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Article abstract

The paper presents an adaptation of a Chamberlain-Kuhn costs of agreement-costs of disagreement model explaining strike incidence and duration as functions of economic factors. The emphasis is on testing this model, rather than «explaining» strike activity. The results indicate the economic model fails to explain strike incidence, but does better at explaining strike duration, given incidence.

The Determinants of Strike Activity
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The paper presents an adaptation of a Chamberlain-Kuhn costs of agreement-costs of disagreement model explaining strike incidence and duration as functions of economic factors. The emphasis is on testing this model, rather than «explaining» strike activity. The results indicate the economic model fails to explain strike incidence, but does better at explaining strike duration, given incidence.

Empirical studies of strike activity generally suffer from lack of a fully developed theoretical model justifying the selection of included variables. For example, Swidinsky — Vanderkamp (S-V) note (p. 466) that «the variables in our model are not derived from a systematic theory» but are a collection of hypotheses common in the literature. While such contributions are valuable, particularly when, as in the case of S-V, they use a better data base than previous studies, they do not provide information about competing theories of the causes of strikes. No attempt is made to refute any theoretical model; nothing is «at stake» in a methodological sense.

One recent study which does not suffer from this problem is Reder-Neumann (R-N). Based on a concept they term a «bargaining protocol», they derive expected signs for two variables, the intrayear coefficients of variation of inventories and shipments in the industry in question. Presumably, if the coefficients of these variables had not carried the expected signs with substantial student's t values in empirical estimation, R-N would have considered this as evidence refuting their model, i.e. something was «at stake». The current paper is a revised version of an earlier attempt to test a variant of a Chamberlain[1] costs of agreement — costs of disagree-

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1 See CHAMBERLAIN and CHAMBERLAIN and KUHN.

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ment (CA-CD) model, where at a referee's suggestion we have included R-N inventory and shipments variables. We consider that the paper makes several contributions. First, the attempt to test a theoretical model should be of interest. However, reaction to our earlier version by a number of readers indicates considerable skepticism that our theoretical model is complete enough to yield the unambiguous sign predictions required by our testing conventions. Persons who ascribe to their view will hopefully still find our empirical work of interest. Aside from S-V, who use micro data, and R-N, very few studies of strike activity in any country have used cross-section data,[2] and Canadian studies have concentrated an aggregate strike activity over time.[3] Further, we deal only with strike activity which is associated with contract renegotiation, rather than all strike activity, and have available data on expiring contracts.[4] Finally, «replicating» the R-N empirical work with Canadian data is of interest, particularly since we introduce their inventory and shipments variables together with a larger number of competing explanatory variables than used by R-N.

The next section presents the theoretical model we are attempting to test, followed by a section explaining our testing conventions. The empirical results are presented in the last section with a discussion of their implications, followed by a brief conclusion.

THE THEORETICAL MODEL

It is a tautology to suggest that a party will not agree to an opponent's position unless the CA $\leq$ CD. Since tautologies are non-refutable, we have attempted to specify both CA and CD in a limited manner. In particular, we make no use of «political» costs in our formulation. The notation used is defined below:

- i = an index indicating strike duration (i = 0 is a strike of zero duration, i.e. no strike).
- w = change in wage rate per hour, e.g. an increase of 60¢ per hour.
- E = subscript or superscript denoting employer.
- u = subscript or superscript denoting union.

2 See BURTON and KRIDER, SHOREY, McLEAN, CREIGH and MAKEHAM, MITCHELL, and PENCAVEL.

3 See VANDERKAMP, WALSH, COUSINEAU and LACROIX, SMITH, 1973 and 1976 and SWIDINSKY.

4 The work stoppage data are from Canada, Department of Labour, *Strikes and Lockouts in Canada,* and the contract expiry data are from the same Department's bargaining history tape. Cousineau and Lacroix have emphasized the importance of a variable measuring contract expirations in empirical work on strikes.

W = wage bill for persons in the bargaining unit (as viewed by the unit).

Π = profits, calculated in the normal manner as total revenue less total costs.

P = probability density function over i, $\mu P_i = 1$.

w_E = «initial, or prebargaining wage increase objective» (Swidinsky) of the employer. Defined more precisely as the smallest settlement viewed as feasible by the employer.

w_u = analogous concept for unions. The largest settlement viewed as feasible by the union.

C^E, C^u = functions of i giving the costs of strikes to employers and unions, respectively.

r_E, r_u = rates of time discount for employers and unions, respectively.

w'_E, w'_u = the largest wage increase the employer will grant without a strike, and the smallest wage increase the union will accept without a strike, respectively.

The four curves comprising the model are then defined as follows:

Costs of Disagreement for Employers (CD_E)

CD_E is defined as the expected costs of strikes, with the stochastic element arising from uncertainty regarding the occurrence and duration of a strike. The costs of a strike are assumed a deterministic function of strike duration.

$$CD_E = \sum_i p_i^E C_i^E \qquad (1)$$

The superscript on P denotes that this is a subjective expected probability distribution, the expectations being formulated by employers. Since the P_i^E distribution is a function of w, CD_E is also a function of w. It is assumed that longer strikes are more expensive than shorter strikes, and that the P^E distribution changes with w in such a manner that the mean expected duration of strikes decreases with increased w offered.

Costs of Disagreement for Unions (CD_u)

CD_u is again the expected costs of a strike, with the stochastic element arising from uncertainty regarding the occurrence and duration of the strike «necessary» to obtain a given w. The costs of a strike are assumed to be a deterministic, increasing function of strike duration.

$$CD_u = \sum_i p_i^u C_i^u \qquad (2)$$

Since the P_i^u distribution is a function of w, CD_u also depends on w. No assumption is made regarding symmetry between P_i^E and P_i^u (e.g. an employer may feel that the probability a w = .50 can be negotiated with a strike of 2 weeks is $P_2^E = 0.7$, while the union may assess P_2^u as greater or less than 0.7), but it is assumed that the P_i^u distribution is such that the mean expected duration of strike increases with w demanded.

Costs of Agreement for Employers (CA_E)

The costs of agreement are defined in an opportunity cost sense as the difference between the discounted present values of two future profit streams, one calculated using a given value of w, the other using what we have defined as w_E, the employer's «initial wage increase objective». Any upward movement from w_E represents some concession on the part of the employer, and CA_E represents the costs of that concession.

$$CA_E = \sum_{t=0}^{\infty} [\Pi_t(w_E) - \Pi_t(w)]/(1+r_E)^t \qquad (3)$$

It is assumed that the discounted present value of the profit stream associated with w_E is greater than that associated with any $w > w_E$, and that CA_E is an increasing function of w.

The generality of equation (3) allows the employer to incorporate estimates of his ability to pass on wage increases in the form of price increases, estimates of the price elasticity of demand for his product, and estimates of the possibility of substituting other factors of production for labour, into his computation of the costs of agreement.

Costs of Agreement for unions (CA_u)

The costs of agreement are defined in an opportunity cost sense as the discounted present value of the difference between two wage bill streams, one based on a given w and the other on the union's «initial wage increase objective», w_u. Any downward movement from w_u represents concession on the part of the union, and CA_u is the costs of that concession.

$$CA_u = \sum_{t=0}^{\infty} [W(w_u) - W(w)]/(1+r_u)^t \qquad (4)$$

It is assumed that the discounted present value of the wage bill stream associated with w_u is greater than that associated with any $w < w_u$, and that CA_E is a decreasing function of w.

We have arbitrarily defined W as the wage bill for all members of the bargaining unit, but the structure of the model would be unaffected if it were defined to apply to members only, or even to the average member (implying lack of union concern for the employment effect of wage increases).

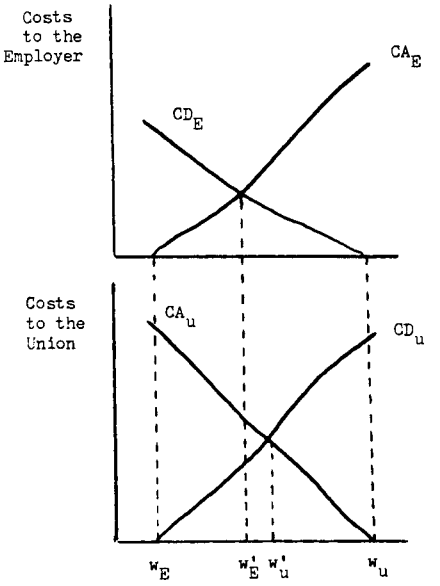
GRAPHICAL REPRESENTATION

The four cost curves previously defined can be represented as shown in Figure 1 (drawn on separate sets of axes for clarity) if one additional assumption is made. Previous assumptions and definitions guarantee that CA_E will intersect the w axis at w_E, and CA_u at w_u. Similarly CD_E will intersect the w axis at the smallest w for which P_O^E = unity, and CD_u at the largest w for which P_O^u = unity. Further, it is reasonable for the employer to assume that the smallest w for which P_O^E = unity is w_u, for if the union felt w_u was possible with certainty without a strike (a logical possibility from the employer's point of view), the probability of a strike would be positive for any $w < w_u$. However, nothing thus far presented assures that the employer knows the numerical value of w_u (or symmetrically, that the union knows w_E). Also, in a world where bargaining is characterized by bluffing and posturing, w_E and w_u need not represent initial offers and demands, or for that matter, any communicated offers and demands. Hence, it would be unrealistic to assume the parties know their opponent's true «initial wage objectives». We assume, however, that the parties are correct, on average, in estimating these points, and have drawn the curves in Figure 1 to represent this «average» case, with CD_E intersecting the w axis at w_u and CD_u at w_E.

Previous assumptions are sufficient to determine the first derivatives of the cost curves shown in Figure 1, but the second derivatives are indeterminate (treating w as continuous for ease of discussion). The intersection of CD_E and CA_E determines w_E^1 and CD_u and CA_u similarly determine w_u^1. If $w_u^1 > w_E^1$, there will be a strike. The model thus far presented therefore explains the incidence of strikes.

Figure 1

Cost of Agreement and Disagreement to the Employer and the Union



STRIKE DURATION

The length of a strike, given that one occurs, depends upon how fast the cost curves shift and how wide the pre-strike «zone of disagreement» (w'_u minus w'_E) was. We assume that the factors determining the CA curves were correctly estimated prior to the strike, so that no new information is received in the course of the strike which would cause these curves to shift. Similarly, we assume C_i^E and C_i^u were correctly estimated prior to the strike. Thus it is changes in P_i^E and P_i^u which cause the CD curves to shift, eventually eliminating the «zone of disagreement».

The manner in which this occurs is that after a strike has been in effect for k days, equation (1) becomes:

$$CD_E = \left(\sum_{i>k} P_i^E \; C_i^E\right) / \left(\sum_{i>k} P_i^E\right) \qquad (5)$$

In short, the employer's subjective probability that a given w can be negotiated without a strike, or with a strike of k days or less, becomes zero once a strike of k days has been experienced. Assuming this probability was non-zero before the strike, then the conditional probability of experiencing a strike of more than k days becomes greater than the prestrike $P^{E}_{i>k}$, raising CD_E for at least some w, possibly shifting w'_E to the right and thus inducing concession on the part of the employer.

Equation (5) implies that experiencing a strike of k days does not change the employer's subjective estimate of the *relative* probabilities of different durations greater than k days. This assumption simplifies the notation of equation (5), but it is not necessary to specify it in this strong form. In a similar manner, experiencing a strike of k days changes equation (2) to:

$$CD_u = (\Sigma P^u_i C^u_i)/(\Sigma_{i>k} p^u_i) \qquad (6)$$

Assuming that at least for some w, ΣP^u_i was non-zero, then the occurrence $i \leq k$
of the strike of k days duration will raise CD_u for this (these) w, possibly shifting w'_u to the left causing concession on the part of the union.

TESTING CONVENTIONS

There are a number of different measures of strike activity of potential interest: measures of incidence, size, duration and volume. From the preceding theory, a reduced form equation for any measure of strike activity can be derived, with explanatory variables representing the exogenous determinants of: the costs of agreement, costs of strikes, and initial wage increase objectives. We estimate these reduced form equations for two measures of strike activity: number of strikes (NSTR) and duration (DUR), measured as man-days lost divided by workers involved in strikes.

Our testing convention was to attempt to use exogenous variables for which relatively unambiguous signs could be specified a priori, run stepwise (stepdown) regressions of each measure of strike activity on these exogenous variables until all t values attained same minimum value (we report results for 1.0 and 1.5), and then count the proportion of coefficients which

had the hypothesized sign.[5] No rigid rules were adopted a priori, but if several variables were included with the expected sign and none with the wrong sign, we would have accepted this as strong support for the model. Conversely, if few variables were included, and if there were several wrong signs, we would consider this strong refutation of our model.

Since any factors which decrease the slopes of the CD curves, or increase the slopes of the CA curves, or increase the difference between w_u and w_E, will increase strike activity; our testing conventions require selection of exogenous variables which only affect one curve, or if they affect more than one curve, do so in such a manner that unambiguous sign expectations derive. The exogenous variables selected are listed below, with brief rationalizations of sign expectations.

W/VA = wage bill divided by value added, with a positive sign expected. An increase in W/VA will increase the slope of CA_E directly.

EX/SH = exports divided by total shipments, with a positive sign expected. We assume the ability to pass any cost increases though price increases is greater in domestic than foreign markets, causing an increase in EX/SH to increase the slope of CA_E.

ELAST = the elasticity of substitution, with a negative sign expected. A high value of ELAST will reduce CA_E, and if unions are concerned about the employment effect of wage gains, CA_u as well.

PCEST = percentage change in the number of establishments from 1971 to 1975, with a positive sign expected. We assume industries with declining numbers of establishments will be characterized by firms with short time horizons and hence high discount rates in equation (3). Such industries will have CA_E curves less steep than other industries.

ADV/S = advertising budget to sales ratio, with a positive sign expected. We assume much advertising is done in an attempt to induce brand loyalty among consumers. If effective, this reduces the costs of strikes to the employer, and hence the slope of CD_E.

NPWF = non-production workers as a proportion of total employees, with a positive sign expected. We assume non-production workers were primarily non-union, and could carry on production as «supervisory» personnel[6] in the event of a strike, reducing the slope of CD_E.

5 We use pooled cross-section time-series data for 17 two-digit manufacturing industries (all but Miscellaneous Manufacturing, with Textiles, Knitting Mills and Clothing combined into one category) covering the five years 1971-75. Two observations were dropped because there were no expiring agreements. An Appendix providing detailed variable definitions and data sources is available from the authors on request.

6 Non-production workers includes clerical personnel who are not necessarily «supervisory» but since the average annual earnings of non-production workers were substantially above those of production workers (Statistics Canada, 31-203) we felt the «supervisory» component dominated. The variable is obviously an imperfect proxy for the effect of interest.

DER = the ratio of debt to equity in the capitalization of firms within the industry, with a negative sign expected. The argument is that debt service requires a continuous cash flow which would be interrupted by a strike, leading a high value of DER to be associated with a steep CD_E.[7]

INV = the intra-year coefficient of variation of finished goods inventories, with a positive sign expected. The rationalization is given below.

SHIP = the intra-year coefficient of variation of shipments, with a negative sign expected. INV and SHIP are the key variables suggested by the theoretical approach of R-N. We interpret them slightly differently here, within our CA-CD approach. Large values of INV, given SHIP, indicate «substantial buffering of the output stream from shocks to the flow of inputs»,[8] reducing the slope of CD_E. Large values of SHIP, given INV, indicate «a greater premium on the timeliness of delivery»,[9] increasing the costs of strikes and the slope of CD_E[10].

URBAN = proportion of employees living in urban areas, with a positive sign expected. We assume alternative employment opportunities for workers on strike are greater in urban areas, reducing the slope of CD_u.

CNMF = the proportion of employees covered by collective agreements who are not union members, with a negative sign expected. The cost to the employer of agreeing to any w depends on the total number of persons covered by the contract, but the costs of disagreement to the union are generally borne disproportionately by the members. Thus a high CNMF can be viewed as a *ceteris paribus* increase in CD_u.

FEM = the proportion of production workers who were female, with a negative sign expected. Females have higher turnover rates than males, causing high values of FEM to be associated with high discount rates in equation (4), decreasing CA_u.

AGE = the proportion of employees who were 25-44 years of age, with a negative sign expected. We assumed most persons in this age group have dependents, mortgage and other periodic payments, and at least compared to older workers, limited savings. For the reasons noted above with respect to FEM, this increases CD_u.

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7 The variable was suggested by arguments in Healy, et. al., regarding reasons why Kaiser Steel broke away from the multiemployer bargaining unit in existence until October 26, 1959. A referee points out that the variable should have no effect if capital markets are perfect.

8 REDER-NEUMANN, p. 875.

9 *Ibid.*

10 To the extent that INV and SHIP represent opportunities for making up lost output from a strike by overtime employment before and after the strike, the sign expectations given are reinforced by effects on CD_u.

MF/F = married females as a proportion of total females, with a positive sign expected. We assumed most married females had working spouses, lowering CD_u.

EGTE9 = proportion of employees who had completed 9 or more years of formal schooling, with a negative sign expected. Assuming more educated workers are paid more, on average, then C^u is higher for them. It is widely believed that unions narrow intra-unit differentials e.g. by seeking dollar across-the-board increases instead of percentage increases, which implies some net increase in CD_u where EGTE9 is high.

(P + 1/P-1) = the profit/sales ratio led one year divided by the same concept lagged one year with a negative sign expected. We assume w_u is based in part on past profit rates, while w_E is based in part on (correct on average) forecasts of future profit rates. The difference between w_u and w_E should then be smaller when (P + 1/P-1) is large.

EQ/S = equity to sales ratio, with a positive sign expected. We assume unions consider the profit rate on sales (P/S) as an indication of ability to pay, while employers are more concerned about the profit rate on equity (P/EQ), since this variable more closely affects their position in capital markets. Forming the ratio, this reduces to the equity sales ratio, with the expectation that the difference between W_u and W_E will be larger when EQ/S is larger.

(PCE_I/PLE_M) = the year-over-year percentage change in averge hourly earnings in the industry divided by the same concept for manufacturing as a whole, used lagged one year, with a negative sign expected. Assuming employers base their wage comparisons on their competitors (industry average) while the union uses some broader reference group (such as all manufacturing), then for a given firm, f, (PCE_f/PCE_I) > PCE_f/PCE_M) if $PCE_I/PCE_M < 1$. This will cause W_u-W_E to be larger.

We also included several other variables for which no reasonably unambiguous sign expectation could be formulated, primarily to reduce the possibility of specification bias due to omitted variables. We do not consider our theoretical model «at stake» regarding the outcomes for these variables. In the interest of brevity, we do not discuss the manner in which our theoretical model suggests these variables are relevant, nor why sign expectations are ambiguous. These include:

MEMF = union membership as a proportion of total employment. S-V include this variable.

BIGEMP = the number of establishments with 200 or more employees, divided by total establishments in the industry. Our dependent

variables refer to agreements covering 200 or more workers, while many independent variables are calculated as industry averages.

URATE = The national average unemployment rate. While our pooled data cover only five years, there is a substantial literature dealing with cyclical variations in strike activity.

INFL = year-over-year percentage change in the all-items consumer price index. Again, the variable has been used in the previous strike literature.[11]

QUE, ONT, PRAI, BC = number of establishments in the region divided by total establishments in Canada. These variables deal in part with differences in provincial labour codes.

Finally we inserted the number of expiring agreements (NEXAG) into the NSTR equation. We expected this variable to have a strong positive influence, an expectation which was confirmed.

EMPIRICAL RESULTS

We ran stepwise regressions on the 26 independent variables (plus NEXAG in the strike incidence equation), dropping at each stage the variable with the smallest t value. We continued this process until all t values had an absolute value of 1.5 and greater, and report the resulting equations in Table 1. We also discuss (but do not report) the intermediate results when all t values had an absolute value of unity or greater.

There was one exception to this procedure as discussed above, INV and SHIP are only interpretable when they are both included in the equation. Hence, these variables were dropped only when they accounted for the two lowest absolute t values.

The NSTR equation in Table 1 contains 15 independent variables, including only 9 for which sign expectations were formulated. Of these, 5 have the expected sign and 4 the opposite sign. Interestingly, the two R-N variables have signs opposite to expectations.

Using a cutoff value of unity for t values in the stepdown procedure would have included 5 more variables: (P + 1/P-1), DER, EQ/S, INFL and MEMF. Sign expectations were realized for the 3 variables in this group for which expectations were formulated, making the «box score» at $t \geq 1.0$: expected sign 8, opposite sign 4.

11 See KAUFMAN.

The DUR equation in Table 1 was estimated only for the observations which had a non-zero number of strikes. The equation thus deals with the duration of strikes given the existence of strikes. The equation contains 14 variables, including 9 for which sign expectations were formulated. All but DER have the expected sign. If the $t \geq 1.0$ cutoff is used, two more variables, (PCE_I/PCE_M) and (P + 1/P-1) are included, both with expected signs. The «box score» for the DUR equation at $t \geq 1.0$ is thus: expected sign 11, opposite sign 1. The R-N variables drop out of the DUR equation.

Our interpretation of these results is that our model is refuted as an explanation of strike incidence, but cannot be refuted as an explanation of strike duration, given the evidence presented. Since our model deals solely with economic variables, excluding all consideration of intra-union political factors and factors relating to bargaining structure and bargaining procedures, one implication is that models incorporating such factors may be more useful in explaining strike incidence. On the other hand, our model seems to perform well in explaining strike duration.

Leaving aside the question of testing the model, the results in Table 1 have some interesting implications. First, we get signs on INV and SHIP opposite to those obtained by R-N, or predicted by theory. We performed some experiments with simple models including only INV, SHIP, INFL, URATE, a relative wage measure as used by R-N, and in some cases our regional variables to represent political factors. The R-N variables generally obtained substantial t values, with signs opposite to expectations. This indicates that the difference between the R-N results and ours is not due to collinearity between INV and SHIP and other included variables in our model.

There are other explanations for the difference. First, there appears to be a typographical error in the R-N equation defining INV (p. 875), so our calculated measure may not be the same as theirs, though our measure seems intuitively to be «an intrayear coefficient of variation». Second, we measure our dependent variable on a year-by-year basis, while R-N used 2 and 3 year averages. They report (pp. 878-9) that attempting to use year-by-year data produced the expected signs but large standard errors. Finally, we measure INV and SHIP in such a manner that they have no time variation, contrary to R-N.

Thus there are several reasons why our work is not direct replication of R-N, but none of these reasons explain opposite signs with substantial t values.

Another potentially interesting aspect of our results deals with the variables which performed as expected. While our results indicate economic

TABLE 1

Estimation Results (t values in Parentheses)

Indep. Variables	*Dependent Variables*	
	NSTR	*DUR*
Intercept	107.8	-428.1
	(3.7)	(-3.2)
NEXAG	0.2	
	(10.9)	
W/VA	53.8	
	(-3.9)	
PCEST	36.8	98.1
	(3.7)	(2.0)
ADV/S	-563.0	8169.9
	(-2.3)	(4.4)
URBAN	31.0	191.0
	(2.7)	(2.8)
FEM	-14.5	
	(-2.8)	
EGTE9	-38.8	
	(-2.7)	
BIGEMP	14.6	
	(1.6)	
AGE	-118.9	-1520.8
	(-4.2)	(-5.1)
URATE	O.9	9.5
	(1.6)	(1.9)
INV	-14.5	
	(-1.8)	
SHIP	8.7	
	(1.9)	
EX/SH		157.2
		(4.4)
CNMF		-206.9
		(-2.4)
DER		74.6
		(2.1)
MF/F		1999.5
		(5.9)
EQ/S		545.2
		(5.8)
INFL		2.2
		(1.8)
ONT	-26.3	-600.5
	(-1.8)	(-4.4)
QUE	-32.1	-785.1
	(-2.0)	(-4.9)
PRAI	-84.1	
	(-3.0)	
BC		-1328.8
		(-4.0)
R^2	.77	.57
$\bar{R}^2$	.72	.44
n	83	61

variables may not be sufficient to explain strike frequency, they do not deny that such factors may be important. Since many of our variables are somewhat «novel», a look at which variables performed as expected may provide information useful in future empirical work. Our AGE, PCEST and URBAN variables appeared in both equations in Table 1. Using the $\geq$ 1.0 cutoff, (P + 1/P-1) appeared in both equations. The AGE, PCEST and (P + 1/P-1) variables are crude, arbitrary proxies for the effects of interest. Replication with other variants may prove useful.

CONCLUSIONS AND POLICY IMPLICATIONS

Very few of the economic variables in our model are amenable to policy manipulation, so from the perspective of policy to reduce strike activity the main conclusion, that our model is not sufficient to explain strike incidence, is heartening. Perhaps factors such bargaining structure and bargaining procedures which are more subject to policy manipulation are important. Our other conclusion, that our model cannot be refuted as an explanation of strike duration, is symmetrically more pessimistic from a policy perspective.

These implications concerning policy are, of course, very weak. To test if policy variables are important, one should include them in the equations. This was not the immediate purpose of the present paper.

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Les caractéristiques de la grève selon les branches industrielles

Cet article consiste dans une adaptation du modèle Chamberlain-Kuhn en matière de coûts entre un accord et un désaccord en vue d'expliquer l'incidence et la durée des grèves en tant que fonctions des seuls facteurs économiques. Le but recherché est de vérifier le modèle plutôt que d'expliquer le fait même de la grève.

On y expose diverses variables relatives aux coûts d'un accord, aux coûts d'un désaccord et aux objectifs reliés à l'augmentation des salaires dans la période précédant les négociations tant de la part des syndicats que de la part des employeurs. On y a fait un effort afin de s'assurer que les résultats obtenus en regard de ces variables sous formes d'équations réduites alors que les mesures de l'incidence de la grève sont utilisées comme variables dépendantes, ne prêtent pas à équivoque. On a retenu dix-huit variables auxquelles furent ajoutées quelques variables de contrôle. Si presque toutes les variables utilisées dans l'opération donnent les résultats attendus, cela confirme la valeur du modèle; sinon, les résultats doivent être considérés comme la réfutation dudit modèle. Les données ont été tirées d'un échantillonnage regroupé (dix-sept industries manufacturières) sur plus de cinq ans (1971-1975).

Les grèves analysées furent choisies à partir de statistiques circonstanciées de manière à ne comprendre que des grèves survenues à l'occasion de la renégociation des conventions collectives. On a utilisé deux variables dépendantes: le nombre de grèves (une mesure d'incidence) et les jours personnes perdus divisés par le nombre de travailleurs touchés (mesure de durée).

Les résultats ont indiqué que, selon la forme de vérification utilisée, le modèle a failli à expliquer l'incidence des grèves, mais qu'il a réussi davantage à en expliquer la durée, lorsqu'il y avait eu grève. Ceci signifie que les facteurs d'ordre économique ne suffisent pas à expliquer l'incidence, mais qu'ils sont plus valables pour expliquer la durée des grèves, conclusion contraire aux résultats de la plupart des études qui se fondent sur des séries chronologiques.