

The Effect of Bargaining Structure on Negotiated Wage Settlements

L'effet des structures de négociation sur le règlement des conditions salariales

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Résumé de l'article

Bien qu'il n'y ait pas de lien théorique universellement acceptable entre la structure de négociation collective et le règlement des questions salariales par négociation, les analystes des relations professionnelles ont depuis longtemps reconnu que le type d'unités de négociation retenu dans la négociation collective peut avoir un effet sur le processus de détermination des salaires. D'une façon générale, on estime que des unités de négociation plus vastes ou plus centralisées mettent en valeur le pouvoir de négociation du syndicat, bien que la preuve empirique dont on dispose permette de penser que le pouvoir monopoleur des syndicats ne soit pas accentué par une négociation fortement centralisée.

L'article vérifie l'hypothèse selon laquelle le type d'unités de négociation (unité de négociation par établissement, unité de négociation par compagnie, unité de négociation multipartite ou association d'employeurs) retenu dans la négociation collective a un effet sur les ententes salariales négociées dans le secteur privé au Canada. L'analyse se fonde sur le modèle de la courbe de Phillips où la variable dépendante consiste dans le pourcentage du changement dans les taux de salaire de base pendant la durée de la convention collective. Entrent aussi en ligne de compte plusieurs variables indépendantes, y compris l'une qui représente les différents types d'unités de négociation.

Les résultats se fondent sur l'étude de 2,338 conventions collectives régissant 200 salariés ou davantage qui ont été conclues entre 1966 et 1975. Dans cet échantillon, on compte 1,217 conventions collectives négociées dans des unités de négociation par établissement; 811, dans des unités de négociation par compagnie; 110, dans des unités de négociation multipartites et, enfin, 200, qui ont été négociées avec des associations d'employeurs.

Les résultats obtenus démontrent que la structure de négociation collective a un effet significatif sur les règlements des questions salariales. Les accords négociés dans les conventions collectives où les unités de négociation sont accordées par compagnie ou sont multipartites sont en moyenne d'un pour cent inférieurs à ceux qu'on observe dans des conventions collectives négociées dans des unités de négociation par établissement ou avec des associations d'employeurs.

Il en découle que les entreprises possédant plusieurs vastes établissements ont un pouvoir de négociation fort. Dans des industries fortement concentrées, les entreprises dominantes sont en quelque sorte immunisées contre la surenchère des syndicats. De plus, si ces entreprises sont des multinationales, elles peuvent utiliser leurs opérations internationales pour faire de la surenchère de leur côté. Dans les négociations où l'unité de négociation est multipartite, les syndicats se trouvent dans une position plus faible, puisque les tactiques de surenchère sont limitées à cause du caractère relativement homogène des entreprises.

D'un autre côté, la négociation au niveau de l'établissement permet à un syndicat puissant d'avoir un pouvoir de négociation considérable. S'il s'agit d'entreprises possédant un seul établissement ou de firmes intégrées verticalement, le syndicat peut exercer une forte pression en recourant à des tactiques de surenchère.

De même, lorsqu'une association d'employeurs négocie dans un marché de produits ou de services locaux où le taux de syndicalisation est élevé, le syndicat possède un avantage marqué. Étant donné que les employeurs ont des structures de prix différentes, donc des intérêts divergents, il est très vraisemblable que quelques-uns d'entre eux puissent rompre les rangs sous la menace d'une grève.

Alors que les résultats montrent que la consolidation des unités de négociation au niveau de l'unité par compagnie ou de l'unité multipartite peut signifier des gains significatifs dans le pouvoir de négociation de l'employeur, cela n'implique pas que des unités de négociation plus vastes puissent donner lieu à des contraintes en matière de taux de salaire. Notamment, une orientation vers la négociation par une association d'employeurs ne serait pas de nature à valoriser le pouvoir de négociation de ces derniers, même si ces groupements locaux peuvent avoir des avantages sur certains points. En fait, la formation d'associations d'employeurs ne limite pas la possibilité pour le syndicat d'utiliser des tactiques de surenchère et ne semble pas non plus accroître le pouvoir de marchandage des employeurs.

Enfin, les constatations faites paraissent indiquer que les syndicats, dans les industries peu syndicalisées, ont été en mesure de négocier des règlements salariaux plus élevés que ceux des industries fortement syndicalisées. Ce dernier résultat contredit les découvertes antérieures et il faut, en conséquence, le considérer avec réserve.

The Effect of Bargaining Structure on Negotiated Wage Settlements

Robert Swidinski

The purpose of this paper is to explore the effect of the structure of collective bargaining on union bargaining power. More specifically, its objective is to determine whether bargaining through employer's association, multi-employer, single (multi-plant) employer or single-plant negotiation units has had an effect on negotiated wage settlements (union wage changes) in the private sector in Canada.

There is wide-spread recognition that the structure of collective bargaining (identified by type of negotiation unit) plays a vital role in an industrial relations system. It can have important implications for the aims, objectives and strategies of the unions; it can affect industrial peace, wage structures, uniformity in working conditions and intra-firm labour relations; and it can alter relative bargaining power between union and management. In general, the bargaining processes and the bargaining outcomes are likely to be significantly different under alternative bargaining structures. The purpose of this study is to explore the effect of the structure of collective bargaining on union bargaining power. More specifically, its objective is to determine whether bargaining through employers' association, multi-employer, single (multi-plant) employer or single-plant negotiation units has had an effect on negotiated wage settlements (union wage changes) in the private sector in Canada.

Although there is no universally accepted theory linking bargaining power with different types of bargaining structures¹, many industrial relations analysts have subscribed to the view that wider (or more centralized

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• This study was conducted while the author was visiting the Industrial Relations Research Unit at the University of Warwick. Financial Assistance was provided by the Centre for the Study of Inflation and Productivity. A more detailed version of this study is available in the Economic Council of Canada Discussion Paper No. 139.

¹ Livernash (1963) and Weber (1967) have conducted perhaps the most exhaustive analysis of the effects that specific bargaining structures are likely to exert on relative bargaining power under different labour and product market conditions and corporation and union structures. Their analyses suggest that generalizations are not possible. The effects depend on the specific nature of the product and labour markets and the corporate and union structures.

negotiation units) may confer a power advantage to organized labour. For example, Lewis (1951) argued that union monopoly power could be curbed by limiting the size of collective bargaining units and making collusion among them unlawful. Weber (1963) noted that, whereas it was unclear how centralized bargaining affected relative bargaining power in European countries, extreme decentralization of collective bargaining in Japan appeared to restrain union power. More recently, Hildebrand (1972) and Northrup (1973) have argued that, in the long run, centralized negotiation units may enhance already inflated union power. Ulman (1974) has similarly argued that centralized bargaining may be more inflation-prone, but he also noted that a centralized system may be more amenable to official wage restraint policy than a decentralized system.

However, these views are not generally supported by the empirical analysis conducted by Hendricks (1975) for the United States and by Thompson, Mulvey and Farbman (1977) for Great Britain. Both studies concentrate on the wage level rather than its rate of change. The British analysis is based on wage differential between samples of employees in similar industries and occupations but differentiated by type of bargaining structure, whereas the U.S. study is based on an estimated wage level relationship. Although the methodology and the types of bargaining structures analyzed are different, both studies conclude that the monopoly power of unions is not increased by highly centralized bargaining. However, the findings reported by Hendricks are considerably more complex. In comparison with employer-wide negotiation units, plant-level and industry-wide units pay lower wages (with the latter negotiation units paying the lowest wages), whereas local multi-employer negotiation units pay higher wage levels than all other types of negotiation units. Given the apparent conflict between a priori expectations and the empirical evidence, it seems appropriate to subject the hypothesis that centralized bargaining enhances union bargaining power to an additional empirical test using wage change analysis.

One of the main features in this study is the use of micro data for individual Canadian wage contracts. The basic wage change findings reported in this study are based on 2,338 wage agreements containing 200 or more employees and signed during the 1966-75 time period². In this sample of

² The data base is an unpublished source made available by Mr. Dan Rosenbloom, Chief Collective Bargaining Division, Canada Department of Labour, Ottawa. This data base includes the settlements for bargaining groups containing 200 or more employees. Wage contracts which were excluded from the study consist of construction sector settlements, which were not part of the sample until recently, and contracts with cost-of-living clauses. This latter group of 574 contracts were excluded because of the diversity of the COLA clauses (e.g. different formulas, caps, triggers, etc.). While it is conceivable that the exclusion of COLA contracts may affect the results, the problem of translating the COLA clauses into base rate changes are too severe to be handled in this paper. The termination date of our sample coincides with the introduction of wage and price controls (Anti-Inflation Board) in Canada.

wage agreements, 1,217 agreements (52.1 percent) were negotiated by single-plant negotiation units, 811 (34.7 percent) by single (multi-plant) employer units, 110 (4.7 percent) by multi-employer units and 200 (8.5 percent) by employers' associations³. The vast majority of the employer's associations in our sample operated in local product markets.

In the first section we specify the wage model which is used throughout this analysis. Our model departs from the conventional price expectations — Phillips curve model in that it includes price catch-up, wage spillovers and several institutional forces as additional explanatory variables⁴. Section II contains estimates of our wage change equations for the private sector and the final section summarizes our findings.

MODEL SPECIFICATION

Wage settlements negotiated in the private sector are assumed to be determined by the following factors: excess labour demand (VRHW), price expectations (\dot{P}^e), price catch-up (\dot{P}^{cu}), wage spillovers (S), union density (UD), a set of industry-specific dummy variables (IS_i) and a set of intercept-shift dummy variables representing the types of negotiation units (NU_j).

$$(1) \quad \dot{W} = C_0 + \gamma VRHW + \alpha \dot{P}^e + \beta \dot{P}^{cu} + \delta S + \theta UD + \sum_{i=1}^n \lambda_i IS_i + \sum_{j=1}^k \rho_j NU_j$$

³ The criterion used to distinguish between the four types of negotiation units (single-plant, single-employer, multi-employer and employers' association) are as follows. Settlements negotiated at a single location by a single firm (either single-plant or multi-plant) were classified into single-plant negotiation units. Settlements negotiated at several locations by a single, multi-plant firm were classified into single-employer negotiation units. Settlements were assumed to be negotiated by multi-employer units if they were listed under several firms, or if they belonged to the same specific SIC group and had the same settlement and expiry dates. Employers' associations were explicitly identified in the description of the employers in the contract settlement. Technically, multi-employer and employers' association units belong to the same type of bargaining structure. The main distinction is that the former is comprised of two or three firms in the industry whereas the latter generally encompasses all employers in a given local product or labour market. While our method of classification may have its limitations, the distribution of major collective agreements by type of negotiation units it yielded for 1973 is not dissimilar from the 1965 distribution reported by Waisglass and Craig (1968), Table 1, despite the fact that the sample of collective agreements and the criteria for assigning negotiation units were not identical in the two years. Had COLA agreements been included in our sample, the distribution would have remained basically unchanged.

⁴ While there should probably be other (firm-specific) variables in a micro-wage equation, experimentation with profits, productivity and concentration produced insignificant or perverse results. Other variables that might be used in a micro-wage change equation were not available at this time.

The dependent variable is the total percentage change in base wage rates over the life of the contract expressed at an annual compound rate. The first four explanatory variables in our model (VRHW, PE , PCU , S) have received considerable attention elsewhere⁵, but it may be helpful to summarize the arguments briefly.

While the usual proxy for excess labour demand is the aggregate unemployment rate, it is our contention that this proxy is no longer a consistent measure of relevant labour market conditions. A number of structural and demographic changes within the Canadian labour market, such as the age-sex-family status characteristics of the unemployed, the composition of the labour force and revisions in the Canadian Unemployment Insurance Act, may account for the demise of the unemployment rate variable as a proxy for excess labour demand in wage determination studies. In any case, the aggregate unemployment rate generally displays a perverse relationship in Canadian wage equations estimated for recent years⁶.

In terms of the unemployment-vacancy relationship, the declining performance of the unemployment rate in wage change equations may mean that the shift in the U-V curve, which appears to have started in the early 1970's, originated on the unemployment rather than the vacancy side⁷. Since the vacancy rate has been found to be a more consistent proxy for excess labour demand, we employ the Department of Finance regionalized help-wanted index normalized by the size of the regional labour force (VRHW) as an indicator of labour market conditions⁸. Thus, our vacancy rate variable captures the labour market conditions within the specific geographic region in which the individual micro wage settlement was negotiated. However, the national help-wanted index is utilized for inter-regional contracts. Finally, the help-wanted vacancy rate variable is specified for the quarter of the year which precedes the wage contract settlement date.

Our proxy for price expectations is based on a weak form of the rational expectations hypothesis. We assume that the actual price inflation (as measured by the quarterly change in the consumer price index) at time t can be described by a distributed lag of past values of inflation and an error term. Using this auto-regressive equation, we can generate values of future price expectations for contracts of any given duration^{8a}.

5 See, for example, Christofides, Swidinsky and Wilton (1980a, 1980b).

6 The evidence is presented in Christofides, Swidinsky and Wilton (1980a).

7 See Green and Cousineau (1976).

8 Five broad economic regions were used: Atlantic, Quebec, Ontario, Prairies and B.C.

8a A technical demonstration of this point is available from the author upon request.

Price catch-up, while not as common as the first two factors, has been proposed by a number of authors, including Turnovsky (1972), Turnovsky and Wachter (1972), Johnston and Timbrell (1973) and de Menil and Bhalla (1975). A price catch-up variable can be rationalized as a measure of firm specific excess demand for labour, but the typical explanation has been that of a bargaining demand. To illustrate the potential role of a price catch-up variable, consider a three-year Canadian wage contract signed in 1972. Based on a reasonable estimate of annual price expectations of 5 percent, labour would have suffered an unexpected 15 percent loss in real wages during this three-year period of unanticipated inflation. It would be naive to assume that, during the 1975 contract negotiation, labour would bargain as if this loss did not occur (i.e. accept the loss in perpetuity) and make wage demands only in terms of expected inflation during the next contract period. At the negotiation table, bygones are clearly not bygones but important issues at the next contract negotiation.

Given our micro data base, our specification of price catch-up can be much more precise than those specifications that use aggregate, time series data. As defined in Equation (2) below, our proxy for price catch-up allows for both (i) unexpected inflation, and (ii) the possibility that all of expected inflation is not incorporated into wages *ex ante* (i.e. $\alpha < 1.0$). Turnovsky (1972) and de Menil and Bhalla (1975) have constrained the " α " in their price catch-up term to be unity, but have estimated the coefficient on current price expectations freely. While their specification does capture "unexpected" inflation, our proxy provides a measure of "uncompensated" past inflation. All of our models in the next section are estimated non-linearly in order to provide an identical estimate of " α " for both of its appearances within the wage change equation.

Finally, the values of successive contract lengths (the ℓ 's) are crucial in determining the magnitude of uncompensated inflation and the period of time for which this shortfall can be apportioned. In our sample, contract length varies considerably both across micro units and over time (for the same micro unit). The above-mentioned studies which include price catch-up in their wage change model have, of necessity, assumed constant contract length in an aggregative framework. Thus, our catch-up results based on micro data where we have precise information on successive individual contracts provide a much sharper statistical test for the relative merits of the price catch-up determinant of wages.

$$(2) \dot{P}^{cu} = (\dot{P}_{t-1}^a - \alpha \dot{P}_{t-1}^e) * \ell_{t-1} / \ell_t$$

- where \dot{P}_{t-1}^a : actual percentage change in the C.P.I. over the previous contract (at an annual rate)
- \dot{P}_{t-1}^e : expected change in prices at the signing date of previous contract (at annual rate)
- α : coefficient for price expectations
- l_t : length of current contract
- l_{t-1} : length of previous contract

It is our contention that labour will bargain just as vigorously for “uncompensated” past inflation as it does for anticipated future inflation. The fact that inflation is unexpected is no reason to dismiss it from the bargaining process. Furthermore, if it is well understood by both sides of a wage contract that “uncompensated” past inflation will be included as a bargaining issue in the next wage negotiation, then 100 percent of future expected inflation may not be included in wages *ex ante*. Given the uncertainty of future price expectations over a two to three year horizon (the usual contract length) and the opportunity to correct past expectational errors *ex post*, the wage determination process may assign a relatively lower weight to uncertain expectations of future inflation.

The role of wage spillovers in the wage change model has been explored in several studies, but most notably in Eckstein and Wilson (1962), McGuire and Rapping (1968) and Mehra (1976). While these studies have not resolved the problem of distinguishing between neo-classical labour supply forces and institutional spillover effects, they nonetheless suggest that wage spillovers are relevant in the wage determination process in at least some industries. However, since the use of quarterly or annual data discards valuable information pertaining to the exact timing of wage settlements (a key factor in establishing wage spillover patterns), the existence of wage spillovers (interdependencies) can best be detected by the direct analysis of micro wage data prior to aggregation. Not only does one avoid institutional econometric problems, but there are clear gains in the precision of the estimates derived from micro data prior to aggregation.

In our wage change model, spillover effects are captured by a variable constructed from preceding wage settlements within a reference group of wage settlements identified by specific industry and regional characteristics. Thus, wage spillovers into the i^{th} wage settlement can originate only from preceding settlements in the specific industry and region to which the i^{th} bargaining unit belongs⁹. All past settlements are constrained to carry equal

⁹ There are many other reference groups one can employ, such as broad industry (any region), region (any industry), key group, public sector, etc. Of the many reference groups tried, the specific industry-region group gave best results. The allocation of wage settlement into specific industry and region was, of necessity, rather arbitrary. A detailed description of the specific industry-regional reference groups will be supplied by the author upon request.

weight, and thus the spillover variable is the simple average of preceding wage settlements in the specific industry-region reference group¹⁰. In estimating our wage equations, successive past settlements (in reverse chronological order) were added to the spill-over variable until the standard error of estimate for the regression commenced to increase.

The remaining explanatory variables (UD, IS_i , NU_j) give our model its "institutional" dimensions. Union density (UD) is specified as the proportion of the labour force in the industry containing the specific wage settlement that is unionized¹¹. Several studies, but particularly those by Ross and Goldner (1950) and Segal (1961), have indicated a strong positive relationship between interindustry rates of increase in wages and the extent of union strength (measured by the proportion of production workers covered by collective agreements). While there is no *a priori* reason for disputing these findings, it would be interesting to determine whether they can be confirmed using an alternative methodological approach¹².

The industry dummy variables (IS_i) are designed to capture industry-specific influences that would not otherwise have been captured in the model¹³. IS_i takes on a value of unity if the wage settlement is negotiated in

10 We also experimented with an unconstrained weight model (the weights attached to past settlements being freely estimated) and a time decay polynomial model (the weights of past settlements being assumed to lie on a quadratic time polynomial). See Christofides, Swidinsky and Wilton (1980b) for a more thorough discussion.

11 The industrial classification was at the two-digit S.I.C. level. The union density data pertains to 1971 since this is the only year for which detailed industrial labour force data are available. However, interindustry union density is unlikely to have varied much over the 1966-75 period.

12 While Rees (1961), Lewis (1963) and Levinson (1967) criticize the Ross and Goldner and Segal studies, their criticism is directed primarily against the finding that the ability of a union to achieve wage increases is enhanced by monopolistic product markets. On the other hand, Reuber (1970) was unable to detect a significant relationship between the degree of unionization across industries and the rate of change in wages across industries in Canada from 1961 to 1966.

13 It is recognized that such industry-specific dummy variables in a wage change equation have their limitations. For example, they are not very informative in that they do not pinpoint the industry-specific influences. However, attempts to include such firm and industry-specific variables as profits, productivity, concentration and size of the negotiation unit provided insignificant or perverse results.

the i^{th} industry (otherwise zero)¹⁴. Finally, NU_j defines a set of bargaining structure intercept-shift dummy variables. NU_1 assumes a value of unity if the wage settlement was negotiated through an employer's association (otherwise zero); NU_2 assumes a value of unity if the wage settlement was negotiated by a multi-employer negotiation unit (otherwise zero); and NU_3 assumes a value of unity if the wage settlement was negotiated by a single (multi-plant) employer negotiation unit (otherwise zero). The omitted bargaining structure is the single-plant negotiation unit.

EMPIRICAL RESULTS

Table 1 presents the estimated wage change equations for 2,338 private sector negotiated wage settlements for the period 1966-75. The equations are presented in a step-wise manner in order to highlight any interactions that may exist between the union density, industry structure and negotiation unit variables and the more traditional determinants of wage change. Equation 1, containing only the price, labour market and spillover variables, gives strong statistical support for our price expectations-price catch-up wage change model. Both estimated price coefficients are highly significant and indicate that ex post compensation for past price inflation is more important in the wage determination process than ex ante compensation for future price expectations (i.e. a coefficient of .697 versus .259). Under a constant fully anticipated inflation rate, the combined ex ante et ex post compensation for inflation (the sum of the two price coefficients minus their cross-product i.e. $\alpha + \beta - \alpha\beta$) is 78 percent. That is, slightly more than three-quarters of constant fully anticipated price increases are built into wage settlements. The labour market coefficient is correctly signed and significantly different from zero, but its value indicates that the implicit Phillips curve has a relatively gentle slope¹⁵. Finally, the estimated spillover coefficient is highly significant and implies that in excess of 40 percent of the average increase in past wage settlements spills over into current wage negotiations¹⁶.

14 The industry classifications are forestry and fishing (IS₁), mining (IS₂), non-durable manufacturing (IS₃), durable manufacturing (IS₄), transportation, communications and other utilities (IS₅), trade (IS₆) and finance (IS₇). The omitted industry is services.

15 In the 1966-75 period VRHW had a range of 2.14 and a mean of 1.36.

16 The introduction of the wage spillover variable into the basic wage change equation containing prices and labour market conditions produces a substantial improvement in the goodness-of-fit. See Christofides, Swidinsky and Wilton (1980b). Although the price coefficients are affected by the addition of the wage spillover variable, the order of compensation remains unchanged. Somewhat surprisingly, the labour market effect on price changes is strengthened by the introduction of wage relativities.

TABLE 1
Wage Change Regressions for Negotiated Wage Settlements
in the Private Sector, Canada 1966-75
(t-values in parentheses)

<i>Independent Variable</i>	<i>Equation</i>		
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>
Constant	1.815 (2.38)	1.797 (2.73)	2.663 (3.03)
\dot{p}^e	.259 (3.23)	.213 (2.55)	.223 (2.87)
\dot{p}^{cu}	.697 (14.34)	.692 (13.99)	.670 (14.73)
VRHW	3.276 (5.13)	3.679 (5.51)	3.489 (5.65)
S	.412 (15.05)	.420 (14.62)	.372 (12.53)
UD			- .028 (2.65)
IS ₁			3.006 (3.06)
IS ₂			2.026 (1.86)
IS ₃			.984 (1.28)
IS ₄			.028 (.04)
IS ₅			.672 (.76)
IS ₆			1.986 (2.49)
IS ₇			- .808 (.27)
NU ₁		.608 (1.13)	.004 (.01)
NU ₂		- .630 (.90)	-1.335 (2.01)
NU ₃		-1.101 (3.35)	-1.085 (2.87)
S.E.E.	4.078	4.067	4.032
\bar{R}^2	.475	.478	.488

The addition of the set of bargaining structure dummy variables to the wage change equation shows that some types of negotiation units may exert a significant effect on negotiated wage settlements. While the estimated employers' association (NU₁) and multi-employer (NU₂) coefficients in equation 2 are not significantly different from zero, the single-employer (NU₃) coefficient is negative and significant. The remaining price, labour market and spillover coefficients are basically unaffected by the introduction of the bargaining structure dummy variables.

When the union density and industry structure variables are added in equation 3, the size and significance of the estimated NU₃ (single-employer) coefficient remains basically unaffected. On the other hand, the negative NU₂ (multi-employer) coefficient more than doubles in absolute size and becomes significant whereas the NU₁ (employers' association) coefficient

becomes very small and highly insignificant. This suggests a relatively strong interaction between some bargaining structures and other (unspecified) structural characteristics of the industries.

The results in equation 3 imply that certain types of negotiation units tend to restrain negotiated wage settlements. In comparison with single-plant negotiation units, employers' association units tend to negotiate comparable wage increases whereas single-employer and multi-employer units tend to negotiate significantly lower wage increases. In effect, settlements negotiated through single-employer and multi-employer negotiation units are 1.08 and 1.33 percent lower, respectively, than settlements negotiated through alternative (single-plant and employers' association) negotiation units¹⁷.

Turning to the other "institutional" variables in equation 3, union density and industry structure have only a marginal effect on the estimated price, labour market and spillover coefficients. The union density coefficient is negative and significant, suggesting that unions in weakly organized industries have been able to negotiate higher wage settlements¹⁸. This result contradicts previous studies, based on interindustry data, which suggest that unions in strongly organized industries are able to negotiate higher wage increases. Although the estimated union density coefficient is relatively small, it nonetheless implies that a 20 percent increase in an industry's union density (the mean for all industries in 1971 was 26.8 percent) would result in a 0.6 percent reduction in negotiated wage settlements.

Only three of the seven industry-specific coefficients are significantly different from zero. Settlements in forestry, fishing and trade appear to be higher by 2.0 to 3.0 percent than in other industries. While the finding that unions in resource industries have been able to negotiate higher wage increases than unions in other industries is not surprising, it is surprising that unions in the trade sector would have such exorbitant bargaining power.

In general, however, the institutional variables contribute very little to the overall explanatory powers of the estimating equation, even though 5 of the 11 estimated institutional coefficients are significantly different from

¹⁷ However, a standard F-test shows that the single-employer and multi-employer estimated coefficients are not significantly different. The calculated and critical F-values are .135 and 1.64, respectively.

¹⁸ One may speculate that this result is due to some interaction between product market concentration and union density in the industry. However, a wage change model containing \bar{P}^e , \bar{P}^{cu} , VRHW, S, UD and a concentration variable tested for 1,482 wage settlements in manufacturing shows that this is not the case. The coefficient on the concentration variable is positive but insignificant whereas the union density coefficient is negative and generally significant.

zero. The adjusted R^2 increases only marginally from .475 in equation 1 to .488 in equation 3 when the full set of institutional variables is included. Individual institutional variables, nonetheless, play a significant role in determining the outcome of wage bargains.

SUMMARY AND CONCLUSIONS

Using base rate data in the private sector, the results of our wage change model show that the structure of collective bargaining has had a significant effect on negotiated wage settlements. When other factors, such as price changes, labour market conditions, spillover effects, union density and industry structure are taken into account, the type of negotiation unit engaged in the bargaining process still plays an effective role in determining the size of wage settlements. Specifically, settlements negotiated through single (multi-plant) employer and multi-employer negotiation units are approximately one percent lower than settlements negotiated through single-plant and employers' association negotiation units. With the exception of plant-level units, these results are basically consistent with those reported by Hendricks (1975).

Our results imply that large, multi-plant firms bargaining as company-wide units have considerable bargaining power. In highly concentrated industries the dominant firms are relatively immune from whipsawing by the unions. Moreover, if the firms are multi-national they can use their international operations to whipsaw the unions. In multi-employer negotiation units the unions are in an even weaker bargaining position since their ability to employ whipsawing tactics are fairly limited. Also, the firms organized into multi-employer units are likely to be relatively homogenous, unlike the unions who must contend with regional and local interests.

On the other hand, plant-level bargaining appears to provide a large, national union with considerable bargaining power. If the plants belong to single-plant firms or to vertically integrated firms the union can exert considerable pressure by using whipsawing tactics. Similarly association bargaining in local product markets that are completely unionized provides the union with a significant power advantage. Since the employers have different cost structures, and thus divergent interests, it is highly likely that some of the employers in an employers' association may break ranks under the pressure of a strike. Thus, although employers' associations are basically defensive mechanisms, there is little evidence to suggest that they have performed very effectively¹⁹.

¹⁹ Obviously, there are many different ways to interpret our results. It is fairly clear, however, that the effects of bargaining structure on relative bargaining power are complex and not easily generalized. For some additional arguments that can be used to explain our results see Livernash (1963), Weber (1967) and Ulman (1974).

While our results show that the consolidation of bargaining units at the single-employer or multi-employer level may provide significant gains in employer bargaining power, they do not imply that wider negotiation units will in general produce wage restraint. In particular, a shift to employers' association bargaining in local product markets will not necessarily enhance employer bargaining power above what it would have been under plant-level bargaining. Thus, while local employers' associations may confer advantages in some areas of industrial relations (i.e. reduced industrial conflict, reduced competition among employers, convenience in bargaining, etc.), they appear to be weak bargaining institutions in terms of wage restraint. That is, limiting a union's ability to implement whipsawing techniques by forming an employers' association does not appear to have enhanced employer bargaining power.

Finally, among our more interesting findings is the suggestion that unions in weakly organized industries have been able to negotiate higher wage settlements than unions in strongly organized industries²⁰. This finding is in direct contradiction to earlier findings based on interindustry data. However, the interindustry results may have reflected differential wage changes for union and non-union workers. Thus, if union workers receive higher wage increases than non-union workers, it follows that strongly organized industries will display higher wage increases as well. Our result, since it is based on micro wage settlement data, avoids such complications and is thus likely to be more accurate.

Admittedly, however, it is difficult to find theoretical arguments that would support this empirical result. One interpretation may be that it reflects differences among firms that are organized. In weakly organized industries only the most successful firms may be unionized. These firms may employ a superior work force and possess the greatest ability to pay. Moreover, unions in weakly organized industries may find it necessary to negotiate higher contracts in order to justify their existence. In more densely organized industries wage settlements may be reduced because of the presence of many unionized marginal firms. Nonetheless, since this finding contradicts a widely-held position (backed by some supporting empirical evidence), it should be regarded with a certain degree of skepticism unless confirmed by additional research.

²⁰ Our result is not reversed even when an industry concentration variable is included in the equation.

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L'effet des structures de négociation sur le règlement des conditions salariales

Bien qu'il n'y ait pas de lien théorique universellement acceptable entre la structure de négociation collective et le règlement des questions salariales par négociation, les analystes des relations professionnelles ont depuis longtemps reconnu que le type d'unités de négociation retenu dans la négociation collective peut avoir un effet sur le processus de détermination des salaires. D'une façon générale, on estime que des unités de négociation plus vastes ou plus centralisées mettent en valeur le pouvoir de négociation du syndicat, bien que la preuve empirique dont on dispose permette de penser que le pouvoir monopoleur des syndicats ne soit pas accentué par une négociation fortement centralisée.

L'article vérifie l'hypothèse selon laquelle le type d'unités de négociation (unité de négociation par établissement, unité de négociation par compagnie, unité de négociation multipartite ou association d'employeurs) retenu dans la négociation collective a un effet sur les ententes salariales négociées dans le secteur privé au Canada. L'analyse se fonde sur le modèle de la courbe de Phillips où la variable dépendante consiste dans le pourcentage du changement dans les taux de salaire de base pendant la durée de la convention collective. Entrent aussi en ligne de compte plusieurs variables indépendantes, y compris l'une qui représente les différents types d'unités de négociation.

Les résultats se fondent sur l'étude de 2,338 conventions collectives régissant 200 salariés ou davantage qui ont été conclues entre 1966 et 1975. Dans cet échantillon, on compte 1,217 conventions collectives négociées dans des unités de négociation par établissement; 811, dans des unités de négociation par compagnie; 110, dans des unités de négociation multipartites et, enfin, 200, qui ont été négociées avec des associations d'employeurs.

Les résultats obtenus démontrent que la structure de négociation collective a un effet significatif sur les règlements des questions salariales. Les accords négociés dans les conventions collectives où les unités de négociation sont accordées par compagnie ou sont multipartites sont en moyenne d'un pour cent inférieurs à ceux qu'on observe dans des conventions collectives négociées dans des unités de négociation par établissement ou avec des associations d'employeurs.

Il en découle que les entreprises possédant plusieurs vastes établissements ont un pouvoir de négociation fort. Dans des industries fortement concentrées, les entreprises dominantes sont en quelque sorte immunisées contre la surenchère des syndicats. De plus, si ces entreprises sont des multinationales, elles peuvent utiliser leurs opérations internationales pour faire de la surenchère de leur côté. Dans les négociations où l'unité de négociation est multipartite, les syndicats se trouvent dans une position plus faible, puisque les tactiques de surenchère sont limitées à cause du caractère relativement homogène des entreprises.

D'un autre côté, la négociation au niveau de l'établissement permet à un syndicat puissant d'avoir un pouvoir de négociation considérable. S'il s'agit d'entreprises possédant un seul établissement ou de firmes intégrées verticalement, le syndicat peut exercer une forte pression en recourant à des tactiques de surenchère.

De même, lorsqu'une association d'employeurs négocie dans un marché de produits ou de services locaux où le taux de syndicalisation est élevé, le syndicat possède un avantage marqué. Étant donné que les employeurs ont des structures de prix différentes, donc des intérêts divergents, il est très vraisemblable que quelques-uns d'entre eux puissent rompre les rangs sous la menace d'une grève.

Alors que les résultats montrent que la consolidation des unités de négociation au niveau de l'unité par compagnie ou de l'unité multipartite peut signifier des gains significatifs dans le pouvoir de négociation de l'employeur, cela n'implique pas que des unités de négociation plus vastes puissent donner lieu à des contraintes en matière de taux de salaire. Notamment, une orientation vers la négociation par une association d'employeurs ne serait pas de nature à valoriser le pouvoir de négociation de ces derniers, même si ces groupements locaux peuvent avoir des avantages sur certains points. En fait, la formation d'associations d'employeurs ne limite pas la possibilité pour le syndicat d'utiliser des tactiques de surenchère et ne semble pas non plus accroître le pouvoir de marchandage des employeurs.

Enfin, les constatations faites paraissent indiquer que les syndicats, dans les industries peu syndicalisées, ont été en mesure de négocier des règlements salariaux plus élevés que ceux des industries fortement syndicalisées. Ce dernier résultat contredit les découvertes antérieures et il faut, en conséquence, le considérer avec réserve.