistics are indicated in parentheses

A total of 22 occupational dummies and 43 indicators of sectoral affiliation have also been included in the regression. Model estimated by ordinary least squares

^aThe variable explained is the Napierian logarithm of the gross hourly wage in BEF (€1 = 40.3399 BEF)^bCA means collective (wage) agreement)

Table AII.

equilibrium theories has been published in the *American Economic Review*.
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