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Wages and the bargaining regime in a corporatist setting: the Netherlands

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Abstract

In a corporatist country, of which the Netherlands is an example, wages should not be distinguished by union membership status, but by the bargaining regime. Four bargaining regimes can be distinguished: (i) company level bargaining, (ii) industry level bargaining, (iii) mandatory extension of an industry agreement, and (iv) no collective bargaining. Acknowledging firms' bargaining regime, we find small differences between the four regimes, and certainly no distinction between "covered" and "uncovered" firms. © 2002 Published by Elsevier Science B.V.

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1. Introduction

Many workers have their wages set in collective bargaining. In the United States, this has given rise to a large literature on the magnitude of the union markup, which is the wage differential between the union and the nonunion sector. The institutional setting in the United States justifies equating collective bargaining with unionisation. In a firm level election, unions can win the exclusive right to represent workers, and bargaining regime and union status more or less coincide. In 1996, 15% of the workers belonged to a union and 17% were covered by a collective agreement. In continental Europe, union involvement in collective bargaining is not directly dependent on (or followed by) union membership, and collective agreements are often extended by law or custom to firms

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not represented in the original bargaining process.[1] Industry level bargaining (or sometimes even national bargaining) leaves the door wide open for free ridership. For example, in Germany (in the mid-1990s), 29% of the workers belonged to a union but 80% were covered by a collective labour agreement. The situation in the Netherlands is quite similar: 26% union membership, 79% covered by collective bargaining.[2]

While there is a large literature on the union wage markup in the Unites States,[3] and a smaller literature for the similar institutional setting of Canada,[4] not much is known about wage differentials by bargaining regime in Europe. Blanchflower and Freeman (1992) report on wage differentials between union members and nonmembers in Austria and Germany, but it is not clear what this means because membership status cuts right across bargaining regimes.[5] Barth et al. (1994) study wage differentials in Norway between firms covered only by national bargaining and firms with additional local bargaining. Dell'Aringa and Lucifora (1993) analysed the effect of firm level bargaining on top of national bargaining for Italy but focussed on wage dispersion rather than wage levels. For the United Kingdom, an excellent study by Stewart (1987) acknowledged the rich variety in bargaining structures, including closed shop arrangements, multiple union recognition by employers, various levels at which bargaining can take place, and interaction between all these features. In this paper, we analyse wage bargaining results in the relevant regimes in the Netherlands. Our contribution is relevant for the debate on the effect of institutional arrangements on outcomes in the labour market. The debate has focused on the effect of centralised versus decentralised bargaining and corporatist versus non-corporatist institutions. Centralisation refers to the institutional level of bargaining, often distinguished as national, industry or firm level bargaining. Calmfors and Driffill (1988) have rightly pointed out that the distinguishing feature is not the level at which the negotiations take place, but the level at which coordination occurs. Industry level bargaining may be tightly coordinated by national level union and employer federations. In such a case, the visible level of bargaining is quite misleading. Bruno and Sachs (1985) widened the perspective from the bargaining level to the entire institutional environment, taking the concept of corporatism from political scientists.

Corporatism is a structure of well-organized interaction and consultation between union federations, employer federations, and the national government on all issues of social economic policies, including labour legislation and social protection. Several analysts have developed rankings of countries by degrees of centralisation and corporatism. Examples of highly centralised, corporatist countries are Austria, the Netherlands, and Sweden. The prime example of a decentralised, non-corporatist country is the United States. Bruno and Sachs advanced (and substantiated) the hypothesis that corporatist labour markets perform

[1] Detailed information on institutional arrangements for collective bargaining for 12 OECD countries is given in Hartog and Theeuwes (1993).

[2] The data are from Visser (1999).

[3] See, e.g. the survey in Pencavel (1991).

[4] See Robinson and Tomes (1984).

[5] van den Berg (1995, p. 124) reports that wage differentials between union members and nonmembers in the Netherlands are negligible. Applying the Lee (1978) model with endogenous switching produced bizarre and incredible results (van den Berg and Groot, 1992).

better in terms of unemployment and wage inflation because of internalisation of external effects (high wages generate unemployment and lead to a higher burden of unemployment benefits). Calmfors and Driffill (1988) derive the prediction that industry level bargaining generates the worst outcomes, as unions can pass the bill of higher wages to consumers of the industry's product. Under nationwide bargaining, unions would anticipate higher consumer prices, while under fully decentralised firm level bargaining, unions would be held in check by the inability to increase the firm's cost level above that of competitors.

There is little theory to guide us on expected wage effects in an institutional environment like the Dutch. Standard theory on unionisation effects leads us to anticipate lower wages in firms not covered by collective bargaining. A thoughtless application would also suggest lower wages for uncovered workers in covered firms. Calmfors and Driffill (1988) analyse wage effects in environments that have bargaining either exclusively at the firm level, or at the industry level, or at the national level, and predict wages to be highest under industry bargaining, but in the Netherlands, we have to deal with a system where several bargaining regimes coexist. The Dutch case is a good example of a European corporatist labour market, and apart from Teulings and Hartog (1998), there are no detailed analyses of such systems.[6] Teulings and Hartog describe corporatism as an integrated institutional framework in which unions are not driven by the aggressive local rent sharing that characterises unions in a decentralised setting, resulting in a reduction of noncompetitive wage differentials.

We shall assess the magnitudes of wage differentials under corporatist labour relations, following the distinctions of the precise institutional structure. We distinguish among four bargaining regimes: company and industry level bargaining, mandatory extension of an industry agreement, and no collective bargaining. When a firm is covered by some collective agreement, however, not all its employees are necessarily covered. Thus, within firms we distinguish between workers who are covered and workers who are not.

At the outset, we should point to inevitable modesty on the *causal* effect of the bargaining regime. We only have a single cross-section data set, so we cannot allow for individual or firm fixed effects by using repeated observations. With respect to selectivity on the firm side, this is unlikely to be important given the historical background of present-day arrangements. We therefore take firm coverage as a point of reference in our analysis of wage differentials in order to minimize problems related to selectivity at the workers' side.

Section 2 of this paper specifies institutions, Section 3 the data, and Sections 4 and 5 give estimation results. Section 6 concludes.

2. The Dutch institutional setting

By Dutch law, a collective agreement is binding for all workers in a firm, not just for the members of the union signing the agreement. Also by law, the Minister of Social

[6] Most analyses of corporatism have a macroeconomic orientation. Full references to the debate are given in Teulings and Hartog (1998, Chap. 1). The state of the debate on the Calmfors and Driffill hypothesis is summarised in OECD (1998).

Affairs can extend an agreement to an entire industry. In practice, this is done for industry agreements where at least 55% of the workers are employed by firms directly bound by the agreement. Extension requires that at least one party that signed the agreement request it. In practice, all industry contracts are extended. Whether a contract is extended or not is usually not related to the wage level but to other terms of the contract.[7] Only in retail trade and wholesale, where there are many small firms, is it difficult to satisfy the requirement that a substantial majority of the workers be bound directly. Instead, in such cases, joint public bodies (PBOs) of employers and trade unions have been installed by law. Negotiations on industry agreements take place within these bodies, which then have the legal right to extend the agreements to the entire industry without interference of the Ministry. These agreements are called rulings. The character of rulings differs from usual industry contracts, in the sense that they are imposed upon firms.

This institutional setting results in four relevant bargaining regimes in the private sector. First, a firm can negotiate its own collective agreement with one or more unions. Second, a firm can be part of an industry agreement. Third, it can be roped in by extension of an industry agreement (or be covered by a ruling). Finally, a firm can be uncovered by any collective bargaining at all. When the firm is bound by a collective contract, not all employees are necessarily covered. The agreement itself defines coverage. Top-level management is always excluded. Other categories of workers may also be excluded. Mostly, these are low-paid workers in non-core activities: cleaning, catering, doormen. Below, we refer to these workers as marginal workers. The formal rules for exclusion are not clear and we have no good information on exclusion practices.

Bargaining regimes are not isolated but are embedded in a corporatist web. Most unions belong to one of three federations that have a seat in the Foundation of Labour, a private institution where trade union and employer federations meet and consult, and give joint recommendations to their member organizations on wage setting, training, and employment policies. Sometimes a Central Agreement is negotiated in a private consultation body for employer associations and union federations. There is no strong legal basis for the system of labour relations (e.g. no union representation rules, no compulsory collective bargaining). With a weak legal basis and low union density, union federations have managed to become key players in a system with extensive formal and informal coordination in a typical corporatist structure. Further details on the operation of the system are given in Teulings and Hartog (1998).

3. The data

Our data were provided by the government agency that monitors wage policies and the implementation of collective agreements.[8] The agency extracts the data from private

[7] For example, the agreement may include a pension system that does not suit the firm.

[8] Dienst Arbeidsvoorwaarden, Ministerie van Sociale Zaken en Werkgelegenheid. We are most grateful for these data.

sector company records, guaranteeing that wages are measured precisely and are based on straight definitions. A stratified sample of firms is drawn, with large firms being overrepresented. Within each firm, a random sample of workers is drawn, where the sampling probability depends negatively on firm size to compensate for the over-representation of large firms in the first stage. We can identify the workers that belong to the same firm, which enables us to separate between individual and firm effects. Our dependent variable is the gross hourly wage, excluding compensation for overtime, shift work, and working conditions (in many wage systems, notably for blue-collar work, there is explicit compensation for 'inconveniences' such as hazards, dirt, smoke, etc.). The most serious shortcoming of the data set is the omission of tenure. All we know is whether a worker has been hired recently as an 'entrant', or has been with the firm for a longer period. Unfortunately, there is no information on the firm's market position or profit-ability. Otherwise, it is a data set of excellent quality. The observations are for the year 1991.

The character of the bargaining regimes is not always unequivocal. As noted, mandatory extension includes "rulings" and in fact, the largest subset here is firms under rulings in retail trade. Bargaining areas under industry contracts do not coincide with industries as defined in the Standard Classification of Industries (SCI) for general statistical purposes. An industry agreement may have a wide coverage, but it may also be restricted to a sector within an industry. Some care should be taken when interpreting the difference between 'mandatory extension' and 'industry agreement', as many extended agreements are classified in the latter category. Formally, the criterion for classification is whether the firm that is covered by the extended agreement is a member of the relevant employer organization. We are not sure that this is done properly in all cases. For example, nearly all firms in the construction industry are categorised as having an 'industry agreement', while extension is certainly relevant there.

The data are shown in Table 1. Experience is measured as potential experience (age minus schooling minus six), education is given in years beyond basic schooling, hours worked are measured per week, and firm size is measured by work force. By far, the majority of the workers are covered by an industry agreement. In firms covered by industry or firm agreement, the share of workers actually covered is quite high, but in the mandatory extension segment it is low. Among the bargaining regimes, the company bargaining regime is special. It has the highest average wage, the highest worker experience, education, weekly hours worked and firm size, and the lowest proportion of women and entrants. The no-bargaining regime does not markedly stand apart in terms of our variables. The data seem to suggest the presence of rather new industries, where workers have high education and relatively low experience.

To characterise the firm, we use firm size and industry affiliation. If these variables correlated strongly with bargaining regime, we could not disentangle their contributions. Firm sizes are widely dispersed within each regime and the distributions for industry bargaining, firm bargaining, and no bargaining strongly overlap. Only the distribution for the firm bargaining regime is shifted markedly to the right, but even here we observe a substantial overlap.

Table 1
Descriptive sample statistics by firm bargaining regime

	Industry agreement	Firm agreement	Mandatory extension	No agreement	All
Number of workers	15,489	1175	1519	5006	23,189
Workers covered (share)	0.95	0.84	0.31	0	0.70
Experience (years)	18.60 (11.09)	19.67 (10.36)	16.67 (11.46)	16.20 (10.90)	18.01 (11.09)
Education (years beyond basic)	2.11 (2.16)	3.72 (3.11)	1.91 (2.00)	3.44 (2.75)	2.47 (2.43)
ln hours worked	3.48 (0.49)	3.63 (0.26)	3.41 (0.56)	3.54 (0.42)	3.49 (0.48)
Female (share)	0.33	0.20	0.45	0.38	0.34
Entrant (share)	0.19	0.17	0.20	0.19	0.19
ln firm size	4.05 (1.40)	5.78 (1.16)	3.06 (1.52)	3.48 (1.37)	3.95 (1.49)
ln wages:					
All workers	2.98 (0.37)	3.25 (0.46)	2.80 (0.47)	3.04 (0.42)	3.00 (0.40)
Covered workers	2.96 (0.35)	3.14 (0.38)	2.70 (0.42)		2.96 (0.36)
Non-covered workers	3.43 (0.52)	3.80 (0.44)	2.85 (0.48)	3.04 (0.42)	3.07 (0.48)

Standard deviations in parenthesis.

The industry agreement is almost the exclusive agreement in a number of SCI industries (printing, some metal and electrical engineering, construction, and health care), but in the other industries there is no exclusivity of a single regime. With dummies for the 31 SCI industries that we have in our data, and with the dispersion of firm size within bargaining regimes, we are able to disentangle the bargaining regime effect from these two firm characteristics.

The bargaining regime of a firm is in itself subject to bargaining: a union can propose bargaining to a firm (and the firm may refuse), and both the firm and the union can propose a regime switch. The firm may want to cut wages, the union may want to boost them. Indeed, occasionally a firm or a union manages to move to another regime although this rarely happens. One might presume that firms in some sector would be uncovered, because the size of the rents that might be seized is too low, relative to the cost of organizing the bargaining. Similarly, one might presume a union to single out a firm for a separate agreement if the rent is higher than average in the sector. However, as we have argued elsewhere (Teulings and Hartog, 1998), in the Dutch system unions do not operate as aggressive local rent seekers. They are part of a corporatist structure that provides many countervailing incentives to discourage this type of behaviour. Bargaining regime affiliations are highly stable, and have mostly been determined by historical incidents. We conclude therefore that selectivity on the firm side is unlikely to pose a major problem for our analysis.

The remaining problem is one of unobserved heterogeneity in workers within firms. One of the main sources of selection bias is high-skilled workers not being covered, thereby underestimating the union differential (Robinson, 1989). Unfortunately, we are not able to control for individual fixed effects since we only observe one cross-section and are unable to use regime switches as a source of identification. However, selectivity on individual effects is eliminated with our data by not taking individual coverage but rather

Table 2
The effect of the firm's bargaining regime in a single wage equation

Compared to industry agreement:	
Firm agreement	0.005 (0.008)
Mandatory extension	− 0.038 (0.006)
No CLA	− 0.041 (0.005)
R^2	0.712
S.E.E.	0.215
N	23,189

Standard errors in parentheses. The regression equations include a third-degree polynomial for experience, education, ln hours worked, and dummies for female, entrant, and 30 industries.

firm coverage as the point of reference. By defining coverage at the firm level, we avoid the within-firm selectivity problem.

4. Comparing firm bargaining regimes

Table 2 reports the separate intercepts for the firms' bargaining regime from a pooled wage regression. The wage equation contains standard human capital variables like (potential) experience, education, and gender. The dependent variable is the log hourly gross wage rate. For experience, we use a third-degree polynomial, following Murphy and Welch (1990). As Table 2 shows, the differences in wage level between the bargaining regimes are no larger than 5%. The hypothesis that the industry and firm agreement yield the same wage rate cannot be rejected at standard levels of statistical significance. The same holds for the mandatory extension and the no-agreement regime.

Table 3 presents wage regressions for each company bargaining regime separately. The wage experience profiles are highly parallel (as a graph will immediately show). The firm

Table 3
Wage equations by bargaining regime of the firm

	Industry	Firm	Extension	None
Intercept	1.827 (0.019)	1.410 (0.123)	1.555 (0.102)	1.764 (0.044)
Experience/10	0.818 (0.012)	0.697 (0.064)	1.003 (0.042)	0.720 (0.022)
Experience^2/1000	− 2.693 (0.057)	− 2.189 (0.312)	− 3.272 (0.196)	− 2.038 (0.101)
Experience^3/100,000	2.810 (0.080)	2.353 (0.457)	3.269 (0.268)	1.786 (0.138)
Education (years)	0.092 (0.0008)	0.115 (0.002)	0.094 (0.004)	0.092 (0.001)
Female	− 0.098 (0.004)	− 0.096 (0.017)	− 0.102 (0.016)	− 0.141 (0.008)
Entrant	− 0.060 (0.004)	− 0.044 (0.017)	− 0.084 (0.018)	− 0.078 (0.009)
ln hours	0.107 (0.004)	0.191 (0.030)	0.096 (0.013)	0.092 (0.009)
ln firm size	0.011 (0.001)	0.031 (0.007)	0.019 (0.005)	0.017 (0.003)
R^2	0.705	0.794	0.706	0.700
S.E.E.	0.200	0.209	0.254	0.231
N	15,489	1175	1519	5006
Industry dummies	30	13	22	22

Standard errors in parentheses.

Table 4
The wage equation in wholesale

Compared to no CLA:	
Industry agreement	0.015 (0.009)
Firm agreement	− 0.025 (0.044)
Mandatory extension	0.041 (0.017)
R^2	0.645
S.E.E.	0.227
N	2960

Standard errors in parentheses. The regression equation includes the same controls as in Table 3 (except for industry dummies).

bargaining regime generates a 2% higher return for each year of schooling than the other bargaining regimes where they are just over 9%. With respect to entrants, there is a demarcation between industry/firm and extension/none. The hour's effect stands out in the firm agreement, just as the education effect. The differences in firm size elasticities imply that the ranking of wage levels by bargaining regime depends on firm size.[9] The wage-size curves for the three types of collective agreements cross at a firm size just over 300 employees. For all firm sizes larger than the average size in the firm bargaining regime (380 employees), the firm bargaining regime generates the highest wages. At the mean firm size for firms under industry bargaining, industry bargaining leads to the highest wages. Mandatory extension and no-agreement firms, evaluated at their mean firm sizes, occupy intermediary positions for their wage levels.

Table 3 shows that the wage structure in the uncovered sector is not markedly different from the bargaining sector. The only outstanding effect is the gender gap, which is a commonly found effect of collective bargaining (Teulings and Hartog, 1998; Blau and Kahn, 1996). The regime that stands apart is firm bargaining, where we find the largest differences in coefficients compared to the other regimes. The firm bargaining regime is more idiosyncratic than the no-bargaining regime.

The wholesale trade industry is exceptional, because it is the only sector in which a no-contract regime exists next to industry agreements.[10] This allows us to analyse the effect of collective bargaining directly. The results are given in Table 4. The effect of the bargaining regime is again small. An industry agreement yields 1.5% higher wages, and mandatory extension now leads to the highest wages, 4% above the uncovered sector. However, this segment is small, as most extended contracts are classified as 'industry agreements'. For firm agreements, the number of observations is too small to allow reliable judgment.

Our data allow us to identify individuals working at the same firm. This feature makes it possible to decompose the error term in a firm-specific component and an individual

[9] Brown and Medoff (1989) indicate an elasticity of establishment size in the United States of about 0.03, Teulings and Hartog (1998) report about 0.01 to 0.02 for Northern and continental European countries. The larger value for the USA, where firm bargaining dominates, is mirrored in a higher elasticity for firm bargaining than for industry bargaining.

[10] There are other industries where multiple bargaining regimes are observed, but there, the uncovered sector is dominated by firms employing mainly highly-skilled professionals who would, in any event, have been uncovered by the collective agreement.

Table 5
Decomposition of residual variance of log wages in individual and firm effects

	Total	Firm	Individual
Wholesale	0.1908	0.0707	0.1772
Industry agreement	0.2080	0.0704	0.1957
No CLA	0.2226	0.0996	0.1991

component. Table 5 presents figures for all workers and for subgroups in wholesale trade. From the last two lines, we conclude that the intra-industry/between-firm dispersion of log wages is substantially smaller under industry agreements. Industry bargaining therefore seems to act as an equalisation device for the bargaining position of workers in different firms. This conclusion is consistent with cross-country evidence (see Teulings, 1998). The results counter the argument of Blau and Kahn (1996) that collective bargaining equalises on observable characteristics and leaves inequality from unobserved characteristics unaffected.

From the results in this section, we conclude that wage differentials between firm bargaining regimes are modest. Neither in terms of wage level nor in terms of wage structure is there a cleavage between firms covered and not covered by a collective agreement (except for the gender wage gap). The firm bargaining regime has the most idiosyncratic wage structure. Bargaining does reduce the residual variation of wages.

5. Who is covered?

As noted, in a firm covered by collective bargaining, not all of the firm's employees will be covered. We also know that individual non-coverage in a covered firm can have two faces: top-level management and low-pay marginal workers. Our data specify whether an individual worker is covered or not, but for non-covered workers we do not observe the "regime". To reflect this structure, we should estimate earnings functions separately for these different worker categories, corrected for selective coverage. However, the nature of our data set as a single cross-section and the available variables (which do not justify exclusion restrictions) leave only functional form as the vehicle for identification. This clearly is not a very powerful vehicle. In the estimated endogenous switching regression models we present, we will therefore focus on the switching equations (who is covered) and use the earnings results as reconnaissance of the sensitivity of our results obtained so far.

We attempted to estimate the Dickens and Lang (1985) model with unobserved sector selection, extending that model to have an observed covered regime and an uncovered regime consisting of the two regimes (top management and marginal) but without observation of the latter assignment. The model works excellently for industry bargaining but fails for the other two regimes (no convergence, little gain in log likelihood). For each type of firm bargaining regime, we have also estimated a standard endogenous switching regression model (Maddala, 1983, p. 283). Table 6 gives results for standard switching regressions and Table 7 for the extended Dickens–Lang model.

Table 6
Ordinary (endogenous) switching regression equations

	Industry			Firm			Extension			No CLA
	W_c	W_{nc}	Selection	W_c	W_{nc}	Selection	W_c	W_{nc}	Selection	W
Constant	1.700	0.486	2.319	1.226	1.855	2.298	1.0205	1.497	− 1.554	1.783
	(0.017)	(0.162)	(0.178)	(0.088)	(0.389)	(0.411)	(0.122)	(0.079)	(0.309)	(0.036)
Experience/10	0.839	0.741	− 0.065	0.672	0.568	− 0.119	1.200	0.950	− 0.279	0.722
	(0.013)	(0.080)	(0.130)	(0.062)	(0.205)	(0.509)	(0.087)	(0.059)	(0.263)	(0.022)
Experience^2	− 2.786	− 1.925	− 0.081	− 2.253	− 1.566	− 0.608	− 4.621	− 2.986	1.811	− 2.049
/1000	(0.061)	(0.354)	(0.581)	(0.302)	(1.014)	(2.518)	(0.480)	(0.275)	(1.435)	(0.103)
Experience^3	2.930	1.801	− 0.339	2.525	1.640	0.879	5.295	2.859	− 3.900	1.806
/100,000	(0.086)	(0.456)	(0.766)	(0.441)	(1.513)	(3.719)	(0.766)	(0.368)	(2.248)	(0.140)
Education	0.087	0.154	− 0.187	0.099	0.104	− 0.227	0.093	0.095	− 0.044	0.094
	(0.001)	(0.008)	(0.007)	(0.003)	(0.026)	(0.018)	(0.006)	(0.005)	(0.019)	(0.001)
Female	− 0.130	− 0.217	− 0.021	− 0.038	− 0.265	0.724	− 0.020	− 0.077	0.607	− 0.144
	(0.004)	(0.029)	(0.043)	(0.016)	(0.125)	(0.176)	(0.031)	(0.024)	(0.077)	(0.008)
Entrant	− 0.057	− 0.076	0.004	− 0.065	0.0003	− 0.055	− 0.082	− 0.103	− 0.136	− 0.079
	(0.005)	(0.034)	(0.052)	(0.017)	(0.051)	(0.147)	(0.030)	(0.026)	(0.094)	(0.009)
ln hours	0.131	0.119	0.152	0.244	–	–[a]	0.118	0.143	0.184	0.098
	(0.004)	(0.024)	(0.039)	(0.023)			(0.024)	(0.019)	(0.074)	(0.009)
ln firm size	0.007	0.079	− 0.107	0.030	0.117	0.016	0.046	0.034	0.143	0.020
	(0.001)	(0.010)	(0.013)	(0.005)	(0.020)	(0.046)	(0.008)	(0.007)	(0.023)	(0.003)
S.D.	0.203	0.476		0.189	0.245		0.286	0.323		0.235
	(0.002)	(0.067)		(0.009)	(0.035)		(0.022)	(0.012)		
Correlation	− 0.022	0.865		− 0.144	− 0.115		− 0.848	− 0.603		
	(0.071)	(0.032)		(0.134)	(0.591)		(0.051)	(0.080)		
N	14,667	822		982	193		475	1044		5006
Mean log-L	− 0.019355			− 0.134790			− 0.651306			

Standard errors in parentheses. W_c, W_{nc}: wage for covered, non-covered workers, respectively.

[a] There is no variation in the hours worked for the 193 non-covered individuals; the variable hours is therefore excluded from the selection equation and the non-covered wage equation.

Table 7
Wage and selection equations, industry bargaining

	Covered	Non-covered	
		Marginal	Senior management
Wage equation			
Intercept	1.694 (0.017)	1.445 (0.588)	− 0.167 (0.551)
Experience/10	0.838 (0.012)	1.062 (0.111)	0.687 (0.106)
Experience^2/1000	− 2.785 (0.061)	− 4.175 (0.538)	− 1.474 (0.469)
Experience^3/100,000	2.930 (0.086)	5.082 (0.763)	1.180 (0.623)
Education (years)	0.086 (0.001)	0.066 (0.010)	0.168 (0.011)
Female	− 0.133 (0.004)	0.118 (0.178)	− 0.270 (0.056)
Entrants	− 0.057 (0.004)	− 0.105 (0.037)	− 0.031 (0.047)
ln hours	0.132 (0.003)	0.096 (0.057)	0.250 (0.124)
ln firm size	0.006 (0.001)	0.022 (0.018)	0.083 (0.012)
Selection equation			
Intercept		− 2.141 (0.231)	− 7.232 (0.767)
Experience/10		0.022 (0.188)	0.332 (0.182)
Experience^2/1000		0.251 (0.856)	− 1.447 (0.800)
Experience^3/100,000		− 0.641 (1.134)	3.117 (1.033)
Education (years)		0.006 (0.019)	0.255 (0.012)
Female		0.809 (0.091)	− 0.464 (0.181)
Entrant		0.020 (0.076)	− 0.044 (0.083)
ln hours		− 0.268 (0.055)	1.050 (0.199)
ln firm size		0.081 (0.021)	0.111 (0.018)

Variance–covariance matrix		(1)	(2)	(3)	(4)	(5)
(1) Wage, senior management	u_1	0.249 (0.036)	*	*	− 0.461 (0.045)	0
(2) Wage, marginal	u_2		0.045 (0.003)	*	0	−0.019 (0.230)
(3) Wage, covered	u_3			0.0413 (0.0002)	0.012 (0.013)	0.063 (0.015)
(4) Selection, senior management	ε_1				1	0
(5) Selection, marginal	ε_2					1

Standard errors in parentheses.

The extended Dickens–Lang model is a relevant extension of the standard switching regression as judged by the gain in log likelihood. The Dickens–Lang identification of regimes is often viewed rather skeptically, but in our case we actually know that the distinction is real, even if we do not observe the assignment directly. Moreover, the results give a very sharp regime assignment. If we predict regime assignment within the uncovered segment, we either predict a very high probability of the marginal segment or a very low probability. Failure of the Dickens–Lang model in the other firm bargaining regimes may be understood from the results in the standard switching regressions, which we discuss below. The results in Table 6 suggest that non-coverage under firm bargaining is dominated by top-level management, while under mandatory extension the non-covered segment is probably too heterogeneous for a straight dichotomy.

The selection equations in Table 7 measure firms' propensity to be in the uncovered marginal or top-management segment relative to the covered segment. Experience borders

on positive significance for management non-coverage, while it is insignificant in all other selection equations (cf. Table 6). Education, gender, and hours worked neatly separate non-coverage at the opposing ends, while increasing firm size about equally favours both positions. As noted under firm bargaining, the selection equation (in Table 6) points to non-coverage dominated by top management: education increases non-coverage, gender (female) decreases it, leaving the top for highly educated men. In fact, the wage equation for these uncovered workers supports this interpretation, with a positive effect of education, a very large negative effect for women and a very strong positive effect of firm size. In the extension sector, we found no support for a clear dichotomy in the uncovered segment. In this sector, the majority of workers is uncovered rather than covered as in the other firm bargaining regimes. That, apparently, makes the uncovered segment too heterogeneous for easy characterisation in the selection equation.

Cautiously looking at the wage equations, we may make a few brief comments. Under industry bargaining and firm bargaining, the firm size elasticity is larger for uncovered workers than for covered workers as one would expect. As Table 7 shows, this larger elasticity is mostly due to the sensitivity of management compensation. Quite remarkable is the large gender wage penalty for covered workers under industry bargaining, a magnitude comparable to that for workers in uncovered firms. One would have anticipated unions to wipe out such differences, an anticipation borne out by the other results. Perhaps even more surprising is the finding that uncovered women in the marginal workers segment experience no significant earnings difference to men. Conceivably, in this segment of non-core activities (cleaning, catering), there is discrimination against women as much as men. There are many immigrants employed in this segment, but our data do not identify them.

While acknowledging the limitations of our wage estimates, we have compared predicted wages for typical workers under different regimes, restricting employees of covered firms to covered workers only (Table 8). The typical worker in the no-bargaining regime will not gain from moving to a firm in a covered regime, nor will a typical worker in any of the covered regimes lose from moving to the no-bargaining regime. Collective bargaining per se does not create a gap with the no-bargaining regime. This conclusion is in line with our results in Section 4. Comparing firm bargaining regimes, the rankings for different worker types are very similar. Industry bargaining and firm bargaining have small wage differences of no more than 5%; the difference is to the advantage of industry bargaining. This again is similar to what we found in Section 4. In each comparison, the

Table 8
Wage effect of the firm's bargaining regime (for covered firms, covered workers only)

	Industry	Firm	Extension	No
Industry bargaining	2.961	2.911	2.849	2.960
Firm bargaining	3.138	3.144	3.062	3.165
Mandatory extension	2.826	2.784	2.704	2.808
No bargaining	3.046	3.021	2.948	3.042

Source: Tables 6 and 7; predicted wage includes selection effect. A row gives the predicted wages for a worker with the average characteristics in the row's bargaining regime.

extension sector has the lowest predicted wages, with wages up to 10% lower than elsewhere.

6. Conclusions

We have found that neither in wage level nor in wage structure, the institutional structure for wage bargaining in the Netherlands does lead to a cleavage between the sector with some form of collective bargaining and the sector without collective bargaining. If in terms of wage structure one regime stands out, this is the regime with firm level bargaining.

Previously, in Teulings and Hartog (1998), a survey of the international literature led to the conclusion that collective bargaining affects wage levels differently under different institutional arrangements. In the dual structure of North America, the average wage gap between the union and the nonunion sector is estimated to be at least 20% in Canada (Robinson and Tomes, 1984; Robinson, 1989) and about 15% in the US during the 1970s (Flanagan et al., 1993; Pencavel, 1991; Hirsch and Addison, 1986). In Australia, the gap has been estimated as 15% to 17% (Christie, 1992). In the UK, the average effect has been put at 8% to 10% (Addison and Siebert, 1993; Booth, 1995; Hirsch and Addison, 1986; Metcalf, 1990), but there are differences by type of bargaining arrangement, with a strong effect of the closed shop, in particular for semiskilled manual workers (Stewart, 1987). For Germany, Austria, and Norway, the bargaining regime effect has been measured inadequately as an effect of individual union membership. For Germany, an average gap of 8% has been reported, for Austria 7% (Blanchflower and Freeman, 1992), and for Norway an effect of 4% (Barth et al., 1994). An institutionally more proper estimate for Norway finds that firms with central wage bargaining only have 7.5% lower wages than firms with additional firm level bargaining; firm level union density is a mediating variable responsible for nonlinearity of this effect (Barth et al., 1994).

These results suggest that the magnitude of bargaining regime differentials falls if the country is ranked as more corporatist. Canada and the US are commonly ranked as non-corporatist, decentralised countries. On Australia, there is some disagreement but it is usually put at the low or very low end of corporatism. Austria is always put on top of the corporatism scale, Norway is at the high end with Germany and the Netherlands. The UK is ranked closer to the North American non-corporatist countries. The results for just the firm bargaining regime for the Netherlands, with wage differentials between regimes no larger than 4%, neatly fit this relationship: as a highly corporatist country, the Netherlands has small bargaining regime wage effects.

Our results also indicate that mandatory extension is not an instrument for unions to increase wages. The effect on wage cost is not an argument to abolish mandatory extension, as is sometimes suggested in the wave of ‘deregulation’ proposals. As we have argued elsewhere (Freeman et al., 1995), abolishment would undermine the entire institutional structure and would push unions in the direction of local rent sharing as in a decentralised system.

Our empirical results indicate that there is a need for further research on the effect of collective bargaining in systems that are more complex than just a distinction between

unionised bargaining and no collective bargaining at the level of the firm. In particular, we would like to see better analysis of wage differentials between covered and uncovered employees of covered firms. This, however, can only be accomplished with better data than are presently available.

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