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An International Comparison of the Volatility of Strike Behavior

Samuel Cameron

This paper develops a synthetic model of the strike process which suggests the use of volatility as the measure of severity rather than levels or regression intercepts

There is an immense literature on strikes which is generated by numerous disciplines-economics, politics, sociology, industrial relations etc.; in contrast the meagre literature on international comparisons is dominated, so far as analytical work goes, by political scientists.[1]

A synthetic model would appear to be required, particularly if we intend to attempt international comparisons. The implications of the model are tested by studying the *variation* in measures of strike activity. This must not be taken to imply that the level of strike activity is not important or that the variance of measures may not be related to their means. We rank measures of variation as this involves fewer data problems and also the most important implications of the model are about fluctuation rather than levels.

INTERNATIONAL COMPARISONS OF STRIKES

The variations in accuracy, coverage, definitions etc. across countries in their strike statistics are such that few sensible statisticians would ever contemplate using them to compare *levels* of disputes, days lost or workers involved. Conversely commentators on industrial relations seem almost unable to refrain from using them for this purpose. In the United Kingdom this stems from the feeling, in the mid-1960's that a strike malaise might be a cause or a consequence of the nation's industrial decline.

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1 By 'aggregate' we mean at industry or national level; of necessity we are forced to ignore sociological and social psychological theories of strike behaviour, at the level of the individual plant or firm, in the present paper.

In a satirical attack on such beliefs, Frayn[2] complains that the country does not have enough strikes:

«Because heaven knows, the country *needs* more strikes. I've been analysing the figures published by the United Nations International Labour Organization showing the number of days lost through strikes over the last ten years in eighteen leading industrial nations. Poor old moribund Britain comes well down the list- twelfth, in fact — with an average of 294 days lost per 1,000 workers per year. In dynamic France they averaged 336. In bustling Japan it was 391. In Canada, which according to another table published recently has more central heating, more refrigerators, more cars, more telephones, more washing machines, and more television sets per household than any other country in the world, they did it by losing an average of 597 days.

Italy apparently based its Economic Miracle upon a cool 875. And America retained its economic leadership of the world by losing more time through strikes than any other nation; every 1,000 workers were out on average for 1,044 days per year.»

Frayn carries on in this fashion citing figures on cost of living increases to show that strikes are positively correlated with prosperity. Although this is done in a mocking fashion, the conclusions can be made sense of using the 'accident' models developed by economists,[3] i.e. the greater the volume of bargaining the greater the likelihood of unintended breakdown, or the similar model for the large firm developed by Prais[4] in which larger firms have more breakdowns in negotiation, as Forcheimer[5] commented the more economically developed a nation is the more likely it is to have large firms and their higher strike propensity will raise the overall figure.

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2 Michael FRAYN, «A Perfect Strike», in R. Blackburn and A. Cockburn (eds.), *The Incompatibles Trade Union Militancy and the Consensus,* Penguin, Harmondsworth, 1967; quotation from p. 162.

3 The most recent manifestation of the accident approach is J.T. ADDISON & W.S. SIEBER, «Are Strikes Accidental?», *Economic Jouranl* 91, 362, 1981, pp. 389-404; although not recognised in the above article accident explanations go back a long way amongst economists; see e.g. K. MAYHEW, «Economists and Strikes», *Oxford Bulletin of Economics and Statistics* 41, 1, 1979, pp. 1-19; T. LANCASTER & C.R. BARRET, An Econometric Model of Strike Frequency, *University of Hull Discussion Papers in Economics* No 1, 1974; J.R. HICKS, 1963, *The Theory of Wages,* London, Macmillan, second edition, 1963; A.C. PIGOU, *The Economics of Welfare,* Part III Ch. 6, London, Macmillan, 1952; A.C. PIGOU, *Principles and Methods of Industrial Peace,* London, Macmillan, Appendix A, 1905.

4 S.J. PRAIS, «The Strike-Proneness of Large Plants in Britain», *Journal of the Royal Statistical Society,* Ser. A, 141, 1978, pp. 368-84.

5 K. FORCHHEIMER, «Some International Aspects of the Strike Movement», *Bulletin of the Oxford University Institute of Statistics* 10, 1, 1948, pp. 9-25.

The Donovan Commission[6] and Clegg[7] use tables of strikes per 1,000 workers and days lost per 1,000 workers involved, averaged over 1964-6 for 15 leading industrialised nations. Donovan does not lay much stress on this table; Clegg concludes that it shows Britain to be amongst the countries with a high strike frequency (6th.) but having a low place in terms of days lost in such countries. It is of interest to note that the top of the Donovan table is Ireland (not menioned by Frayn) for days lost whilst the difference between France and the U.K. is minimal (+ 10 days).

Whittingham and Towers[8] in a topically-inspired piece (at the time of the *Industrial Relations Act*) use the average days lost per 1,000 workers in the periods 1957-66 and 1960-9 to provide two sets of rankings which place Ireland (top of the Donovan table) below the U.S.A. and Italy and places the U.K. at 12th. and 10th. respectively. Japan's bustling 391' of the Frayn period falls to a meagre 250 in 1960-9 which is *below* the U.K.'s 268 for the same period. The authors (after expressing the customary reluctance) suggest that the move from 12th. to 10th. may represent a downward trend in British industrial conflict (see p. 39). (The Towers-Whittingham comparisons use 18 countries.)

These studies are remarkable for the way in which they tend to use averaged days lost per 1,000 workers as the indicator of industrial conflict. An average is a much more sophisticated device than is commonly recognised (after all an average is the mean of a distribution and there is no clear reason to neglect other characteristics of the distribution which generated the mean) and in the present case it involves an implicit assumption that it somehow represents the 'normal' level. Days lost is used presumably because it is regarded as the best reflection of the 'damage' caused by a strike. Evidently, the relative conflict proneness of a country can be altered by altering the sample period and the other countries in the sample. It is not obvious that a normal figure in a country is high relative to others because of variations in the effects of conflict and variations in the mechanisms for absorbing its costs.

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6 *Report of the Royal Commission on Trade Unions and Employers' Associations,* 1965-8, Command 3263, HMSO 1968.

7 H.A. CLEGG, *The System of Industrial Relations in Great Britain,* Basil Blackwell, Oxford, 3rd. ed., 1976, pp. 315-7.

8 T.G. WHITTINGHAM & B. TOWERS, «Strikes and the Economy», *National Westminster Bank Review,* November 1971, pp. 33-42.

INTERNATIONAL COMPARISONS OF STRIKE BEHAVIOUR
USING MODELS

There is a small literature[9] in which models of industrial conflict are estimated to provide international comparisons. Typically these are such things as pooled cross-section/time-series regressions or more simply separate regressions for each country. In some cases 'strike volume' — days lost per 1,000 workers is used as the dependent variable- the idea of volume[10] coming from the analogies with length, breadth and height of strike duration, size and frequency is used, in others the number of strikes is used.

These studies usually put forward the view that periods in which the 'economic' variables (e.g. wages and profits) have little influence (i.e. the model fails- 't' statistics are poor and coefficients may have wrong signs etc.) are periods in which the political, cultural, and institutional environment is not stable and hence cannot be treated as a datum.

It is found that it is only really the postwar period in which the parameters of the economic variables are significant and conform to expectations;[11] further Hibbs[12] concludes via testing restrictions that the parameters on real wages, unemployment and profits are constant across diverse systems of industrial relations. The number of countries used in these studies is not large (because of the data problems)- the most complete is that of Hibbs (1976) which pools time-series for 10 industrialised nations.

International comparisons using models have estimated 'political' models for the pre-war period and claimed that these out-perform the economic models in terms of expected signs achieved and t-statistics. The trouble with political models is that it is difficult to find the variables with which to estimate them; Snyder uses number of cabinet changes and the

    9 D. SNYDER, «Institutional Setting and Industrial Conflict: Comparative Analyses of France, Italy and the United States», *American Sociological Review* 40, 3, 1975, pp. 259-78; D.A. HIBBS, «Industrial Conflict in Advanced Industrial Societies», *American Political Science Review* 70, 4, 1976, pp. 1033-58; D.A. HIBBS, «On the Political Economy of Long-Run Trends in Strike Activity», *British Journal of Political Science,* 1978, 8, pp. 153-77; M. SHALEY, «Strikers and the State: A Comment», *British Journal of Political Science,* 8, 1978, pp. 481-94.

    10 The concept of volume is introduced in FORCHHEIMER, *op. cit.,* and is used in regressions as the dependent variable by HIBBS (1976, 1978).

    11 See SNYDER, *op. cit.* on this point; J. CRONIN, *Industrial Conflict in Modern Britain,* Croom Helm, London, 1979, argues that economic models only 'work' in Britain for the period 1951-67; SNYDER takes the period when such models 'work' to be 1949-70 (U.S.A.), 1946-66 (France), and Italy (1949-70).

    12 HIBBS, 1976, p. 1050.

trade union density as his political variables. The former can only be a dummy and the latter might be regarded by economists as an economic variable;[13] in addition we might see density as simultaneous with strikes (or lagged strikes) if displays of union strength cause increased membership.

An interesting feature of regression studies is that they attempt to 'explain' the incidence of conflict rather than presenting us with levels which are regarded as specific to the country and somehow 'normal'. In view of this the most enlightening way to use the models would be to purge the indicator of conflict of as much of its explainable content as possible and treat the constant as the unexplainable content of the indicator; the constants could then be compared across countries as indicating innate conflict propensities. In his pooling strategy, Hibbs[14] essentially does this as he pools his observations using country -by-country dummies to «pick up the net effects of nation-specific, time-invariant, structural-historical factors not captured explicitly (causally) in the equations». Unfortunately he sees the dummies as merely part of the estimation problem and hence not interesting enough to report.

A SIMPLE MODEL

We now attempt an elementary synthesis of the three basic approaches to strike activity. For the purposes of exposition, we can regard them as mutually exclusive so that they can be set out as in Figure 1 below.
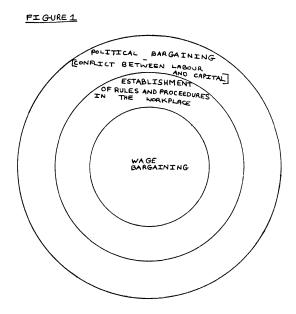
In each ring we list the type of activity that each model studies; the inner ring is the domain of economic models, the second innermost ring is the domain of the 'institutionalist' models of industrial relations theory, the outer is the domain of 'political' models.

We begin at the inner circle and work outwards. The most common approach to strikes by economists has been to regard them as accidental outcomes of wage bargaining. In this view, a strike is something which neither side really wishes to occur; when one does occur neither side benefits from its direct effects. Strikes occur because of imperfect information about bargaining strengths and positions; in the absence of such imperfections, accident theories imply that a bargain should be struck without a strike. There is an influential rival theory, amongst economists,[15] which argues that

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13   For a complete critique of the suspect nature of the good results (suspect because of the data) in the political model see SHALEY, *op. cit.,* on the HIBBS (1978) model.

14   HIBBS, 1976, p. 1047, fn. 22.

15   O.C. ASHENFELTER & G.E. JOHNSON, «Bargaining Theory, Trade Unions and Industrial Strike Activity», *American Economic Review,* 59, 1969, pp. 35-49.

FIGURE 1

the union representative knows the strengths etc. of management and is, in fact, in collusion with them in that he has already agreed on a settlement. A strike may arise if the representative calls one to save his face, as it were, by bringing down an unacceptably high wage claim over the duration of the strike. The strike serves the dual function of satisfying the management with a lower wage claim and convincing the workers that the representative is still 'fighting' for them.

Some implications of the above two approaches enable us to move to the discussion of factors pertaining to the second ring. Both models suggest that strikes will converge to some 'optimal' level (also length and coverage); in the accident model the optimum will be arrived at through weighing the marginal costs and benefits to each side of providing an extra unit of information.

Economic models generally focus on the number of strikes, rather than length or worker involvement, with the occurence of a strike being a breakdown in the wage bargaining process. It follows from this that strikes are most likely at the expiration of contracts; this is a feature which economists sometimes claim is responsible for the seasonal variations in strike frequency. As different countries have different bargaining systems there will be variations in the frequency of striking due to variations in typical contract length and the frequency with which contracts are broken.

Within a single country the length of contract or its propensity to breakdown is subject to the influence of exogenous macroeconomic shocks; e.g. a more unpredictable inflation rate may generate shorter contracts or the reneging of existing ones. Countries with bargaining frameworks which are flexible will accomodate such shocks whilst those with inflexible, or poorly developed frameworks will have a high 'volatility' of strike frequency.

By 'volatility', we mean the degree of fluctuation in strike indicators, i.e. that the distribution of an indicator is widely dispersed so that it is extremely difficult to predict its level in any period. Under flexible frameworks, management will make good predictions of the reactions of workers to all their actions and *vice-versa*. Hence volatility generated by bargaining breakdown will be low[16]. We would expect volatility from this source to be lower in less developed countries where the processes of worker-management negotiation are not yet fully articulated[17].

We now consider industrial relations theory relevant to the second ring[18]. Such theory recognises the importance of the futurity of the engagements between negotiating parties; this is neglected in economic models which treat deals as essentially concerned with a one-period payoff.

The major issue on which a model of the Dubin type departs from that of economists is power. The following quotation[19] illustrates this, the model

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16   The argument that employers should be able to predict strikes and hence offset their costs is developed in M. FISHER, *The Measurement of Labour Disputes and Their Economic Effects,* Paris, OECD, 1973; this monograph also provides the most detailed information available on international strike statistics and their weaknesses.

17   This is similar to the argument of PIGOU (1905), pp. 15-17 except that he adds the thesis that periods of tranquility will induce a certain carelessness in negotiators (they lack the sense of costs from a strike due to lack of recent experiences) which will be periodically disciplined by the strikes it causes so that minor ripples are caused.

18   See R. DUBIN, «Industrial Conflict: The Power of Prediction», *Industrial and Labor Relations Review* 18, 1965, pp. 352-63; J. BARBASH, «Price and Power in Collective Bargaining», *Journal of Economic Issues,* 11, 1977, pp. 847-59.

19   DUBIN, *op. cit.,* p. 360.

«leads to the prediction that on 'fundamental' issues in collective bargaining the amount of conflict in union-management relations is inversely related to the disparity in power between company and union, the introduction of a 'fundamental' issue in the collective bargaining would result in much conflict, while the same issue would produce little conflict if there was a wide disparity in power between company and union. 'Fundamental' issues were defined as 'those not yet incorporated in collective bargaining'.»

The accident model implies that the number of fundamental issues would be progressively reduced as stable negotiating frameworks are developed. Dubin predicts that, where fundamental issues do occur, dominant unions or dominant workers will lead to a low conflict propensity whilst equally balanced oppositions will lead to a high conflict propensity. These arguments about the magnitude of the levels of conflict also carry over to its volatility (variability); the tussle to dominate in an equally balanced situation should lead to volatile conflict levels, its absence to stable conflict levels.

Power is the ability of one side to enforce its wishes on the other through the threat of (or through) withdrawal of resources; an interesting illustration that the strike is an exercise of power comes in one author's definition of it[20] as the withdrawal by labour of its demand for the services of capital.

Dubin's predictions seem to be valid only in the case where we can safely neglect factors germane to the other two levels of analysis. The exercise of power will depend on relevant elasticities of demand in labour and product markets. A choice can be made, by unions, over how they will deal with fundamental issues; they can bargain directly about them or engage in what Walker[21] calls 'extra-market operations'. An example of an extra market operation would be action by organized labour to bring about wage or conditions alterations through state intervention; direct bargains with employers are clearly market operations because they take place in terms of the supply and demand of the commodity (labour) under consideration.

This consideration leads us to the concerns of the political model which analyses the issues of the third ring. This model takes the view that... «industrial conflict is something more than a mere accident in the collective

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    20   See R.V. ANDELSON, «The Strike in a Laissez-Faire Society: A Libertarian View of Labor's Ultimate Strategy», *American Journal of Economics and Sociology,* 30, 2, 1971, pp. 159-70.

    21   E.R. WALKER, «Beyond the Market» in K.W. Rothschild (ed.), *Power in Economics,* Penguin, Harmondsworth, 1971.

bargaining process. Rather, the strike constitutes one working-class strategy — political action is another — in the action out of class conflict in capitalist society»[22].

In a political model, power can be exercised through the influence of labour or capital rather than through the withdrawal of resources from a market. In economic and industrial relations models strikes are treated on a micro level through an analysis of their causes whilst in the political model they are treated on a macro model as manifestations of conflict. Conflict will be reflected in non-strike protests such as industrial sabotage, working to rule, and absenteeism above the levels dictated by ill health and injury.

These methods may be either substitutes or complements to strike activity in expressing discontent or seeking to exercise power. If they are complementary in roughly similar proportions over time *within* the same country then predictions of a model about the influence of conflict can be adequately tested on the level or variability of strike indicators.

If the methods are substitutes then our data are subject to the influence of variations in the economic viability and social acceptability of strike and non-strike methods in different countries. Clearly this would invalidate the use of comparisons of means of indicators. However the comparison of volatility should not be invalidated *unless* substitution between strike and non-strike methods is taking place *within* nations over the time period studied.

Leaving aside the issue of the imperfections of strikes as measures of conflict, it must be recognised that strikes serve different functions in different political systems. In some the strike may be a weapon used to procure a stronger place for labour within the state. In such cases there is a clear intention to cause harm to the government perhaps through dislacing it. In other countries the strike may be used defensively rather than aggressively, e.g. public workers might strike as a method of 'notifying'[23] their claims to the general public; they will have no intention of influencing the polity rather they are forced to use the strike in the absence of a suitable method of arbitrating the national distribution of employment incomes.

The implication of the political model is that volatility will increase as the cohesiveness of labour, management and the organs of government declines. The original formulation of concept of the 'withering away of the

22 SHALEV, 1978, p. 481.
23 The concept of public sector workers using strikes as a 'notification system' in the absence of other methods of publicising the justice of their pay claims is developed in S. CAMERON, «Strikes and the Third Party», *The Month,* 15, 10, October 1982.

strike' in developed nations was based on the idea that, with the exception of the U.S.A.,[24] such cohesiveness was rising so that labour could obtain improved conditions through legislation rather than the costly, haphazard and undesirable resort of striking.

We can now see clearly that Ross and Hartman's thesis was much too simple as strikes have exploded, rather than withering away in developed nations, being at a drastically higher level, on all indicators, from 1969 to the late 70's than they were in the 50's and 60's. The recent wilting in the strike indices is undoubtedly due to the strong upsurge in unemployment rates.

Some predictions about volatility follow from considering the cohesiveness of economic interest groups in the state. In less developed nations, cohesiveness will undoubtedly be poor particularly where industrialization is taking place. Industrialization will often involve the presence of multinational corporations who will be in conflict with workers and the elected government unless they are in control of the government in which case we expect heightened conflict with workers. These things will contribute to increased volatility.

Within the developed nations most governments have sought, in the post war period, to institute cohesiveness with the chief method being incomes policies. A successful incomes policy would reduce strikes as the absence of claims for a higher share of the national product dictated the absence of attempts to achieve it. The collapse of a successful incomes policy will lead to an upsurge in strikes particularly if the macroeconomic reward for consent- the abatement of inflation is not delivered. A procession of on-off incomes policies will accordingly generate increased strike volatility.

HYPOTHESES

As we are mostly concerned with hypotheses about volatility it is wise to point out why volatility is the indicator used. In terms of the economic model, volatility is a measure of risk- if an economy can adapt to levels of strikes through forecasting them and taking appropriate action, then levels (of strikes, workers involved, days lost) are meaningless as measures of damage. The only real damage caused by strikes is through their unexpectedness.

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24 See A.M. ROSS, «Changing Patterns of Industrial Conflict», *Proceedings of the 12th. Annual Meeting of the Industrial Relations Research Association,* 1959.

Comparing averaged means, does not tell us much about the 'highness' or 'lowness' of conflict in terms of its causation by the union-management distribution of power as (even stable) institutional frameworks will differ across all nations — the figures contain a nation-specific component plus a power-caused component.

A similar argument applies to the political model- i.e. differing nations have differing political systems and figures for means contain a component due to this as well as due to the role of labour within these systems.

There seems less reason to suppose that variation differs greatly across nations than there is to suppose that the nation-specific component of means does.

Ultimately our measure of variation is composed of variation due to all three sets of causes enumerated in the three types of model considered above and it is difficult to see how it could be decomposed into these elements. We consider now how the three sources will combine to give the total variation for different types of country.

Three measures are used for volatility, computed as the coefficient of variation, being number of strikes, number of workers involved and number of working days lost.

Variation due to 'economic' factors is expected to be less in developed than in less developed nations, following the accident theory which would also suggest that such variation will be small relative to that caused by the other two types of factors. Also we would expect economic variation to be greater in the last two sets of coefficients of variation as it is more difficult to 'insure' against the length or coverage of a strike than against its occurence[25].

Variation due to 'institutional' factors should be less where a polarisation of power exists hence union-dominated or management-dominated (in terms of labour markets) economies should exhibit less of such variation.

Variation due to 'political' factors will be less in countries where the labour movement has a secure position within a 'corporatist' state, is itself unified, and/or has access to a political party with which it is affiliated.

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25 Single country studies by economists have usually used strikes in preference to the other two series probably because it works better as The R^2 in a multiple regression will be higher with a less variable regressor. For criticism of this approach, see M. SHALEV, «Trade Unions and Economic Analysis: The Case of Industrial Conflict», *Journal of Labor Research* 1, 1980, pp. 133-73. Table I shows that low volatility countries in terms of disputes invariably display higher volatility in the other two measures.

There appears to be no clear prediction possible about the relative magnitudes of variation for the three sets of coefficients in the case of the last two factors.

On 'political' grounds, volatility is expected to be higher *within* less developed nations where there is industrialization through multinational corporations and *within* developed nations where there are on-off income policies combined with a higher mean and variance of inflation.

RESULTS

Table I presents coefficients of variation of the three series of strike behaviour for 62 countries (further details on data are given in the Appendix) using data for 1968-77. Suitable data, are not available for all nations-this is the reason for the blanks in parts of the table. There are two statistical problems with these results; one is the small sample size, this is difficult to overcome as the further back we take the series the harder it is to keep them reasonably comparable (also breaks occur), the other is the unreliability of the coefficient of variation (given as C.V.) when the mean is close to zero — this is more serious with the number of disputes than the other indicators — to provide a check we give the means of all the data in Table 2.

The first thing which is immediately apparent is the tendency for advanced industrial nations to appear at the bottom of the rankings of the three C.V's with the striking exception of the Scandinavian countries. The bottom fifteen of all three series contain the U.S.A., Italy, France, Ireland, Belgium, New Zealand, and the U.K. whilst Japan, Canada, Spain and Australia only go above the bottom fifteen on one indicator each. Switzerland, South Africa, Austria and the Netherlands show an exception.

The high volatility in Scandinavian countries where labour is strong/corporatist certainly does not fit in well with the model. It may be that the fluctuations exhibited by these countries is a manifestation of some influences other than political, economic and industrial relations ones.

The almost complete dominance of the bottom of the table by the U.S.A. conforms closely with the hypotheses advanced as the country is characterized by the polarisation of power in labour-management bargaining as evidenced in the persistent failure of the unionization rate to rise much above 20 per cent and the extent of its industrial development would lead us to expect the minimization of risk (reduction of 'accidents').

The behaviour of U.K. indicators affords interesting matter for speculation as the nation is characterized by one of the rare cases of a union rate around 50 per cent, high and variable inflation, on off incomes policies, a polity in which labour has a considerable influence but is, itself, subject to disunity, and a fragmented bargaining system which would tend to militate against the minimization of risk. These features would lead us to expect that, although the U.K. might be low in the table relative to non-industrialized nations, it would be high amongst the low volatility nations. On the indicators for strikes and workers involved it is moderately high (fifth bottom, in each) but on the measure for days lost (the most popular choice as a mean damage estimate) it rises to thirteenth bottom making it one of the most distinctively volatile of the low volatility nations.

It would be possible to pick off each country one at a time and explain its rankings in terms of the synthetic model outlined above, however it it is beyond the scope of this paper to enter into an elaborate essay on comparative politics and institutions; the reader may readily entertain his or her self with contemplation of the synthetic interpretation of the various rankings.

CONCLUSION

Our purpose in this study was to produce an international comparison of the severity of industrial conflict. The weaknesses of previous comparative attempts were illustrated. The present paper developed a synthetic model of the strike process which suggests the use of volatility as the measure of severity rather than levels or regression intercepts. Using regression intercepts is a good idea but difficult to develop because of the difficulty of coming up with suitable data sets for a large sample of nations. The approach of the present study used a large data set (62 nations) and minimized the problems inherent in the data by using variation which can be reasonably assumed to be independent of errors introduced by differences in scope and definition of the series *across* nations.

The synthetic model predicted that, in general, advanced industrial nations would appear at the bottom of the table of strike volatility. As regards policy this suggests that angst in developed nations is perhaps misguided as far as the consequences of industrial conflict go since industrialised nations appear to be efficient in minimizing risk from industrial conflict. This point should not be taken up too enthusiastically as it appears to be less true of days lost and workers involved volatilities than it is of disputes volatility.

It would be difficult to draw any direct conclusions for industrial relations reform; the most we can do is suggest that attention be directed towards the problem of fluctuating durations of strikes rather than the existence of strikes *per se*. Taking the case of the U.K., *comparatively* it can be seen that duration is the problem as working days lost is composed of disputes, number of workers and length of strikes. On the first two, the U.K. is only a moderately high low volatility nation, on the days lost c.v. it is an extremely high one. It is not clear how severely duration risk will impair national welfare; strikes which are longer than expected have obvious welfare loss (lost output, lost income, disappointed expectations, lost goodwill etc.), strikes which are shorter than expected may also involve losses (excessive accumulation of stocks, maldistribution of income amongst saving and spending) but it is not clear if these could be serious.

Finally it is worth noting that volatility due to duration may be symptomatic of an unstable social order — longer strikes will be needed in order to establish increased power for labour, in the absence of this power the strikes will be 'defeats', these will reduce the ability to sustain a long strike for a while, while continued dissatisfaction with the lack of power will lead to the revival of the long strike and so on. If employers can not cope with ('insure against') this instability then we would expect they will concede some of the demands so a new order will come into being in which volatility is low.

Comparaison internationale des variations de comportement en matière de grèves

Cet article traite du problème de l'appréciation relative de la gravité des conflits de travail entre les différents pays. L'amplitude, la définition et le volume des statistiques en matière de grèves diffèrent tellement d'un pays à l'autre qu'il est impossible d'établir des comparaisons valables entre le nombre de grèves, les travailleurs qu'elles impliquent et les jours de travail perdus par millier de salariés.

On y souligne que beaucoup de commentateurs ont effectué des comparaisons pour évaluer si, dans un pays en particulier, le Royaume-Uni, il y a «tendance marquée à la grève». Pour remplacer cette méthode peu valable, on a eu recours dans la présente étude à des modèles qui permettent d'éliminer les éléments découlant de facteurs économiques, politiques et institutionnels.

Les études antérieures sur ce sujet englobaient une quinzaine de pays dont le choix dépendait de la volonté des analystes. La présente analyse utilise les statistiques publiées dans soixante-deux pays pendant une période de dix ans. Le modèle repose sur la façon dont les chercheurs en science économique, en relations professionnelles ou en science politique conçoivent le problème. Ce modèle permet d'en arriver à certaines prévisions au sujet du degré de variabilité parmi les indicateurs de grève, celui-ci consistant dans le taux de fluctuation dans un indicateur de grève, c'est-à-dire que plus l'indicateur est dispersé, plus le comportement en matière de grève varie.

On fonde le taux de variabilité à la fois sur le nombre de jours de travail perdus, sur le nombre de travailleurs(euses) touchés(ées) par les grèves et sur le nombre de conflits. Le modèle indique que la variabilité du nombre de grèves sera plus grande que la variabilité des jours de travail perdus ou celle des travailleurs(euses) touchés(ées) par la grève.

Ce modèle révèle aussi que la variabilité de l'ensemble des mesures est moindre dans les pays développés que dans les nations moins développées. Parmi les pays développés, on peut estimer que la variabilité est plus marquée si l'inflation est forte, si le cadre des négociations n'est pas flexible, si les politiques de revenus ont par moment joué un rôle, si les employeurs et les travailleurs(euses) ne sont pas bien intégrés(ées) dans une situation cohérente.

Les prévisions du modèle ont été vérifiées par le calcul du coefficient de variabilité à partir des statistiques pour la période 1968-1977. D'une façon générale, les résultats confirment les prévisions du modèle. On y trouve que la variabilité est plus grande pour le nombre de grèves que pour le nombre de jours perdus et des travailleurs(euses) touchés(ées). La variabilité est en général plus grande pour tous les indicateurs parmi les pays développés que parmi les pays moins développés. On peut soutenir que, parmi les nations développées, le Royaume-Uni présente un fort degré de variabilité dans la manière de se comporter en matière de grèves, ce qui confirme le modèle que les systèmes politiques et de relations professionnelles sont tels qu'ils entraînent un haut degré de variabilité. La situation dans les pays scandinaves présente un haut degré de variabilité qui semble contredire le modèle. On peut penser que ceci est attribuable à des facteurs dont on n'a pas tenu compte dans le modèle. L'interprétation de la situation relative des pays développés reste ouverte pour des recherches futures.

TABLE I

Variability of Strike Behaviour

Rank (disputes)	Country	C.V. (disputes)	Rank (workers involved)	C.V. (workers involved)	Rank (days lost)	C.V. (days lost)	Rank (disputes)	Country	C.V. (disputes)	Rank (workers involved)	C.V. (workers involved)	Rank (days lost)	C.V. (days lost)
1	Panama	239.8	6	142.1			33	Sabah	52.6	35	61.3	40	68.1
2	Spain	199.2	48	49.3	44	56.2	34	Zambia	51.2	45	51.8	26	97.8
3	Egypt	171.3	14	112.3			35	Sierra Leone	50.8	22	89.2		
4	Guadelope	156.8	5	142.7	9	149.7	36	Burundi	50.2	27	82.7	29	90.6
5	Solomon Islands	151	30	71.4	21	117	37	Ghana	49.3	41	57.9	37	70.1
6	Indonesia	130.9	4	151.6	2	250.1	38	Jamaica	47.9	53	37.8	30	89.2
7	Thailand	129.1	9	130.7	15	130.4	39	Pakistan	43.7	39	58.3	31	87.9
8	Guatemala	114.7	19	104.1	20	118.3	40	Malawi	43.7	28	76.3	27	93.7
9	Mauritius	113.8	12	123.9	19	119	41	Malta	42.9	32	67.4	25	100.2
10	Netherlands	112.5	24	87.53	13	134.6	42	Hong Kong	42.2	31	71	35	70.6
11	Tunisia	99.2	2	158.4			43	Japan	40.2	52	40.1	49	43.9
12	Nigeria	96.6	18	104.2	28	91.4	44	Peninsular Malaysia	39.9	33	67.3	24	100.5
13	Switzerland	90.2	15	109.9	18	120.4	45	Peru	39.8	38	60	33	77.4
14	New Caledonia	86.1	29	74.4			46	Santa Lucia	39.4			16	122.6
15	Iceland	84.6					47	New Zealand	37.5	43	54	46	52
16	Cameroon	84.4	36	61			48	Belgium	36.3	51	41.2	45	55.7
17	Bermuda	83.1	20	100.6	1	315.9	49	Puerto Rico	34.6	57	32.5	47	45.3
18	Finland	78.4			17	120.7	50	Kenya	33.6	12	123.9	38	68.9
19	Denmark	78	8	131.9	3	245.1	51	Canada	33.5	26	83.3	50	41.7
20	South Africa	77.5	11	125.2	8	157	52	Turkey	31	50	42.4	48	45
21	Korea	77	23	87.6	22	108.7	53	Israel	26.5	45	51.8	43	59.5
22	Surinam	73.8	37	60.3	38	68.6	54	Ireland	21.6	55	33.1	41	66.2
23	Trinidad	63.5	21	93.1	14	133.4	55	India	21.5	49	48.3	52	34.6
24	Sarawak	63.4	10	129.3	22	108.7	56	U.K.	20.4	54	33.6	42	60.3
25	Norway	63.1	7	140.6	7	161.7	57	France	19.2	56	32.9	54	28.5
26	Maroc	63	34	61.4	34	72.2	58	Italy	18.9	44	52.3	51	39.5
27	Fiji	62.6	3	156.6	11	142.3	59	Australia	15.3	47	50.4	35	71.5
28	Martinique	61.1	42	57.1	12	137.8	60	U.S.A.	6.8	58	21.8	53	29
29	Sweden	60.6	17	105.9	10	147.7		W. Germany		16	106.6	5	184.2
30	Singapore	59.3	39	58.3				Austria		1	161.5	6	174.1
31	Sri Lanka	58.4	25	85.2	32	86.3	60	Total		58		54	
32	Venezuala	55.7											

TABLE 2

Means of Data Sets

Country	Disputes	Workers Involved	Days Lost	Country	Disputes	Workers Involved	Days lost
U.K.	2,692.1	1,443,260	10,136,200	Solomon Islands	13	570	2,318
Japan	2,697.4	1,964,510	5,233,440	Indonesia	8	2,404	6,329
U.S.A.	5,431.9	2,492,410	41,397,400	Thailand	135.2	47,071	209,890
Australia	2,368.2	1,095,100	2,473,520	Guatemala	14.8	13,206	152,578
Italy	4,279.2	6,556,800	21,540,300	Mauritius	19	18,946	49,408
France	3,509	2,006,480	3,549,890	Netherlands	24	23,690	137,043
India	2,665	1,635,770	21,060,400	Tunisia	124.9	19,472	
Ireland	151.2	37,474	485,537	Nigeria	116.4	59,730	149,718
Israel	124.7	94,999	229,357	Sarawak	2.4	223	341
Turkey	85.1	13,579	474,200	Norway	14.1	6,024	60,885
Canada	784	49,625	7,081,880	Maroc	261.9	50,051	334,185
Kenya	85.9	20,122	51,742	Fiji	39.9	12,525	37,795
Puerto Rico	70.7	16,201	226,776	Martinique	6.3	4,409	62,393
Belgium	183.6	69,155	717,485	Sweden	63.1	18,936	194,215
N. Zealand	347.5	95,976	243,203	Singapore	5.3	1,503	
Santa Lucia	4.5		550	Sri Lanka	196.8	84,369	536,660
Peru	467.8	249,812	1,162,483	Venezuala	129		
Peninsular Malaysia	60.5	13,182	78,557	Sabah	5.1	388	876
Hong Kong	33.1	7,749	26,462	Zambia	101	13,969	36,770
Malta	32.7	11,419	44,816	Sierra Leone	5.9	1,715	
Malawi	10.4	1,333	1,578	Burundi	9.2	3,123	9,174
Pakistan	242.6	160,504	1,008,880	Ghana	42.9	26,274	901,719
Bermuda	4.4	857	8,452,450	Jamaica	107.9	17,890	233,398
Cameroon	10.3	4,863		Austria		15,872	30,438
New Caledonia	10.9	2,935	20,741	W. Germany		169,549	825,055
Switzerland	6.4	846	7,097	Trinidad	49.5	18,335	168,985
Iceland	62.9			Surinam	19.4	3,269	26,597
Panama	37.9	34,748		Korea	31.7	12,215	32,064
Spain	3,394.1	321,476	998,002	South Africa	171.8	24,864	490,081
Egypt	103	11,092		Denmark	86	84,097	552,462
Guadelope	9.4	2,789	30,245	Finland	811		884,583

APPENDIX
to Tables 1 & 2

All data are taken from the I.L.O. *Yearbook of Labor Statistics* (Geneva, 1978)
The second and third columns of Table 2 are rounded to whole numbers.
The following variations exist in the data.

Excludes Political Strikes; New Zealand, UK, India, Pakistan, Denmark, Italy (1969-74)

Excludes workers indirectly affected
Finland (pre-1971), Puerto Rico, Japan, Fiji, Canada, Nigeria, Italy, Belgium, Norway

Exclusions based on severity of dispute
Norway (less than one day), Denmark (less than 100 working days lost), Jamaica (less than 10 workers, 100 wkg. days), Japan (less than 4 hours), Israel (less than 10 working days lost), Australia (less than 10 days lost), Canada (less than 10 man days), India (less than 10 workers), Pakistan (less than 10 workers), Finland (less than 4 hours except where more than 100 working days lost), UK (less than 10 workers, less than 1 day only, except where more than 100 working days lost); USA (excludes less than 6 workers or full-day or shift)

Not based on calendar year Nigeria (yr, end March), Puerto Rico (Yr. end June)

Other
Peru (days lost computed on basis of 8-hr. working days), France (excludes agriculture and public administration), Jamaica (pre-1973 excludes disputes where data for workers involved & days lost is not available), Pakistan (geographical scope extended 1971, 1973 excludes Sind province)

Note: we have not listed all coverage variations due to the argument of the text.

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