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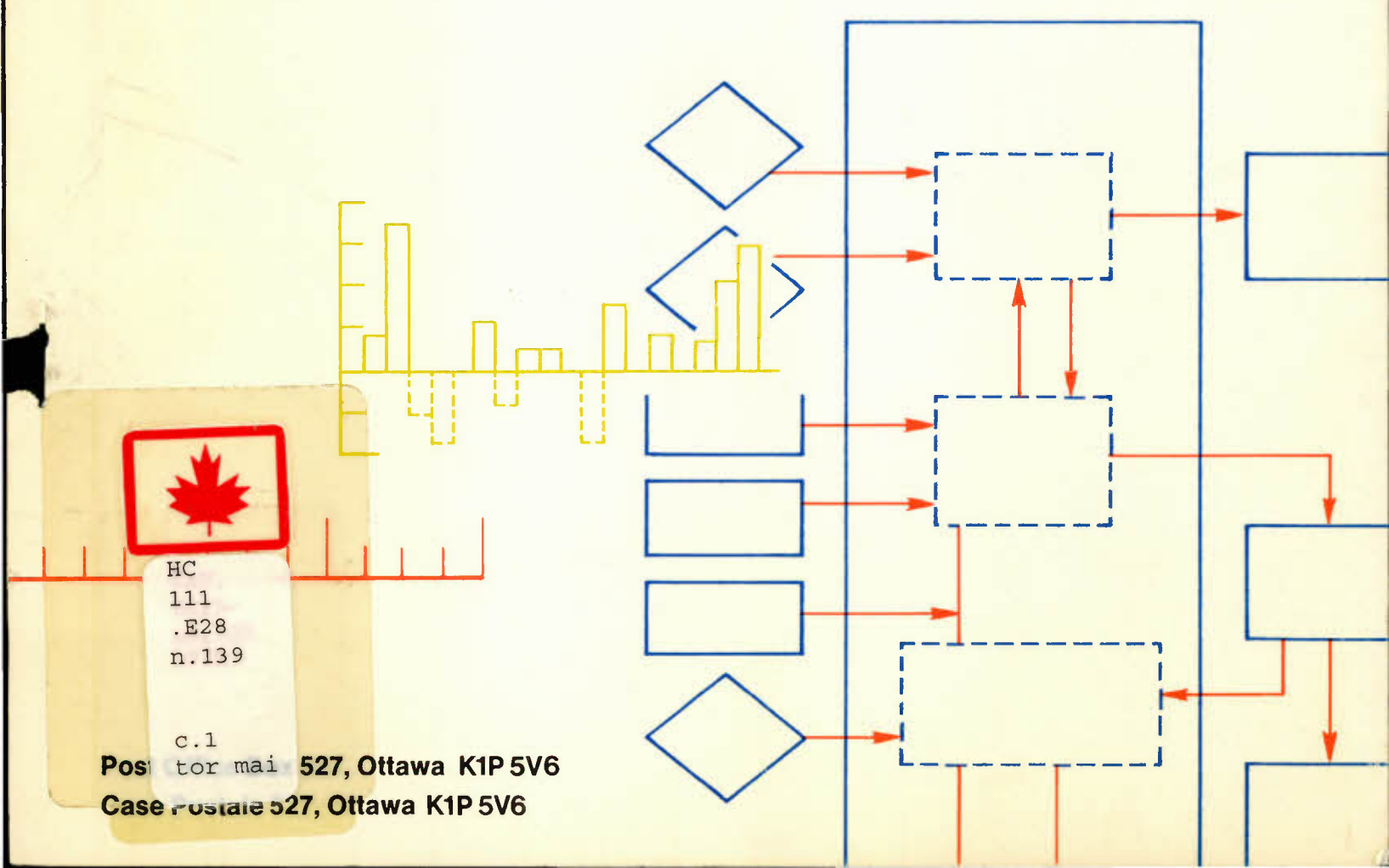

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DISCUSSION PAPER NO. 139

The Effect of Bargaining Structure on Negotiated Wage Settlements in Canada

by

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prepared for

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This Paper was prepared as part of the research program undertaken by the Centre for the Study of Inflation and Productivity (CSIP). It has benefited from comments by independent outside experts who were asked to referee an earlier version of the manuscript, and is being made available in limited numbers and in the language of preparation.

These results are the personal responsibility of the author, and, as such, have not been endorsed by the members of the Economic Council of Canada.

Centre for the Study of Inflation and Productivity
Economic Council of Canada

November 1979

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RÉSUMÉ

On peut dire que le processus des négociations collectives au Canada se caractérise, du point de vue du champ d'action des groupements qui y participent, par une très grande décentralisation. La très grande majorité des unités de négociation sont petites (moins de 500 employés) et négocient pour un seul établissement. Même les unités plus considérables (500 employés ou plus) ont tendance à avoir un champ d'action assez restreint. C'est ainsi qu'en 1973, 47,2 % des 515 unités comprises dans notre échantillon négociaient seulement pour l'établissement auquel chacune était rattachée, alors que 35,5 % d'entre elles négociaient avec un employeur possédant plusieurs établissements, 7,8 % avec plusieurs employeurs à la fois et 9,5 % avec une association d'employeurs. Même si notre échantillon ne nous permet pas de déterminer l'incidence des négociations menées par plusieurs syndicats à la fois, des études antérieures indiquent que cette forme de négociation est plutôt inhabituelle au Canada.

Les spécialistes reconnaissent depuis longtemps que la structure des négociations collectives joue un rôle de toute première importance dans les relations industrielles. Elle peut, par exemple, influer sur les attitudes et le comportement des syndicats et des patrons, ainsi que sur les stratégies de négociation et sur leurs résultats. Elle peut même modifier de façon permanente les rapports de force entre les syndicats et les employeurs. Nous nous proposons ici d'analyser le rôle de la structure des négociations à l'égard du pouvoir relatif des unités de négociation, notamment du point de vue des accords salariaux.

Bien qu'en théorie, les liens entre la structure des négociations et les hausses salariales soient plutôt faibles, la plupart des experts en relation industrielles croient que la création d'unités plus vastes (qui pourraient négocier avec plusieurs employeurs ou avec une association d'employeurs, par exemple) aurait probablement pour résultat d'accroître le pouvoir des syndicats et d'aboutir à des salaires plus élevés. Il existe cependant peu de données empiriques permettant de confirmer une telle interprétation. En fait, les liens entre le type d'unité de négociation et le pouvoir des syndicats sont probablement très complexes, puisqu'ils peuvent varier en fonction de la nature du marché des entreprises concernées, ainsi que de la structure des organismes représentant les travailleurs et les employeurs.

Les résultats de notre analyse, qui portent sur les années 1966 à 1975, confirment l'hypothèse suivant laquelle la structure des négociations influe sur les hausses salariales, bien que cette influence ne paraisse pas très marquée. De façon générale, les unités qui négocient avec un employeur possédant plusieurs établissements tendent à obtenir les augmentations de salaires les plus faibles, tandis que ce sont celles qui négocient avec une association d'employeurs dont les opérations sont concentrées sur les marchés locaux qui réussissent à négocier les hausses salariales les plus élevées. L'écart entre les deux est de l'ordre d'un point de pourcentage. Les augmentations obtenues par les unités négociant au niveau de l'entreprise

individuelle ou avec plusieurs employeurs à la fois se situent entre ces deux extrêmes, bien qu'elles se rapprochent de celles qui sont accordées dans les négociations avec les associations d'employeurs.

Ces résultats indiquent, à notre avis, que les associations d'employeurs sont des groupements négociateurs assez faibles. Dans la mesure du possible, les employeurs possédant plusieurs établissements devraient négocier pour l'ensemble de leur entreprise s'ils veulent maximiser leur pouvoir de négociation. Pour leur part, les syndicats devraient insister sur la nécessité de créer des unités de négociation élargies, notamment pour traiter avec des associations patronales dont les membres écoulent leur production sur les marchés locaux.

Il faut toutefois faire preuve de prudence à l'égard de cette dernière conclusion. La création d'une association patronale locale a pu atténuer -- mais non pas forcément éliminer -- la faiblesse initiale des employeurs. Or, c'est précisément cette faiblesse qui a motivé la formation d'une telle unité de négociation. En outre, les résultats ne nous renseignent guère sur l'impact qu'aurait une association d'employeurs recouvrant toute une industrie, mais on peut supposer qu'une unité aussi vaste ne serait pas de nature à renforcer le pouvoir de négociation des syndicats.

SUMMARY

The structure of collective bargaining in Canada, defined in terms of the scope of the units engaged in negotiations, is highly decentralized. The vast majority of the negotiation units are small (containing fewer than 500 employees) and are engaged in plant-level bargaining. Even the large negotiation units (those containing 500 or more employees) tend to be relatively narrow in scope. In 1973, for example, 47.2 percent of the 515 major negotiation units in our sample bargained at the single-plant level, 35.5 percent at the single - (multi-plant) employer level, 7.8 percent at the multi-employer level and 9.5 percent at the employers' assocation level. Although there is insufficient information in the sample to determine the extent of multi-union bargaining, earlier studies indicate that such bargaining structures are relatively uncommon in Canada.

Industrial relations analysts have long recognized that the structure of collective bargaining plays a vital role in an industrial relations system. It can, for example, affect union and management attitudes and behaviour as well as bargaining strategies and outcomes. In the extreme, bargaining structure can permanently alter relative bargaining power between union and management. The purpose of this paper is to analyze the effect of bargaining struture on relative bargaining power. Its particular focus is the effect of the negotiation unit on negotiated wage settlements.

While the theoretical linkage between the structure of collective bargaining and negotiated wage settlements is relatively weak, most industrial relations analysts share the view that the creation of wider negotiation units (multi-employer, employers' association, etc.) is likely to increase union bargaining power and lead to higher wage settlements. There is, however, limited empirical evidence to support this position. In effect, the relationship between type of negotiation unit and union bargaining power is likely to be relatively complex, depending on factors such as the nature of the product market and the structure of the corporate and union organizations.

The results of the analysis in this paper covering the period 1966-75 support the hypothesis that bargaining structure has an effect on negotiated wage settlements, although the effect is not highly significant. In general, the employer-wide units in the sample tended to negotiate the lowest wage settlements, whereas employer association units operating in local product markets tended to negotiate the highest wage settlements. The differential was in the order of one percentage point. Wage settlements negotiated by plant-level and multi-employer units fell between the two extremes, but they were closer to the settlements negotiated by employer association units.

One interpretation of the results is that employers' associations are relatively weak bargaining institutions. Where possible, multi-plant employers should bargain as firm-wide units if they are to maximize their bargaining power. On the other hand, unions ought to press for the formation of wider negotiation units, particularly employer association units that operate in local product markets.

However, this latter interpretation requires a certain degree of caution. The formation of a local employers' association may have reduced, but not totally eliminated, the very weak initial bargaining position of the constituent employers which was the impetus for the creation of such a negotiation unit in the first place. Furthermore, the results have little to say about the bargaining impact of an industry-wide association of employers, but it is most likely that such extensive negotiation units would not enhance union bargaining power.

INTRODUCTION

There is wide-spread recognition that the structure of collective bargaining plays a vital role in an industrial relations system. It can have important implications for the aims, objectives and strategies of unions; it can affect industrial peace, wage structures, uniformity in working conditions and intrafirm labour relations; and it can alter relative bargaining power between unions and managements. In general, the bargaining process and the bargaining outcomes would likely be vastly different under different 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 purpose is to test the hypothesis that different bargaining structures have an effect on negotiated wage settlements in Canada.

According to Weber (1967, p. 11), any bargaining structure may be described by the "scope of the units of which it is comprised and the system of decision-making adopted by the parties on both sides of the bargaining table." In practice, however, given the complexities of the internal power organization,[1] the structure of collective bargaining is generally identified by the scope and character of the units comprising the bargaining system. The basic elements in this system are the bargaining (or election) units, which have exclusive bargaining rights for specified groups of employees. Although employers and Labour Relations Boards exert some influence over the scope of the bargaining units certified, these units are determined primarily by the unions or employees who take the initiative to propose the desired bargaining unit.[2]

However, the bargaining units merely constitute the building blocks for the negotiation units (the units that actually engage in collective bargaining). The actual negotiation framework that emerges is shaped by market factors, the nature of bargaining issues, corporate and union structures and power tactics in the bargaining process.[3] Nonetheless, the scope and composition of the bargaining units influence and set limits on the actual negotiation units that emerge. In practice, the consolidation of bargaining units into larger negotiation units is achieved through the process of collective bargaining or through the manipulation of contract expiry dates.

The bargaining structure is normally identified according to the type (characteristics of employees) and area (jurisdiction of employer unit) of the emerging negotiation unit.[4] Employees in a negotiation unit can be organized into either craft or industrial-type unions, but there can also be alliances between craft unions, industrial unions or even craft and industrial unions. On the employers side, the area or jurisdiction can be as limited as a department of a single plant or as extensive as a nation-wide association of employers covering an entire industry. In between the area of jurisdiction can cover a single plant, several plants of a single employer, a multi-plant employer, or several employers

organized into city or region-wide associations. Thus, the structure of collective bargaining can fall along a spectrum of negotiation units ranging from a simple system involving a craft (or industrial) local union and the manager of a single plant, to a complex system in which a multi-union organization (craft, industrial or both) bargains with an entire industry on a nation-wide scale.

However, the range of negotiation units is usually limited to four main categories: single-plant units; single (multi-plant) employer units; multi-employer units; and multi-union units.[5]

1. Single-plant unit: This unit is confined to the employees of a single plant. Only part of the plant's employees may be covered (i.e. a particular craft), and the employer may or may not operate other plants.

2. Single - (multi-plant) employer unit: This unit consists of employees in several (although not necessarily all) plants of a multi-plant employer.

3. Multi-employer unit: This unit consists of a group of employees involving more than one employer. The dimensions of the unit can be part of an industry or a region or it can be industry-wide. The multi-employer unit also involves some submergence of independence by individual employers. An association of employers emerges when the member firms enter into a formal arrangement and surrender considerable sovereignty in collective bargaining to the new entity. Employers' association units are generally regarded as distinct from multi-employer units.

4. Multi-union unit: In this unit a number of unions may jointly represent in negotiations the employees of a single plant, single employer or multi-employer unit.

The effect of centralization in the bargaining structure (the creation of wider negotiation units) on relative union bargaining power has been a major concern of industrial relations analysts. As early as 1951, H. Gregg Lewis (1951, p. 278) argued that the obvious approach to labour monopoly power was to limit the size of collective bargaining units and to make collusion among them unlawful. Weber (1963, p.250-151) 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, Northrup (1973) and Hildebrand (1972) have argued that, in the long run, wide bargaining units may enhance alread inflated union power. Ulman (1974) has similarly argued that centralized bargaining may be more inflation-prone, but he has also noted that a centralized system may be more amenable to official wage restraint policy than a decentalized system.

However, these conclusions (based on qualitative analysis) are not supported by the more quantitative studies 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 differentials 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. Nonetheless, although the methodology as well as the types of bargaining structures analyzed are different, both studies report the finding (qualified in the British case) 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.

Although the quantitative studies are based on wage levels rather than wage settlements, the empirical evidence nonetheless suggest that there is no systematic relationship between centralization in the bargaining structure and union bargaining power. The conflict between qualitative analysis and quantitative evidence is sufficiently sharp that additional empirical analysis involving wage change data would appear most appropriate. Undoubtedly, the availability of additional information on the wage effects of different bargaining structures would be most useful in assessing the relative returns to alternative policy combinations.

I. THE STRUCTURE OF COLLECTIVE BARGAINING IN CANADA

To a large extent the structure of collective bargaining is shaped by the characteristics of the bargaining units for it is these units that comprise the actual negotiation units. Although unions are the chief determinants of the bargaining units. Labour Relations Boards can nonetheless define the unit appropriate for collective bargaining as widely or as narrowly as they deem fit. Once certification has been requested, a Board has the option of: (a) rejecting the application on the grounds that the whole unit is inappropriate for collective bargaining; (b) accepting the proposed unit; or (c) redefining the proposed unit by the exclusion of some employees and/or the inclusion of other employees.

In general, the Labour Relations Boards have tended to favour the small plant-wide unit over the multi-plant or multi-employer units. The likely effect of this policy has been a highly decentralized bargaining structure. According to Woods (1973, p.362):

> It is not unreasonable to assume that units are smaller than they would have been, that they tend to be confined more to a single plant, and that probably more experience with regional, company-wide, and even industry-wide bargaining involving multi-employer units would have occurred, in the absence of the bias in the law.

Although the Labour Relations Boards may have a bias toward smaller bargaining units, they also have to operate under legislative restraints. For example, Woods (1973, p.117) points out that the federal and most provincial Boards must respect the special rights of craft groups (or groups exercising unique technical skills) to be certified as independent bargaining units. While there is universal provision for the certification of employer-wide bargaining units, there is no explicit provision for multi-employer units in the labour legislation of several provinces. Where provisions exist, the conditions under which multi-employer units may be certified are highly circumscribed. Nonetheless, no province prohibits the voluntary organization of multi-employer negotiation units without reference to the Labour Relations Board.

The formation of wider bargaining units (employer-wide or multi-employer) has also been made difficult by the limitation of authority of provincial Labour Relations Boards. Employer-wide and multi-employer units cannot be certified if the firm's plants or the constituent employers operate in several provinces unless they fall under federal jurisdiction. While such negotiation units may be formed voluntarily from the bargaining units certified in different provinces, the bargaining process may become extremely complicated. For example, if bargaining difficulties arise and conciliation (and eventually strike action) becomes necessary, the negotiation unit effectively becomes subject to as many laws as provinces in which it operates. Thus, it is not surprising that most multi-employer negotiation units are confined to a single provincial jurisdiction.

Some evidence of the decentralized nature of the bargaining structure in Canada can be gathered from data on collective bargaining agreements. While there was a total of 17,842 collective agreements (excluding construction) in existence in 1973[6], there were only approximately 800 major agreements covering more than 500 workers. These major agreements comprised roughly 4 percent of all collective agreements, but they encompassed 55 per cent of all unionized employees. Thus, in terms of the size distribution of collective agreements, the bargaining structure in Canada is highly decentralized. In terms of employee coverage, however, there is a considerable degree of centralization.

Although there is insufficient information to permit a more detailed analysis of all 17,842 collective agreements in existence in 1973, some additional insights into the bargaining structure can be obtained from a subsample of major collective agreements in the private sector in effect on December 31, 1973. The size distribution of 603 private sector settlements covering 500 or more employees is presented in Table I. Only 37 settlements in our sample (6.1 percent of the total) covered 5,000 or more employees and only 66 settlements (11 percent of the total) covered 2,000 to 4,999 employees. Nonetheless, these latter two categories accounted for 57.4 percent of all employees covered in our sample. In the context of all collective agreements in existence in 1973, these 103 agreements covering 2,000 or more employees represented 0.6 per cent of all agreements, but 8.6 percent of all unionized employees covered.

The extent of decentralization in the bargaining structure can be further ascertained from the type of units (single-plant, single-(multi-plant) employer, multi-employer and employers' association) that negotiated the wage settlements in our sample of major agreements. The criterion used to distinguish between the first two negotiation unit types (single-plant and single-employer) is geographic. Settlements negotiated at a single location by a single firm (either single-plant or multi-plant) were classified into single-plant negotiation units, whereas settlements negotiated at several locations by a single, multi-plant firm were classified into single-employer negotiation units. Settlements were assumed to have been negotiated by multi-employer negotiation units if they were listed under several firm names, or if they belonged to the same specific SIC group and had the same settlement and expiry dates. Associations of employers are explicitly identified in the description of the employers in the contract settlements.

Unfortunately, there is insufficient information to permit a classification of negotiation units by type of union organization. While such classification may have been instructive, all available information for earlier years suggests that multi-union bargaining was too infrequent for this limitation to be taken seriously.[7] However, there are other potentially serious limitations in our classification of negotiation units.

For example, we cannot identify settlements negotiated through a master agreement but supplemented locally. Neither can we determine whether the firm in the single-plant negotiation unit is a single-plant firm or a multi-plant (vertically integrated) firm. Nonetheless, our typology of major negotation units is likely to be accurate for the majority of settlements in the sample.

TABLE I

NUMBER AND DISTRIBUTION OF MAJOR COLLECTIVE AGREEMENTS AND EMPLOYEES COVERED BY SIZE OF NEGOTIATION UNIT, 1973

Size of Negotiation Units	Number of Agreements	Percent of Agreements	Number of Employees Covered	Percent of all Employees Covered
500-999 Employees	375	62.2	242,000	25.8
1000-1999 Employees	125	20.7	157,996	16.8
2000-4999 Employees	66	11.0	182,475	19.4
5000 or more Employees	37	6.1	356,405	38.0
Total	603	100.0	938,876	100.0

Source: Major Collective agreements compiled by Canada Department of Labour.

The categorization of all 603 major collective agreements in our sample that were in effect in 1973 by type of negotiation unit is presented in Table II. The single-plant negotiation unit is dominant, representing 51.3 percent of these collective agreements. Single-employer units negotiated 33.3 percent of the collective agreements in our sample, whereas multi-employer units and employers' associations were responsible for the remaining 6.6 and 8.8 percent, respectively. Thus the dominance of the single-plant negotiation unit again suggests that the structure of collective bargaining in Canada is considerably decentralized. However, the distribution of employees covered leaves a somewhat different impression. Viewed from this perspective, the bargaining structure in Canada is dominated by the single-employer negotiation unit.[8]

Finally, the industrial distribution of major negotiation units in existence in 1973 is given in Table III. In general, the resources and manufacturing industries are dominated by the single-plant bargaining structure. Transportation and utilities, as well as trade and finance, rely heavily on the single-employer negotiation units, whereas the service industries rely fairly uniformly on all four types of negotiation units.

Multi-employer and employers' association bargaining is not the dominant form of bargaining in any industry, but it is fairly common in several industries, especially transportation and utilities, trade and finance, and services.

TABLE II

NUMBER AND DISTRIBUTION OF MAJOR COLLECTIVE AGREEMENTS AND EMPLOYEES COVERED BY TYPE OF NEGOTIATION UNIT, 1973

Type of Negotiation Unit	Collective Agreements		Employees Covered	
	Number of Agreements	Percent of Agreements	Number of Employees	Percent of Employees
Single-Plant	309	51.3	335,460	35.7
Single-Employer	201	33.3	449.561	47.9
Multi-Employer	40	6.6	39.140	4.2
Employer Association	53	8.8	114,715	12.2
Total	603	100.0	938,876	100.0

Source: Collective agreements compiled by Canada Department of Labour.

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TABLE III

PERCENTAGE DISTRIBUTION OF SAMPLE OF 603 PRIVATE SECTOR COLLECTIVE AGREEMENTS IN EFFECT IN 1973 BY NEGOTIATION UNIT AND MAJOR INDUSTRY

Major Industry	Negotation Unit					Total Agreements
	Single-Plant	Single-Employer	Multi-Employer	Employer Assoc.	Total	
Resources	74.1	12.1	8.6	5.2	100	58
Manufacturing	63.3	23.9	6.8	6.0	100	385
Transportation & Utilities	11.9	72.3	1.0	14.8	100	101
Trade and Finance	9.6	61.9	9.6	18.9	100	42
Services	35.4	17.6	23.5	23.5	100	17

Source: Collective agreements compiled by Canada Department of Labour.

II. THE RELATION BETWEEN BARGAINING STRUCTURE AND BARGAINING POWER: AN APPRAISAL

There is no universally accepted theory linking bargaining power with different types of bargaining structure. However, industrial relations analysts have examined some of the effects that specific bargaining structures are likely to exert on relative bargaining power under different labour and product market conditions and corporate and union structures. Livernash (1963, p. 18) argues that bargaining structure can affect bargaining power in two general ways. First, it can alter the relative ability of the company and the union to win a strike, and, second, it can alter the willingness of the company to make concessions.

The relative ability of union and management to win a strike depends on each party's capacity to inflict real or expected costs on the other party in the course of the bargaining process. According to Weber (1967, pp. 20-21) one of the critical factors that defines such capacity involves some measure of "whipsawing" by either union or employer. Thus, structure has its greatest impact on increasing a company's ability to take a strike when it restricts the scope of the strike to only a fraction of the company's operations. The smaller the fraction of total sales and output affected, the longer the strike that the company can sustain and the more likely that the settlement will be on its terms.[9] On the other hand, a bargaining structure that cuts off a company's production while its competitors operate unhampered is most disadvantageous to the employer. Thus, it is to be expected that each party will attempt to mould the negotiation unit in such a way as to maximize its own power position in the bargaining process.

The willingness of a company to make concessions will depend partially on the bargaining structure in relation to the competitive dimensions of the labour and product markets. A structure that ensures uniform concessions by all employers in a specific product market reduces the employer's costs of conceding to union demands relative to the costs of taking a strike. Thus, unions increase their bargaining strength when they can establish a bargaining structure that effectively removes labour costs from competition.

The type of bargaining structure that effectively eliminates price competition on the basis of labour costs will vary, depending on the competitiveness of the product market and the nature of the union organization. For example, in oligopoly product markets in which there is a strong tradition of pattern-bargaining single-employer negotiation units may be effective in establishing uniform wage adjustments. By contrast, in highly competititve product markets characterized by many small employers, taking wages out of competition may require multi-employer or association bargaining. On the other hand, if a significant fraction of the industry is unorganized, wage uniformity may be impossible to achieve regardless of the structure of bargaining.

The effect of bargaining structure on relative bargaining power is analysed in more detail in the following sub-sections.[10] While bargaining structure impinges on many aspects of labour market behaviour, our analysis is limited to the impact of bargaining structure on negotiated wage settlements.

Relative Power and the Single-Plant Unit

The power implications of the single-plant negotiation unit depend on whether the plant belongs to a single or multi-plant firm. Livernash (1963, p.25) argues that a small, single-plant firm negotiating with a large national union is normally in a weak bargaining position. Such a firm, by virtue of its position in the product market and national union organization, can easily be forced into pattern (or even pattern-plus) settlements from which it does not have the bargaining power to escape.

However, single-plant negotiation units are not totally without bargaining advantages. Weber (1967, p.21) notes that the union's desire and ability to engage in whipsawing tactics to enforce wage patterns are sharply curtailed when its jurisdiction includes a large number of small, single-plant employers. Administratively, it would be easier to enforce similar wage adjustments through some system of association bargaining.

Moreover, negotiations at the single-plant level offer maximum flexibility if the national union engages in decentralized decision-making. While a highly centralized national union with strong pattern proclivities may be unwilling or unable to make exceptions of economically weaker firms, local unions, much closer to the scene and more directly affected by the individual bargains, may be willing to depart from the established pattern.[11] Thus, where the union is decentralized and the patterns loose in character, small, single-plant firms may be able to preserve some degree of bargaining power.

The union's bargaining position is drastically weakened when the plant with which it negotiates is a member of a multi-plant firm characterised by: (a) many, geographically dispersed, plants; (b) a homogeneous commodity produced on a non-integrated basis; and (c) plant bargaining by different unions with different contract expiry dates. If the above conditions prevail, a multi-plant firm can whipsaw the union by transferring production among plants. Thus, if production is not integrated, the employer can blunt the effects of a strike in one plant by increasing production in the remaining plants, providing there is excess capacity. Even if production cannot be increased in the remaining plants in the short-run, the multi-plant employer may still have the economic resources to withstand a lengthy strike in an individual plant.

However, management's strong bargaining position is likely to disappear where the multi-plant firm is engaged in vertically integrated production. Here the relative advantage shifts to the individual plant unions,

for by halting production in any one plant the union may bring production in the entire firm to a standstill.[12] Moreover, if labour costs in the striking plant are a relatively small fraction of the total operating costs of the firm, management may not be prepared to accept a long and costly strike. Thus, it is only logical that a multi-plant firm with a vertically integrated production process should attempt to extricate itself from the single-plant negotiation unit.

Relative Power and the Single Employer Unit

A multi-plant employer with a vertically integrated production process may try to limit union bargaining power by integrating all his plants into a single negotiation unit. However, employer-wide bargaining may not necessarily enhance employer bargaining power. In highly concentrated industries a well-organized union can employ whipsaw tactics to force employers in the industry to accept high and uniform wage increases.

On the other hand, Ulman (1974, p.103) and Livernash (1963, p.25) argue that employer-wide bargaining need not confer a power advantage to either the union or management. Although unions may behave aggressively when bargaining in employer-wide negotiation units, management is also likely to adopt an extremely aggressive bargaining posture. Moreover, if firms in the industry have different cost structures, the union may be restrained in its whipsawing tactics. Rather, it may be forced into the role of a wage discriminator in order to prevent the loss of a substantial number of jobs. Also, if a significant fraction of the industry is unorganized, the national union may be forced to restrain its wage demands. If it does not, the union may suffer a significant reduction in its membership as industry output shifts to the lower-cost non-union sector. These considerations set some limits on the union's potential bargaining power in employer-wide negotiation units.

Where a large firm plays a very dominant role in the industry employer-wide bargaining may prove disadvantageous to the union. Indeed, a large dominant firm with vast economic power may prefer to bargain alone. Independent action frees the firm of the constraints that might otherwise have been imposed on it by weaker firms under multi-employer or association bargaining. If the firm feels secure in its dominant market position, it may bargain very aggressively, especially if the industry demand for the product is elastic. Moreover, if the firm is a large multinational corporation, it may well use its internationally based operations to whipsaw the union into submission.[13] This may be of particular importance in Canadian labour relations, given the large proportion of foreign-owned corporations in Canada.

Relative Power and the Multi-Employer Unit

Independent employers bargaining with a centralized union may well feel the full force of union monopoly power. As a defense against pattern-type bargaining employers may be forced to bargain through a multi-employer structure. Thus, while each employer acting independently would have to operate in a labour market dominated by a centralized union, an association of employers, or even several employers bargaining jointly, may be able to take advantage of a monopsonistic labour market.

In effect, union monopoly power would be challenged by the formation of a labour monopsony in which the employers in the multi-employer structure are the dominant buyers of the unionized labour services. The bargaining situation dissolves into that of a bilaterial monopoly in which neither party has all the power.[14] The wage outcome of the bilateral monopoly market structure is likely to be a compromise between the outcomes that would have existed in the event of a monopoly on only one side of the labour market. Although the final wage settlement is theoretically indeterminate, it will depend on the relative bargaining power of the union and the association of employers.

In local product markets, which are relatively easy for the union to keep fully organized, employers' associations are likely to be weak bargaining institutions. The main problem is that employers may break ranks under the pressure of a strike. This is a weakness which stems mainly from the fact that different employers have different cost structures, and thus divergent interests. Ulman (1974, p. 107) argues that since wages are standardized in an employers' association, a given percentage increase in wages translates itself into a higher percentage increase in unit labour costs in firms that are more labour intensive. Thus, firms with a higher proportion of labour to capital may be determined to resist union wage demands, whereas firms with a lower proportion of labour to capital may find that the cost of a strike is unacceptably high.

Moreover, an employers' association can alter the relative costs of a strike to the individual employers. For example, because product market shares are unlikely to change when all employers in the association are on strike, the cost of the strike to each employer is reduced. However, association bargaining can also reduce the gains from taking a strike since a strike will not alter the relative wages paid by the member firms.

The above considerations imply that employers' associations in local product markets are likely to be very unstable and weak.[15] When a strike occurs the lower labour-cost firms may break ranks, being prepared to pay whatever standardized rate is eventually negotiated. Thus,

although employers' associations are basically defensive mechanisms, they are unlikely to pass the test in an environment characterized by standardized wages and an inelastic product market. As Livernash (1963, p.26) argues, if the unions can organize all the employers, association bargaining in local product markets may well provide unions with their maximum bargaining power.

On the other hand, association bargaining in national product markets presents the union with certain difficulties. In particular the union's bargaining position is weakened because it is unlikely to be able to maintain complete organization of the product market. Moreover, the presence of nonunion competition may force the association to bargain more aggressively if its members are to survive the outside competition. Even the individual members are more likely to realize that their interests coincide with the collective and refuse to break ranks.

The prospect of increasednonunion competition in a national product market is likely to restrain union wage policy, particularly if it is concerned with employment and union membership. An aggressive union wage policy may well force the association members to set product prices that are higher than desirable from the point of view of encouraging non-union competition. In the long run the union may find itself bargaining with a shrinking association.

Summary

To summarize, none of the major bargaining structures (single-plant, employer-wide and multi-employer negotiation units) analyzed above confer an obvious power advantage to either the employer or the union in all product markets and under all corporate and union structures. However, given specific product markets and corporate and union structures, different types of negotiation units will clearly have an effect on relative bargaining power. Union bargaining power is most deficient when the union bargains in single-plant negotiation units with a multi-plant firm in which all geographically dispersed plants are engaged independently in the production of a homogenous product. The union is also at a bargaining disadvantage when it negotiates with large corporations in employer-wide negotiation units in highly differentiated product markets, or with employers' assocations operating in national product markets.

Single-plant negotiation units offer little protection to a multi-plant employer with a vertically integrated production process. Management bargaining power is also curtailed when the negotiation unit is company-wide and the product market is sufficiently undifferentiated so that the national union can employ whipsawing tactics very effectively. Finally, employers are probably in their weakest bargaining postion when they negotiate through employers' associations in local product markets. However, there are exceptions to even these relatively straight-forward cases.

III. METHODOLOGY: AN OVERVIEW

The wage equations used to analyze the effects of bargaining structure on negotiated wage settlements are in the spirit of the Phillips curve model. The main point of departure in this study from conventional Phillips curve analysis is the use of micro-data from individual Canadian wage contracts. Apart from the fact that micro-data allows one to explore the influence of institutions on wages more easily, there are several technical advantages in using micro contract data rather than aggregate time-series as a medium of statistical wage analysis. One of the major advantages is that micro analysis may yield substantially greater precision in the estimate of the parameters than estimates based on the aggregate data. Another advantage is that micro wage change analysis can take into account a number of institutional features in the collective bargaining system that are difficult to model in aggregate time-series analysis. Failure to take these features into account can seriously bias the aggregate time-series results.

One of the most problematical institutional features is that unions typically sign multi-year contracts with "locked-in" or deferred increments.[16] Since deferred increments are determined at the time the contract is signed, explanatory variables must be appropriately dated so that when the deferred increment occurs (say two years after the contract is signed) the explanatory variables correctly reflect economic conditions at the time of the contract signing, and not economic conditions at the time when the deferred increment becomes effective. In addition, because the bargaining calendar is not uniformly spread over all months but has a very pronounced bunching pattern (a point recognized by Johnson and Timbrell (1973) as well as Ashenfelter and Pencavel (1975), one must correctly specify a set of weights to reflect the bargaining calendar if aggregate time series data is being employed. Moreover, one should take account of the front-end loading features of these contracts. The omission or failure to specify correctly these highly variable institutional features can seriously bias the estimates of the Phillips curve and produce substantial instability in the parameter estimates.[17]

The basic price expectations-price catch-up Phillips curve model used to determine the effect of negotiation unit on wage settlements is described formally in Appendix I.[18] However, it may be useful to summarize the model briefly. The dependent variable is the total percentage change in base wage rates over the life of the negotiated contract expressed at an annual (compound) rate. The base wage rate concept excludes fringe benefits, not because they are unimportant but because they are inherently difficult to measure.

The annualized percentage change in base wage rates is assumed to depend on the following factors: labour market conditions; expectations

of future price inflation; catch-up for uncompensated past price inflation; and wage spillovers from other negotiated wage settlements. As in conventional Phillips curve wage change analysis, wage settlements are expected to be higher when labour markets are tight. This is the essential outcome as employers bid for relatively scarce labour resources. Also, unions will attempt to protect their real income by building into negotiated wage settlements the expected increase in consumer prices over the contract period. Thus, when future price expectations are high, negotiated wage settlements are expected to be high as well.

The final two explanatory variables, price catch-up and spill-over effects, are not normally included in conventional Phillips curve analysis. The former variable stems from the assumption that price inflation is not generally correctly anticipated, and, even if it is, price expectations are not necessarily incorporated fully into current wage settlements. Since anticipated price inflation is marked by uncertainty, employers may be reluctant to commit themselves to full compensation for such expectations. If price expectations prove exaggerated, the employer would have to contend with an unnecessarily high total wage bill.

Nonetheless, if price inflation was underestimated or not fully compensated, labour would suffer unexpected real wage losses during the course of the negotiated contract. It would be naive to assume that during the ensuing contract negotiations labour would bargain as if this loss did not occur (i.e. accept the loss in perpetuity) and make demands only in terms of expected inflation during the next contract period. At the negotiation table, bygones are not bygones but important issues for future negotiations. Thus, whenever compensation for future price inflation falls short of actual inflation in the previous contract (i.e. there is price catch-up), current wage settlements are expected to be higher to compensate for this short-fall.

Formal and informal pattern bargaining are common institutional features in the wage negotiation process. Our model assumes that wage settlements in current wage negotiations are patterned after other wage settlements that have been recently concluded. Thus, higher preceding wage settlements in related industries and regions should be reflected in higher settlements in currently negotiated wage contracts.

IV. A SUMMARY OF THE EMPIRICAL RESULTS

The basic findings reported in this section are based on 2,338 wage agreements containing 200 or more employees signed during the 1966-75 time period.[19] All construction wage settlements and all contracts with cost-of-living clauses are excluded from our sample of wage settlements. The former group is exluded because its late introduction into the data base may bias the results,[20] and the latter group is excluded because the diversity of COLA clauses (e.g. different formulas, caps, triggers, etc.) create severe data problems. Also, for technical reasons, all negotiaton units which signed only one contract during the 1966-75 period had to be excluded from our analysis. A limited number of agreements were likewise excluded because of incomplete information.

In our sample of 2,338 wage agreements, 1,217 agreements (52.1 percent) negotiated by single-plant negotiation units, 811 (34.7 percent) by single - (multi-plant) employer negotiation units, 110 (4.7 percent) by multi-employer units and 200 (8.5 percent) by employers' associations.[21] Thus, combining the relevant negotiation units, 310 settlements (13.2 percent) were negotiated through a centralized bargaining structure and 2,028 (86.8 percent) through a decentralized structure. It should be noted, however, that most of the employers' associations in our sample operated in local product markets.

The impact of bargaining structure on wage settlements can be determined in one of two ways. First, our price expectations-price catch-up Phillips curve wage change model can be augmented to include a set of intercept-shift dummy variables to represent different types of negotiation units. In this approach the structural parameters underlying the wage change are invariant with respect to different types of negotiation units. Thus, differences in wage changes among these negotiation units are constant (depending only on the intercepts) and independent of variations in economic conditions.

As an alternative, separate wage change equations can be estimated for each type of negotation unit to ascertain whether the same structural parameters apply for wage settlements achieved through different bargaining structures. This latter approach has an advantage over the intercept-shift dummy variable approach in that it does not constrain the estimated parameters to be equal in wage settlements involving different bargaining structures. Thus, such a procedure will not conceal interesting differences in wage determination under different bargaining structures. Moreover, it may yield better estimates of the effects of different bargaining structures under variable economic conditions.

However, the theoretical model has little to say about the expected roles of the structural parameters under different bargaining structures. Moreover, even within a given type of negotiation unit there is little homogeneity in terms of product market structure and unions and corporate

organization. Each unique system may give rise to different estimated structural parameters. For example, labour market conditions may play a more important role in wage settlements under employers' association bargaining in national than in local product markets. Similarly, employers' associations operating in local product markets may be more willing to compensate for expected price inflation than associations in national markets, especially if the national association does not represent all employers in the industry.

In the absence of *a priori* expectations about the nature of the estimated structural parameters underlying wage change under different types of negotiation units, we will employ both the intercept-shift and the structural equation approaches in our analysis. The detailed regression results, as well as the more technical analysis, are presented in Appendix II. The present section is confined to a summary of the more pertinent findings. Since spillover variables are not common in wage change equations, we will initially discuss the findings that are derived from equations estimated without this particular variable.

At the outset, it should be noted that the estimated wage change equation containing the more traditional explanatory variables (price expectations, price catch-up and labour market conditions) gives strong support to our price expectations-price catch-up wage change model. All the estimated coefficients are highly significant and correctly signed.

Uncompensated past price inflation is more important in determining wage settlements than expectations of future price inflation. That is, employers appear less resistant (or unions more aggressive) when bargaining over short falls in compensation for actual past price inflation than when bargaining over future price expectations. Although our findings show that labour market conditions play the expected role in the wage change process, this role is not overwhelming when compared with that of prices. In all, the Canadian Phillips curve appears to have a relatively gentle slope.

The estimated dummy variable coefficients shed some light on whether structural changes in collective bargaining systems can further the objective of wage stabilization policy. Our results show that negotiated wage settlements tend to be higher under a centralized bargaining structure (multi-employer and employers' association negotiation units) than under a decentralized structure (employer-wide and single-plant negotiation units). In the period under analysis, centralized units are shown to have negotiated wage settlements (that is, wage increases) that were almost .70 percentage points higher than those negotiated by decentralized units. These results confirm Ulman's (1974) suspicions that wider negotiation units (multi-employer, employers' associations, etc.) might make a

greater overall contribution to the wage inflation process. However, we must weigh against this finding the possibility that a centralized bargaining structure may be more amenable to official wage restraint (incomes) policies.

Our findings become more complex when we disaggregate the centralized and decentralized negotiation structures into their respective components. The results show that employer-wide negotiation units produce smaller wage settlements than either highly decentralized (plant-level negotiation units) or highly centralized (multi-employer or employers' association units) bargaining structures. In effect, employer-wide bargaining produces wage settlements that are almost one-half percentage point lower than plant-wide and multi-employer bargaining and almost one percentage point lower than employers' association bargaining.

Clearly, whatever the reasons, unions appear unable to whipsaw employer-wide negotiation units into conceding higher wage settlements. One explanation may be that high concentration in many industries makes whipsawing tactics relatively ineffective. Also, although unions in employer-wide negotiation units may behave aggressively when bargaining over wages, they may face equally aggressive and competititve managements. What is perhaps more surprising is that plant-level bargaining places considerable restraint on union bargaining power, whereas employers' association bargaining in local product markets allows unions to exercise maximum bargaining power.

Our basic finding that wage settlements under centralized bargaining (especially employers' associations) tend to be higher than under decentralized bargaining is confirmed by the structural estimates. Assuming a 10 per cent constant, fully anticipated inflation rate and a vacancy rate of 1.36 (its average value for the 1966-75 period), our estimated equations suggest that centralized bargaining units would negotiate 14.3 percent wage settlements whereas decentralized units would negotiate only 13.4 per cent wage settlements. Our estimates for the individual bargaining structures show that the employers' association, employer-wide and plant-level negotiation units would have negotiated wage settlements of 15.9, 13.3 and 13.7 percent, respectively, under the above price inflation and labour market conditions. These estimates do not include the multi-employer structure because the estimated parameters for this structural equation may be unreliable due to a small sample size.

There are significant differences in the structural parameters underlying the estimated structural equations, although, unfortunately, we cannot offer a theory to explain these differences. For example, labour market conditions play a significantly greater role in determining wage settlements in centralized bargaining systems. Another distinguishing feature of the centralized system is its tendency to

rely almost exclusively on price catch-up when compensating for price inflation. In decentralized systems, but particularly in employer-wide negotiation units, there is greater emphasis on wage compensation for anticipated price inflation. Nonetheless, a considerably higher proportion of constant, fully anticipated price inflation is built into wage settlements negotiated through employers' associations than through either employer-wide or plant-wide negotiation units.

Perhaps the most interesting feature of the structural equations is the effect of wage spillovers on wage change. Whereas pattern-type bargaining plays an extremely important role in wage settlements negotiated at the single plant level, it is of little consequence in wage settlements negotiated by employers' associations. The obvious reason is that the formation of the employers' association effectively eliminates the reference group from which wage spillovers generally emanate. Thus, if the purpose of the employers' association is to eliminate pattern-type bargaining, it has clearly been highly successful. However, this development has not necessarily increased the bargaining power of the employers.

Additionally, we tested the hypothesis that the size of the negotiation unit, regardless of its type, has an effect on negotiated wage settlements. There is no evidence from either the intercept-shift or the structural estimated equations that larger negotiation units (500 or more employees) negotiate significantly different wage settlements than smaller units. Even when the collective agreements are differentiated by type of negotiation unit, the number of employees covered does not appear to affect wage settlements significantly. Thus, Labour Relations Boards need not fear that the certification of larger bargaining units may well require a shift towards more centralized bargaining structures.

Although different sized negotiation units provide roughly similar wage settlements, the elements that comprise these settlements are not necessarily the same. Smaller negotiation units (under 500 employees) tend to compensate more fully for price inflation and rely more heavily on price catch-up. On the other hand, wage settlements in smaller negotiation units are not dependent on labour market conditions as are settlements in larger units. Instead, smaller negotiation units appear to rely more on wage spillovers in determing wage settlements. It is thus likely that smaller negotiation units are forced into wage settlement patterns established by the larger negotiation units.

V. SUMMARY AND CONCLUSIONS

The structure of collective bargaining in Canada, defined by the size and scope of the negotiation units directly involved in bargaining, is highly decentralized. The vast majority of negotiation units contain fewer than 500 employees. Even the major negotiation units (those covering 500 or more workers) are relatively small, consisting on the average of fewer than 1,600 employees. Structurally, the single-plant negotiation unit is dominant, accounting for 51.3 percent of the negotiation units in our sample of 603 major negotiation units in 1973. Single-employer units accounted for 33.3 per cent of all major negotiation units, whereas multi-employer and employers' association units accounted for the remaining 6.6 and 8.8 per cent, respectively. However, most of these latter centralized units operated only in local product markets.

While industrial relations analysts are generally confident that bargaining structures have an effect on relative bargaining power, the theoretical arguments are inconclusive and generally confined to specific cases involving particular product markets and corporate and union structures. However, the focus of these theoretical models is the ability to inflict economic costs on one's opponent in the bargaining process. In a decentralized structure this often involves the use of whipsawing tactics to force the employer (or union) into accepting pattern-type settlements. In multi-employer negotiation units, bargaining power additionally depends on the effective manipulation of the monopsonistic labour markets created by coordinated bargaining among several employer units.

Our findings, based on 2,338 negotiated wage contracts in the private sector for the period 1966-75, lend support to the hypothesis that the bargaining structure has had an effect on negotiated wage settlements, although the effect was not very significant. In general, employer-wide units negotiated the lowest wage settlements, whereas employers' association units operating in local product markets tended to negotiate the highest wage settlements. However, the differential was probably in the order of one percentage point. Hendricks (1975) likewise found that wage levels negotiated by local employer associations tended to be the highest, but he also found that industry-wide negotiation units tended to have the lowest wage levels. Our results however, have little to say about such comprehensive negotiation units since they are virtually nonexistent in Canada.

While our results suggest that local employers' associations are relatively weak bargaining institutions, there may be alternative explanations for the high wage settlements negotiated by such units.[22] For example, local employers' associations may have been created in areas where the employers' bargaining position was extremely weak. That is, the formation of an employers' association may have reduced,

but not totally eliminated, the very weak initial bargaining position of the constituent employers.

The latter theory, however, does not explain why other (stronger) employer groups have not sought to improve their bargaining position by negotiating through local associations. If such negotiation units are inherently weak (as our ad hoc theory and empirical findings suggest), it is not surprising that employers have been relatively reluctant to bargain through local employers' associations, even where the certification of such units is permissible. Although employers may be less reluctant to form industry-wide negotiation units, there are serious jurisdictional constraints on the formation of such units. Whereas employers in an industry typically operate in several provinces, the jurisdiction of provincial Labour Relations Boards is restricted by provincial boundaries. As Finn (1975) notes, a necessary condition for the restructuring of the Canadian bargaining system may be the restructuring of Canadian labour law.

However, industries that fall under the jurisdiction of the federal Labour Relations Board are not subject to the same jurisdictional constraints. Thus, the appropriate negotiation unit in rail transportation, air transportation, grain handling, etc., may well be industry-wide. An industry-wide negotiation unit would likely stabilize industrial relations in these key industries. It would probably eliminate the unequal bargaining power that is generally associated with highly integrated production processes, and it would also reduce the incidence of highly disruptive (sequential) strikes. Even if it is not feasible to certify such industry-wide bargaining units, it may still be possible to achieve effective industry-wide bargaining through the coordination of contract expiry dates. However, it is most unlikely that unions would voluntarily accept such limitations to their bargaining power.

Shifting the emphasis from plant-level to employer-wide bargaining should have a stabilizing effect on wage settlements, but the certification of single-employer negotiation units runs into similar, if less severe, jurisdictional restraints as the certification of multi-employer units. Unions and management are, of course, free to restructure the negotiation unit, providing their preferences correspond. Even if the opposing parties are not agreed on the appropriate negotiation unit, it may still be possible for either the union or management to force through employer-wide or multi-employer bargaining by manipulating contract expiry dates of the constituent units.

However, the circumstances under which wide negotiation units can confer benefits on either union or management are probably limited. Brown and Terry (1978, p. 130) argue that employers are liable to see advantages in bargaining alliances in industries characterized by perishable products, unusual ease of entry, labour having a large contribution to value added, and geographical propinquity. In such

industries (i.e. textiles, clothing, hotel services, dairy, printing, transportation) employers may attempt to change a competitive labour market into a monopsonistic structure by the formation of multi-employer negotiation units.

The major threat to voluntary multi-employer bargaining is the emergence of firms which are large enough to operate in monopsonistic labour markets without the limitations imposed by employers' associations. Thus employers' association bargaining is unlikely to develop in industries that are highly concentrated, nor is it likely to survive in industries that become dominated by one or more large firms. Instead, if the industrial structure becomes more concentrated, there is likely to be a shift towards employer-wide bargaining. There is considerable evidence that this is the trend in the structure of collective bargaining in Britain.

On the other hand, although employer-wide negotiation units tend to negotiate smaller wage settlements than other types of negotiation units, there are also limits on the extent to which collective bargaining can be restructured in this direction. Many of the firms engaged in plant-level bargaining are single-plant firms. Thus centralization can be achieved mainly through multi-employer bargaining, preferably on an industry-wide scale. Given the jurisdictional complexities, this type of negotiation unit is unlikely to become the dominant reality in the foreseeable future.

Our findings also suggest that the wage effects of the bargaining structure depend on the type rather than the size of negotiation units. Since it is generally conceded that there are too many small, independent negotiation units in Canada, it may be possible to amalgamate some of these units without unduly affecting wage stability. Moreover, Labour Relations Boards may still play a constructive role, even within the existing legal framework, by certifying negotiation units that are as inclusive of a firm's employees as possible.

The suggestion that Labour Relations Boards could play a more constructive role in rationalizing the bargaining structure in Canada is not new. For example, Herman (1966), in his study for the Canada Department of Labour, urged the provincial Boards to adopt a more flexible approach in certifying appropriate bargaining units. However, the focus of these earlier discussions was the effect of bargaining structure on industrial conflict rather than negotiated wage settlements.

While the effect of centralization on industrial conflict has not been conclusively demonstrated, there is a fairly strong conviction that wider bargaining units could minimize such conflict, or at the very least eliminate frustrating and highly disruptive sequential strikes in key industrial sectors. Our findings have little to say

about the effect of bargaining structure on industrial conflict. Nonetheless, they do imply that there need not be any serious conflict between the objectives of a minimization of industrial conflict and the attainment of wage stability. That is if centralized bargaining can bring about a reduction in industrial conflict, it need not do so at the cost of significantly higher wage settlements.

APPENDIX I

SPECIFICATION OF THE BASIC PRICE EXPECTATIONS-PRICE CATCH-UP PHILLIPS CURVE MODEL

Negotiated wage settlements are assumed to be determined by the following factors: excess labour demand (VRHW), price expectations (P^e), price catch-up ($\dot{p}^{cu}$) and wage spillovers (S).

$$(1) \quad \dot{W} = C_0 + \gamma VRHW + \alpha \dot{P}^e + \beta \dot{P}^{cu} + \delta S$$

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 usual proxy for excess labour demand is the aggregate unemployment rate, but 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 labour force, the composition of unemployed workers and revisions in the Canadian Unemployment Insurance Act, may account for the demise of the unemployment rate variable in wage determination studies. In any case, the unemployment rate fails to pass a .05 significance test, and even displays a perverse relationship, in Canadian wage equations estimated for recent years.[23]

In terms of the U-V 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 side.[24] Since the vacancy rate has been found to be a more consistent proxy for excess labour demand, we employ a help-wanted index normalized by the size of the labour force (VRHW) as an indicator of labour market conditions. To capture labour market conditions within the specific geographic region in which the individual micro wage settlement was negotiated, the help-wanted index has been regionalized and normalized by the appropriate regional labour force series.[25] However, the national help-wanted index is utilized for inter-regional contracts. Finally, all vancancy rates are specified at their average values for the three months preceding the month in which the wage contract was settled.

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.[26] Using this auto-regressive equation, we can generate values of future price expectations for contracts of any given duration.

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 and/or a mechanism for dealing with (inflationary) uncertainty in a world of long-run relationships between labour and the firm,[27] although 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 4-5 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 negotiations, 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.

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

where $\dot{P}^{a}_{t-1}$: actual percentage change in the C.P.I. over the previous contract (at an annual rate)

ℓ_{t-1} : length of previous contract

$\dot{P}^{e}_{t-1}$: 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

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.

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 (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 ith wage settlement can originate only from preceding settlements in the specific industry and region to which the ith bargaining unit belongs.[28] All past settlements are constrained to carry equal weight, and thus the spillover variable is the simple average of preceding wage settlements in the specific industry-region reference group.[29] In estimating our wage equations, successive past settlements (in reverse chronological order) were added to the spillover variable until the standard error of estimate for the regression commenced to increase.

APPENDIX IA

CONSTRUCTION OF THE EXPECTED RATE OF INFLATION

The construction of the unobservable price expectations variable ($\dot{P}^e$) is based on the assumption that the rate of inflation can be replaced by a distributed lag of its previous values. It is further assumed that agents use knowledge of this relationsip to forecast, efficiently and consistently, future rates of inflation. It is the mean of these forecasts of future inflation which is taken into consideration during contract negotiations. The following second-order Almon polynomial equation is used to generate the sequence of L future quarterly inflation rates ${}_{t+L}\dot{P}^e_t$ where L is the number of quarters in a given contract.

$$\dot{P}_t = \underset{(.81)}{.0015} + \underset{(1.84)}{.2174}\dot{P}_{t-1} + \underset{(3.28)}{.1917}\dot{P}_{t-2} + \underset{(6.87)}{.1656}\dot{P}_{t-3} + \underset{(3.63)}{.1391}\dot{P}_{t-4}$$

$$+ \underset{(2.00)}{.1121}\dot{P}_{t-5} + \underset{(1.36)}{.0847}\dot{P}_{t-6} + \underset{(1.03)}{.0569}\dot{P}_{t-7} + \underset{(.83)}{.0287}\dot{P}_{t-8}$$

$$\bar{R}^2 = .52 \qquad \text{S.E.E.} = .0064 \qquad 1964Q1\text{-}1975Q3$$

Since our wage equations are expressed in annual percentages, the following computation is made:

$$\dot{P}^e = \left| \prod_{i=1}^{L} (1 + {}_{t+i}\dot{P}^e_t) \right|^{\frac{4}{L}} - 1.0,$$

where the component, quarterly, projections of future inflation are described by the equation

$${}_{t+L}\dot{P}^e_t = \sum_{i=10}^{L-2} b_i \, ({}_{t+L-1-i}\dot{P}^e_t) + \sum_{i=L-1}^{7} b_i \, (\dot{P}_{t+L-1-i})$$

and $b_0 = 0.2174$, $b_1 = 0.1917$, etc.

APPENDIX II

EMPIRICAL RESULTS

The estimated price expectations - price catch-up wage change equations reported in this section are based on 2,338 private sector wage settlements negotiated during the 1966-75 time period. Table IV presents the wage change equations in which the type of negotiation unit is identified by an intercept-shift dummy variable. Since spillover variables are not common in wage change equations, we introduce the spillover variable in a step-wise manner. This procedure will highlight any interactions that may exist between the spillover variable and the more traditional determinants of wage change.

The first equation in Table IV, containing only the more "traditional" wage change explanatory variables, gives strong statistical support for our price expecations-price catch-up wage change model. Both estimated price coefficients are highly signigicant 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 .571 versus .371). Under a constant fully anticipated inflation rate, the combined ex ante and ex post compensation for inflation (the sum of the two price coefficients minus their cross-product) is 73 percent. That is less 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 slope.

The addition of an intercept-shift dummy variable to represent all wage contracts negotiated through centralized bargaining (employers' associations and multi-employer negotiation units) produces only marginal changes in estimated price and labour market coefficients and the goodness-of-fit. The estimated D_4 coefficient in equation 2 is positive and significant, implying that wage settlements in centralized negotiation units tend to be almost .69 percentage points higher than in decentralized (plant-wide and employer-wide) negotiation units.

The wage effects of the employers' association, multi-employer and single-employer negotiation units relative to the single-plant negotiation unit are shown in equation 3. The estimated coefficient for D_1 (employers' association units) is positive and significant, for D_2 (multi-employer units) negative but insignificant and for D_3 (employer-wide units) negative and significant. Thus, employers' association negotiation units tend to be most inflation-prone, producing wage settlements that are almost .82 percentage points higher

TABLE IV

RESULTS OF THE WAGE SETTLEMENT REGRESSIONS WITH AN INTERCEPT-SHIFT DUMMARY VARIABLE SPECIFICATION FOR TYPE OF NEGOTIATION UNIT

(t-values in parentheses)

Explanatory Variables	Equations					
	1	2	3	4	5	6
Constant	3.387	3.232	3.298	1.815	1.655	1.797
	(9.02)	(8.51)	(8.62)	(2.38)	(2.54)	(2.73)
Price Expectations ($\dot{P}^e$)	.371	.365	.347	.259	.253	.213
	(6.92)	(6.81)	(6.43)	(3.23)	(3.10)	(2.55)
Price Catch-up ($\dot{P}^{cu}$)	.571	.569	.568	.697	.697	.692
	(18.44)	(18.47)	(18.63)	(14.34)	(13.86)	(13.99)
Labour Market (VRHW)	2.024	2.089	2.229	3.276	3.353	3.679
	(5.15)	(5.31)	(5.62)	(5.13)	(5.15)	(5.51)
Spillovers (S)				.412	.415	.420
				(15.05)	(15.69)	(14.62)
Employers' Associations (D_1)			.816			.608
			(2.51)			(1.13)
Multi-Employer (D_2)			-.062			-.630
			(.15)			(.90)
Single(multi-plant) Employer (D_3)			-.477			-1.101
			(2.46)			(3.35)
Centralized Structure (D_4)		.689			.597	
		(2.65)			(1.40)	
S.E.E.	4.259	4.254	4.247	4.078	4.077	4.067
$\bar{R}^2$	.428	.429	.431	.475	.476	.478

[a] The omitted category in equations 2 and 4 is the decentralized(single-plant and single-employer) negotiation unit. In equations 3 and 4 it is the single-plant negotiation unit.

than settlements in plant-wide and multi-employer units and almost 1.30 percentage points higher than settlements in employer-wide negotiation units. Whereas single(multi-plant) employer negotiation units confer greatest bargaining power on employers, employers' association negotiation units confer greatest bargaining power on unions.

The introduction of the wage spillover variable produces a substantial improvement in the goodness-of-fit. The estimated spillover coefficient in equation 4 is highly significant and implies that in excess of 40 percent of the average increase in past wage settlements spills over into current wage negotiations. Although the price coefficients are affected by the introduction of the wage spillover variable, the order of compensation remains unchanged. The total compensation for constant, fully anticipated price inflation rises to 78 percent. Somewhat surprisingly, the labour market effect on wage change is also strengthened by the introduction of wage relativities.

The wage spillover variable also has an effect on the estimated coefficients of the intercept-shift dummy variables representing type of negotiation unit. As equations 5 and 6 show, centralized bargaining, but particularly employers' associations bargaining, is no longer a relatively more inflationary form of bargaining. The estimated coefficients on D_1 and D_4 are still positive but insignificant. On the other hand, the coefficient on the single-employer dummy variable increases in size and takes on a higher t-score. The set of estimates incorporating wage spillover effects implies that settlements negotiated through employer-wide units are about 1.10 percentage points lower than settlements negotiated through any other bargaining structure.

The structural equations presented in Table V provide some insights into the effects of different negotiation units on the parameters that determine wage change. The multi-employer structural equations are not presented because the estimated parameters may be unreliable due to the small sample size. Price catch-up is the dominant form of wage compensation for price inflation in settlements negotiated through centralized bargaining structures, whereas both price elements play a role in settlements negotiated through decentralized structures. Employees negotiating through employers' associations receive compensation for almost 96 percent of constant, fully anticipated inflation while employees negotiating through employer-wide and plant-wide units receive compensation for only 74 and 75 percent, respectively, of such inflation.

TABLE V

RESULTS OF THE STRUCTURAL WAGE CHANGE REGRESSING FOR WAGE SETTLEMENTS NEGOTIATED UNDER DIFFERENT BARGAINING STRUCTURES

(t-values in parentheses)

Equation	Constant	$\dot{P}^e$	$\dot{P}^{cu}$	VRHW	S	S.E.E.	$\bar{R}^2$	n
Centralized Structure[a]	3.166 (.33)	-.185 (1.20)	.631 (10.36)	5.894 (5.49)		4.035	.526	310
Decentralized Structure[b]	3.743 (9.22)	.429 (7.53)	.564 (16.40)	1.578 (3.76)		4.267	.418	2028
Employers' Associations	.284 (.26)	-.255 (1.86)	.957 (12.45)	4.707 (3.96)		3.531	.637	200
Single-Employer Units	3.910 (7.00)	.626 (6.38)	.290 (4.45)	1.527 (2.49)		4.042	.394	811
Single-Plant Units	2.485 (4.28)	.194 (2.66)	.695 (17.77)	2.712 (4.59)		4.323	.453	1217
Centralized Structure[a]	-3.470 (1.86)	-.699 (2.55)	.598 (6.82)	10.370 (4.93)	.388 (5.89)	3.861	.566	310
Decentralized Structure[b]	2.588 (3.74)	.365 (4.38)	.730 (12.80)	2.327 (3.44)	.416 (13.69)	4.091	.465	2028
Employers' Associations	- .053 (.04)	-.296 (2.03)	.956 (11.09)	5.050 (3.86)	.054 (.77)	3.526	.638	200
Single-Employer Units	2.895 (3.60)	.535 (3.89)	.293 (3.43)	2.605 (2.91)	.300 (6.27)	3.950	.421	811
Single-Plant Units	- .008 (.01)	.036 (.30)	1.019 (13.13)	4.149 (3.81)	.509 (14.23)	4.065	.517	1217

[a] The centralized structure comprises employers' association and multi-employer negotiation units.

[b] The decentralized structure comprises single-plant and single (multi-plant) employer negotiation units.

These differences in compensation for price inflation are reinforced by differences in labour market effects. The estimated labour market coefficient in the employers' association equation is almost twice that in the plant-wide equation and almost triple that in the employer-wide equation. Thus, wage settlements produced by employers' association negotiation units are considerably more sensitive to changes in prices and labour market conditions than those produced by other negotiation units. For example, if fully anticipated price inflation increased from 5 to 10 percent (the vacancy rate remaining unchanged at 1.36 percent, its average value for the 1966-75 period), wage settlements under employers' association, employer-wide and plant-level bargaining would rise by 4.78, 3.64 and 3.87 percentage points, respectively. If the vacancy rate increased (prices remaining constant), the increases in wage settlements would be smaller but the ordering of these increases would be unchanged.

The introduction of the wage spillover variable into the structural wage change equations produces several changes in our results. First, the performance of the centralized and employers' associations structural equations is no longer acceptable. The estimated price expectation coefficients are perverse and significant. Second, compensation for constant, fully anticipated price inflation in plant-wide bargaining becomes primarily ex post and sharply higher. Finally, the labour market effects are strengthened, particularly in plant-wide negotiation units. The spillover effects are not uniform. While they are absent in wage settlements negotiated through employers' associations, they are particularly strong in settlements negotiated by plant-wide units. This suggests that plant-wide negotiation units may be especially vulnerable to wage pattern-setting practices. On the other hand, the formation of an employers' association effectively eliminates the reference group of firms from which spillover may emanate. Thus, the main effect of an employers' association is to eliminate the practice of pattern-type bargaining.

Although it is fairly obvious that wage equations in Table V have different structures, we nonetheless subjected the centralized and decentralized equations (with the spillover variable), as well as the employers' association, employer-wide and plant-level equations, to parameter homogeneity tests. As expected, a standard F-test reveals that the equations in each set are structurally different. The calculated and critical F-values are 4.70 and 2.21, respectively, for the centralized and decentralized equations; and 12.31 and 2.21, respectively, for the three sub-equations taken jointly.

In Table VI we use an intercept-shift dummy variable specification to test the hypothesis that the size of the bargaining unit is an additional determinant of wage settlements. However, there is no

evidence that larger negotiation units negotiate significantly different wage settlements than smaller units. The estimated coefficients on the negotiation unit size dummy variable in the equations with and without wage spillovers remain insignificant even when separate wage change equations are estimated by type of negotiation unit. Thus, it is not the size but the type of negotiation unit that has a bearing on negotiated wage settlements.

Nonetheless, the structural elements of the negotiated wage settlements differentiated by employee size are remarkably different. Table VII shows that smaller negotiation units (under 500 employees) provide higher overall compensation for price inflation and place more emphasis on price catch-up. On the other hand, wage settlements negotiated by smaller units are not signficiantly affected by labour market conditions. The estimated labour market coefficient is very small and highly insignificant. By contrast, wage settlements in larger negotiation units are determined to a greater extent by labour market conditions and to a lesser extent by price inflation and the constant term. However, the settlements implied by the first three structural equations are not markedly different under normal price and labour market conditions. In fact, if the vacancy rate was 1.36 percent and constant, fully anticipated price inflation 5 percent, wage settlements in the smallest and largest negotiation units would be only .1 percentage points apart.

Although most of the estimated coefficients are affected when wage spillovers are introduced into the wage equations, the general pattern remains intact. However, wage spillovers are more important determinants of wage change in smaller than larger negotiation units. More than 50 percent of preceding wage settlements spill over into wage settlements in negotiation units with fewer than 500 employees as compared to 34 percent in units with over 1,000 employees. These results imply that demand management policies to control wage inflation through changes in labour market conditions operate only on relatively larger negotiation units. Settlements in smaller negotiation units respond to labour market conditions only insofar as these conditions affect wage settlements from which spillovers emanate.

The three structural equations incorporating the spillover variable were subjected to parameter homogeneity tests. A standard F-test reveals that the estimated equations taken jointly are structurally different. The calculated and critical F - values are 4.37 and 2.21, respectively. However, taken in pairs, not all of the possible sets of equations display strong structural differences.

TABLE VI

RESULTS OF THE WAGE CHANGE REGRESSIONS WITH AN INTERCEPT-SHIFT DUMMY VARIABLE SPECIFICATION FOR EMPLOYEE SIZE OF NEGOTIATION UNIT[a]

(t-values in parentheses)

Explanatory Variable	Total		Single-Plant		Single-Employer		Employers' Association	
	1	2	1	2	1	2	1	2
Constant	3.527	1.995	2.645	.662	3.793	2.862	.442	.054
	(8.13)	(2.71)	(4.24)	(.50)	(5.91)	(3.15)	(.32)	(.03)
$\dot{p}^e$	.367	.254	.187	.029	.625	.532	-.246	-.287
	(6.85)	(3.16)	(2.55)	(.25)	(6.38)	(3.88)	(1.79)	(1.96)
$\dot{p}^{cu}$	.569	.693	.694	1.008	.284	.286	.957	.956
	(18.43)	(14.3)	(17.82)	(13.25)	(4.37)	(3.37)	(12.33)	(10.95)
VRHW	1.984	3.230	2.669	3.904	1.568	2.623	4.601	4.962
	(4.97)	(4.96)	(4.49)	(3.56)	(2.54)	(2.92)	(3.78)	(3.69)
S	-	.412	-	.501	-	.298	-	.055
		(15.06)		(13.90)		(6.25)		((.78)
D_1	.114	.270	.032	-.308	.723	.897	.297	.361
	(.53)	(.78)	(.11)	(.57)	(1.96)	(1.74)	(.40)	(.45)
D_2	-.418	-.699	-.667	-1.037	-.279	-.510	-.271	-.245
	(1.79)	(1.83)	(1.71)	(1.42)	(.82)	(1.06)	(.39)	(.33)
SEE	4.256	4.074	4.321	4.066	4.029	3.937	3.541	3.536
$\bar{R}^2$	.429	.477	.455	.517	.398	.425	.635	.636
n	2,338	2,338	1,217	1,217	811	811	200	200

[a]The intercept-shift dummy variable D_1 signifies negotiation units with 500-999 employees while D_2 signifies negotiation units with 1,000 or more employees. The omitted category is negotiation units with fewer than 500 employees.

TABLE VII

RESULTS OF THE STRUCTURAL WAGE CHANGE REGRESSIONS FOR NEGOTIATION UNITS DIFFERENTIATED BY EMPLOYEE SIZE

(t-values in parentheses)

	Number of Employees in Negotiation Unit					
Independent Variable	0-499	500-999	1000 or more	0-499	500-999	1000 or more
Constant	5.207 (6.78)	2.174 (3.79)	2.737 (4.79)	4.710 (3.17)	.231 (.24)	1.346 (1.57)
$\dot{p}^e$	.450 (5.41)	.207 (2.30)	.481 (4.84)	.488 (3.76)	.002 (.02)	.300 (2.08)
$\dot{p}^{cu}$	.708 (12.09)	.491 (11.31)	.441 (8.01)	1.077 (8.40)	.571 (9.57)	.444 (6.26)
VRHW	.175 (.25)	3.809 (5.95)	2.407 (3.74)	- .195 (.15)	5.787 (5.60)	3.960 (4.07)
S				.503 (10.34)	.360 (7.70)	.338 (8.27)
S.E.E.	5.101	3.909	3.135	4.836	3.790	2.977
$\bar{R}^2$	.367	.447	.470	.431	.481	.522
n	898	828	612	898	828	612

For example, the equations for the two largest negotiation units are only marginally different, with the calculated F - value estimated at 2.99. Thus, the observed structual differences must be attributed largely to the existence of smaller negotiation units.

FOOTNOTES

[1]Chamberlain (1961, pp.3-4) defines the internal power organization as the way in which the bargaining power of employees and employers is organized and exercised. Decision-making power in collective bargaining may follow different patterns, depending partly on the issues being negotiated. Such power may be retained by the rank and file union members and individual plant managers, or delegated totally or partially to some central authority in each organization.

[2]Some of the considerations unions take into account in proposing a bargaining unit are described in Herman (1966, pp. 3-4).

[3]The determinants of the structure of collective bargaining have been explored in many studies, including Chamberlain (1961), Weber (1967) and Livernash (1970).

[4]The identification of negotiation units by type and area is discussed in Chamberlain (1961).

[5]There is considerable disagreement in the literature as to the most representative categorization. For example, in the Canadian literature Herman (1966, p.3) uses the multi-union unit as a separate category shereas Woods (1973, p. 117) prefers the craft or technical unit as a distinct category. There exists, however, more detailed categorizations. For example, Livernash's (1970, pp. 241-2) list of the six most important negotiation unit systems includes: 1) single plant-industrial union; 2) single employer-industrial union; 3) multi-employer-industrial union; 4) company or plant-craft union; 5) multi-employer-craft union; and 6) multi-craft-single employer or multi-employer. An even more detailed categorization is given by Chamberlain (1951, pp. 161-3).

[6]See Statistics Canada, Corporation and Labour Union Return Act, Part II, Ottawa, 1973. These data exclude the construction industry.

[7]In the period 1953-66 multi-union bargaining was practiced in less than 10 percent of all major negotiation units. See Waisglass and Craig (1968, Table 1). Surprisingly, the most significant increase in multi-union bargaining during that period was in the single-plant structure. This may have reflected an attempt to coordinate bargaining by different craft and industrial unions in a plant. However, there was a downward trend in multi-union bargaining among multi-employer and employer association negotiation units.

Footnotes - cont'd

[8]The 1973 distribution of major collective agreements by type of negotiation unit was not dramatically dissimilar from the 1965 distribution reported by Waisglass and Craig (1968, Table 1), although the samples of collective agreements and the criteria for assigning negotiation units were not identical. However, the Waisglass and Craig distribution shows a higher proportion of single-employer units, a considerably higher proportion of employees covered by multi-employer negotiation units and a considerably lower proportion of employees covered by single-employer negotiation units.

[9]Although this hypothesis has not been tested, the prevailing theory is that employers generally win long strikes whereas workers generally win short strikes. See Livernash (1963, pp. 14-18).

[10]The ensuing arguments are taken largely from the major studies by Livernash (1963), Weber (1967) and Ulman (1974).

[11]Depending on the attitude of union members at the plant level, discrimination may take the form of pattern-plus or pattern-minus settlements. See Ulman (1974, p. 103).

[12]This is also true of individual craft unions, or even single key departments within a plant.

[13]While it is certainly possible for a multinational corporation to use foreign-based plants to whipsaw a union, Bomers and Peterson (1977, pp. 50-51) point out the practical limitations of this tactic. However, there seems to be less reluctance in North America to use internationally based corporations to whipsaw the union. See Craypo (1975).

[14]See the discussion in Marshall, Cartter and King (1976, p. 336).

[15]Another case of instability is the emergence of giant firms. If a firm believes itself sufficiently large so that its individual labour supply curve is upward sloping, it would prefer to take advantage of the monopsonistic labour market without the drawbacks of the association. Thus, with increased concentration employers' association bargaining is likely to become less common while employer-wide bargaining more common. See Brown and Terry (1978, p.130).

Footnotes - cont'd

[16]For example, during the 1955-68 period, the average contract length in Canadian manufacturing industries increased from 17.2 months to 28.9 months. For more complete details on contract length and other institutional features of the Canadian labour market, see Rowley and Wilton (1977).

[17]See Rowley and Wilton (1974).

[18]This is in effect the wage change model developed in Auld, Christofides, Swidinsky and Wilton (1979).

[19]This sample includes most of the major wage agreements analysed in Tables I to III as well as a number of smaller (200-499 employees) wage agreements that were compiled by the Canada Department of Labour.

[20]Information on construction industry wage agreements was compiled only in the last few years of our sample period.

[21]Had the 328 agreements with COLA clauses been included in our sample there would have been 1,439 agreements (54.0 percent) negotiated by single-plant negotiation units, 890 (33.4 percent) by single- (multi-plant) employer units, 113 (4.2 percent) by multi-employer units and 224 (8.4 percent) by employers' associations. Thus the distribution of the COLA agreements among the four types of bargaining structures is fairly consistent with the distribution of non-COLA agreements. However, it is conceivable that the exclusion of contracts containing COLA clauses may have introduced an indeterminate bias into our results.

[22]Although it is tempting to attribute this result to the industrial distribution of employers' association negotiation units, there is little evidence to support such an argument. A relatively higher proportion of the agreements signed by employers' association units involved the trade, finance and service industries, where wage and salary increases during the period 1966-75 were 5-15 percentage points lower than in other industries. Thus the industrial distribution of the employers' association negotiation units would dictate lower rather than higher wage settlements in comparison with the settlements negotiated through alternative bargaining structures.

[23]See Kaliski (1972) revised Table 2.4.

Footnotes - cont'd

[24]See Green and Cousineau (1976).

[25]Five Broad economic regions were used: Atlantic, Quebec, Ontario, Prairies and B.C.

[26]This procedure is described in Appendix IA.

[27]For an extended discussion, see Christofides and Wilton (1978).

[28]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 the best results. The allocation of wage settlements into specific industry and region was, of necessity, rather arbitrary. A detailed description of the specific industry-regional reference groups is given in Auld, Christofides, Swidinsky and Wilton, (1979).

[29]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 t time polynomial). See Christofides, Swidinsky and Wilton (1978) for a more thorough discussion.

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