《人文及社會科學集刊》
第九卷第二期 (86/6), pp.133 ～ 198

Government Intervention and Industrial Conflict: Comparative Policy Research*

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ABSTRACT

This study is partly motivated by the attempts to advance the existing literature of industrial conflict which are based primarily on case studies of single Western countries. These previous studies, utilizing the background factors of labor markets, such as unemployment rates, wage-change rates, inflation, and union membership, rarely yield consistent or consensual conclusions regarding the theoretical generalization of the causes of industrial conflict. To overcome the methodological limitations and substansive shortcomings of previous literature, we establish a more generalized framework of government policy to explain the variation of industrial conflict by expanding observations to six countries across three different regions of the world, including North America, North Europe, and East Asia.

Based on historical-institutional investigations combined with quantitative pooled-data analysis, our research results consistently indicate that the degree of government intervention in industrial relations has a superior overall explanatory power in determining the variations of industrial disputes. Differences in industrial relations policy appear to account for the probability of the unions and employers to intiate work

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* Special thanks are due to Dr. Michael I. Luger, Dr. William Keech, and Dr. Gary Marks for their substantive contributions and suggestive comments to this study. I am grateful to Dr. David Lowery and Dr. Guang Guo for useful comments on this work. Of course, the responsibility for the weaknesses and errors contained in the final product rests soly with the author. I am also grateful for the finacial support of the Curriculum in Public Policy Analysis of the University of North Carolina at Chapel Hill.
(Received : December 6, 1996; Accepted : May 19,1997)

stoppages. On the other hand, we find that, through hypothesis testing of cross-national data covering six countries, most of the previous models of labor market conditions which include economic as well as organizational variables do not yield significant and consistent effects in explaining fluctuations of industrial disputes.

I. Introduction

Industrial conflict has long held the interest of economists, political scientists, sociologists, industrial relations specialists and labor historians. To those scholars interested in labor relations, industrial conflict has always appeared to be a complex and multifaceted phenomenon that defies simplistic theoretical analysis. From a comparative perspective, there are two major features of industrial conflict. On the one hand, the statistics of industrial disputes show a great diversity across countries. On the other hand, the level of industrial disputes also varies greatly over time within individual countries. These features raise a number of questions: Why do those countries vary so dramatically in the extent to which labor uses strikes or employers use the lockouts? Why are the levels of industrial conflict in some countries significantly lower than the others? How can we explain the significant difference in the levels of industrial conflict across countries as well as within individual countries? To answer these questions, we need to understand the causes of industrial disputes. Undoubtedly, as with any complex phenomenon, there may be multiple causes.

A number of studies have been made, particularly in the United States, of strike fluctuations as a reflection of economic conditions or labor-organizational strength. These lines of argument basically contends that whether the parties use the ultimate weapon of strike or lockout depends on the background factors of the labor market. This study is partly motivated by dissatisfaction with those previous explanations that are mostly based on case studies of single countries. We attempt to establish a more generalized and more powerful framework to explain the variation of

industrial conflict by expanding observations to six countries in three different regions of the world, including East Asian NICs, which have been ignored in existing quantitative analyses of industrial conflict.

Section II briefly reviews previous literature on industrial conflict that will help us to construct a refined model that can be tested. In Section III, we attempt to construct a realistic conceptual framework based on government policy for analyzing the variation of industrial conflict. We also present our research methods, including quantitative pooled data analysis and qualitative-historical investigation of industrial relations policies for six countries. In Section IV, we will conduct a historical-institutional analysis for the policy trends, and then provide a basis for constructing a new angle of our refined model, the policy scores of government intervention in industrial relations, that can be utilized in the following quantitative analysis. Section V will be built on quantitative cross-national analysis, including the model specification, hypothesis testing of our refined model, statistical analysis, and discussion of empirical results, to underpin our argument that government policies do matter in determining the levels of industrial conflict. Finally, in Section VI we will conclude the academic contributions and policy implications from this research.

II. Literature Review

Generally speaking, we can identify four major conceptual approaches to the analysis of strike activities or labor-management disputes in macro-level industrial conflict literature. The earliest literature utilized economic variables. But the industrial-relations institutional approach was a reaction against the prevailing paradigm at that time--a purely economic approach. Then came a number of studies incorporating political and organizational variables. In recent years we have seen a blending of economic and political approaches, with many studies using both

economic and political/organizational variables. The debates among those approach have been focused on whether some variables have more significant power than others in explaining the fluctuation of industrial disputes. In addition, there also exists a methodological gap in the industrial conflict literature: on the one hand, most quantitative analyses of industrial conflict are based on a single case study of a Western country; on the other hand, most studies of cross-national comparison, which are mainly derived from traditional institutionalist approach, are descriptive, lacking quantitative methodology.

Economic approach

Numerous studies of individual countries have examined the relationship between changing economic conditions and changes in the frequency of strikes. Most strike studies focusing upon economic variables have been based on the case of the United States. Yoder (1940) found that strike activity increases when the business cycle is in a favorable phase in the United States. This relationship has been explained as reflecting the impacts of general economic conditions on the tactical advantages of both parties as well as the propensity to incur strikes. Rees (1952) argued that union behavior is principally influenced by the conditions of the labor market, namely, the amount of employment available. He pointed out that economic conditions in the period of business prosperity, especially of tight labor market, would affect the timing of strikes, assuming some given existing stock of grievances.

In 1969, Ashenfelter and Johnson (A & J) constructed a modified "bargaining model" treating the strike deliberately as an incident of the wage negotiation among employers, union leaders, and the rank and file. A & J argue that the wage increase a union will accept without a strike depends on the unemployment rate, previous wage increases, and profits. Their theory is constrained because it: (1)looks only at the union's side of bargaining strategy; (2) focuses solely upon strikes as a result of

bargaining over wages; and, (3) neglects the role of the government.

Scully's study (1971) found that strike activity was not clearly related to business cycles in the United States from 1919 to 1969. He claims that there are policy implications in his findings for business, labor and government. Yet, in our view, the policy implications in his research are neither obvious nor clearly specified merely by way of questioning the macroeconomic connection but without providing alternative interpretations. Walsh (1975) has examined the Canadian industrial dispute experience over the 1952-1972 period, using three separate measures of strike activity: frequency, duration, and size. He concludes that only the number of the strikes is strongly associated with general economic conditions. That is to say, the significance of economic conditions in bargaining attitudes is "only consistently revealed in the frequency dimension of strike activity, with the result that the relationship between aggregate economic variables and comprehensive time-loss measures of strike activity is relatively weak" (1975: 53).

Paldam and Pedersen (1982), in their time series regression analysis of 15 individual countries, found that for the majority of countries increases in money wage change are positively and significantly related to strike frequency. The unemployment variable is less successful in that only a third of the countries were found to have significant coefficients and the sign on the variable also differs among countries. Two points should be noted here: (1) the instability of unemployment rate as an independent variable is contrary to the findings of many economic studies; (2) even they conclude that the nominal wage change is "relatively superior" in overall explanatory power compared with other economic variables, it is actually insignificant at 0.05 significance level for 5 of 15 individual countries in the Table 7, and insignificant for 4 of 15 individual countries in the Table 5 and Table 6 (1982: 511-514).

To summarize, studies utilizing an economic approach largely confine their

attention to the relationships between trends of industrial conflict and economic conditions. It is not surprising that no consistent and consensual conclusion can be made in those case studies using diversified data from varying individual countries and different course of time.

Industrial-relations institutional approach

In <Changing Patterns of Industrial Conflict>, Ross and Hartman (1960) sought the determinant influences on relative strike activity within OECD countries in aspects of their industrial relations institutions. They emphasized the reduction in organizational influence on industrial conflict as a consequence of the acceptance of trade unions by employers, mutual accommodation and resultant institutionalization of collective bargaining. Ross and Hartman suggest that the decline in strike activity reflects the fact that the meaning and pattern of the strike has changed considerably: "strike activity has tended to disappear as the labor market has been more tightly organized, union-management relations have become more solidary, and labor has directed its activities into the political sphere" (Ross and Hartman, 1960: 176).

Yet in a comparative analysis of institutional viewpoints, Kassalow (1977) attributes the greater intensity of industrial conflict in the U.S., compared with Europe, to differences in the rate of unionization, the coverage and scope of collective bargaining, and the relative importance of private bargaining versus state intervention in job regulation. Adams (1977) has a similar view, arguing that the nature of centralized/. decentralized bargaining explains the high level industrial conflict in North American countries and low level industrial conflict in Nordic countries. The specific forms of decentralized bargaining that exist in Canada and the United States have "a logic of its own which suggests a high level of industrial conflict."

Clegg (1976), a leading scholar in the Oxford school of industrial relations,

maintains that international difference in the institutions of collective bargaining can explain most of the cross national variation in union structure and behavior, including the density of unionization, strikes and political action. Clegg attempts to put forward an institutional theory to account for the varying status and dimensions of strikes based on evidence from six OECD countries.

Political/Organizational perspective

Shorter and Tilly's work, based largely on the French experience, integrates labor organization into a line of argument which views the strike more as a political than economic phenomenon. In their view, trade unions are seen as a mediating influence between workers' dissatisfaction and the translation of those grievances into overt protest, since prior organization is regarded as a precondition of strike activity. For Shorter and Tilly, each of the periodic waves of strike activity in France reflects an increase in the organizational capacities of the labor movement, with the timing of crises at critical junctures of French political history.

Snyder's (1975) argument in support of political variables is essentially that unions tend to strike when they have the resources to do so. He assumes that variations in the institutional setting over the longer term will produce marked variations in the determinants of strike activity. He concludes that, in the three countries (France, Italy and United States) prior to World War II, the organizational/political model explains fluctuations in industrial conflict well. In each case, "union membership as a measure of labor's organizational capacity for collective action is a significant predictor of the frequency and the size of industrial conflict" (1975:274). But in the post-war years the effects of organizational and political influences on fluctuations in strike activity do not seem to be important.

Although the results of Snyder's study are interesting, there are obvious problems in his attempt to measure the political components of industrial conflict. As Gallie (1975) comments, to use the frequency of Cabinet changes as an indicator

of alterations in the national political position of labor is "downright silly," since formal government changes need not involve increased conflict. Also, for the United States, Snyder uses a somewhat different political measure in terms of the actual composition of the political center itself. In consequence, as Bean critically points out, "any direct comparison between the results for the three countries must be somewhat suspect" (1985: 154).

Political-economic approach

In recent years, a number of scholars have utilized both economic and political variables in attempt to explain national strike rates. Edwards (1981) found that economic variables are of some importance, but varied greatly in their effects, and worked in different direction in different periods. He concluded that the influence of the political component in Snyder's model is much less clear, but his results show that the party of the president was related to strikes during the period prior to 1946 in the United States.

Kaufman's findings (1982) include union membership, unemployment, and price change as predictors of strike rates from 1900 to 1977 in the United States. For the 1900-1948 period, it is found that both economic factors (unemployment and price change) and organizational factors (union membership) do seem to affect the level of strike frequency, whereas political factors (the outbreak of World War II, and the New Deal legislation) appear unimportant. In the post-1948 period, however, fluctuations in union organization ceased to be significant at 5% level in explaining annual movement in strike activity, and economic factors did become relatively more important. Skeels retests (1982) Snyder's and Edwards' analysis, employs ordinary least squares and two-stage least squares test, and then concludes that both economic and union organization factors were important in determining the level of strike activity in the 1900-1948 period and that unemployment and price change were always significant and performed in a manner consistent with the study

findings of post-1948 strike activity.

By using an international pooled cross-section and time-series analysis for 10 OECD countries, Hibbs (1976) was especially interested in supplementing the model with political variables, such as the proportion of labor party members in elected governing bodies and appointed cabinets, but only a variable catching the relative strength of Communist parties was significant.

Marks (1986) points out the key role of socialist participation in government: "The effects of socialist participation in government may be viewed from two perspectives, from that of the state and its willingness to grant interest groups, particularly unions, participation in a key sphere of policy formulation, and from that of union and its willingness to take the risks of responsibility for wage restraint " (1986: 257). Thus, governments willing and able to pursue consensual incomes policy as a stable feature of economic policy are able to maintain high levels of industrial peace and employment. By investigating incomes policies of OECD countries, Marks concludes that socialist participation in government and centralized union structure are crucial and interrelated conditions for stable consensual incomes policy.

Limitations of Previous Literature

Although this previous research has a number of strengths and insights, there exist some limitations that could be advanced in the macro-level industrial conflict literature. First of all, most of the literature uses case studies of individual countries, especially the United States, employing simple time-series regressions. However, the external validity of a single case study is limited in terms of theoretical constructing. As we discussed above, it is fairly clear that those case studies fail to yield consistent and commonly accepted conclusions pertaining to the significance of economic and organizational variables. The instability and inconsistency of previous research based on varying cases leads to the fact that we learned so little in

terms of generalized propositions regarding the causes of industrial conflict or industrial peace. One of the problems, as Kaufman notes, is "the lack of a satisfactory theory of strike causation" (1981: 333). The failure to develop a satisfactorily generalized theory leaves us without knowledge of the reasons for relations between certain variables and strike rates.

Second, among this literature, the political-economic approach (Hibbs, 1976; Kaufman, 1982; Skeels, 1982; Marks, 1986) seems to provide a more convincing framework in explaining a union's behavior of wage-restraint and differences of the level of industrial conflict. But again, they all are focused on OECD countries. However, East Asian countries, the region that has had rapid economic growth with impressive industrial peace, seems to be absent in that literature. This paper tries to fill that gap.

One major problem of concentrating on particular areas or countries lies in the fact that it is rarely possible to construct such political/institutional variables that can be applicable to the context of other countries. It does seem likely that, in some countries and during some periods, the political/institutional variables they use do influence national strike rates. Yet, quite different results have been obtained by scholars who relate strike rates to different measures of political climate in different countries. For instance, these political/institutional variables such as "the percentage of Democrats in Congress," "whether the President was a Democrats or Republican," or "the percentage share of Cabinet portfolios held by Leftist party," are definitely not applicable to most non-Western countries. Even within OECD countries, the variable of "participation of Leftist party" is not suitable to interpret the case of the United States; similarly, the variable of "Democrats/Republican" can not be applied in explaining the experience of European countries. Apparently, the attempts at theorizing in the area of industrial conflict have been restrained and inadequate due to the limited focus on OECD countries or the U.S. case studies. In

this regard, this study using comparative research design is intended to construct a more generalized conceptual framework that makes sense of the phenomenon not only within but also without OECD countries.

Third, most of the previous literature has not paid much attention to the government's role in the industrial relations system and thereby has provided little policy implications of importance. A limitation of previous research is that it is less likely to contribute toward policies. When these scholars seek to explore the causal relations of industrial conflict, they often discover causes that rarely suggest policy alternatives. The main purpose of their models is to test whether common background factors in labor market (eg: inflation, unemployment, union density) influence the probability that the interaction between labor and management will lead to a conflict. In general, this literature is likely to construct a model with non-manipulable variables. The explanatory variables that they are interested in are rarely alterable by policy interventions. For example, can we ask, based on their research, whether policy-makers would increase unemployment or adjust inflation in order to influence the level of industrial conflict? Of course not.

While these models try to capture the possible determinants of strikes by looking into the factors of the labor market such as unemployment, wage changes, and union density, the common factors of state institutions and government policy have been overlooked. The ignorance of government intervention in industrial relations leaves us without knowledge of the realistic mechanisms of the most important third party in labor-management relations. As we discussed above, some scholars included political/institutional variables in their models, but still, these dummy variables such as "President of Democrats/Republican" or "the outbreak of World War II," are rarely manipulable by government policy. Besides, these political/institutional variables have not consistently yielded strong results. Thus there are no policy implications of importance to be drawn from these studies, since

they give little, or even no, information to forming policy in resolution of industrial conflict.

Recognizing the insight that government policy and regulations provide for opportunities and constraints for the interaction between labor and management, we argue that industrial relations policy and labor relations law should be included in analyzing the level of industrial conflict. Ironically, it appears that the quantitative industrial conflict literature and the studies of industrial relations policy and labor law have never communicated with each other since the emergence of industrial conflict study in 1920s-- while the quantitative research of industrial conflict has not paid adequate attention to government policy and regulation, the literature of comparative labor law and industrial relations policy have used the descriptive-historical approach without any quantitative analysis.

To remedy some of the limitations of previous studies, this paper will bring the quantitative analysis of industrial conflict and historical-institutional study of industrial relations policy together on the one hand, and derive some new insights from comparative policy research by expanding the observations in time and space, on the other.

III.Conceptual Framework and Research Methods

Conceptual Framework

A crucial third party that is involved in industrial relations is the government. The government, or the state, is not merely the reflection of societal interest. Rather, the state has "state interest" and potential autonomy in the policy process, and may have many ways of shaping the development of civil society. As Block points out, "those who manage the state apparatus, however, are forced to concern themselves to a greater degree with the reproduction of the social order because their continued power rests on the maintenance of political and economic order" (1977: 34). As a

result, the state may formulate and pursue policy goals that are not simply reflective of the demands or interests of social groups or classes.

In the field of industrial relations, following the idea of the "state-centered" perspective, the government can be regarded as an actor performing a number of distinctive roles. A primary role has been to act as a third-party regulator promoting a legal framework which establishes general rules for labor-management interaction, particularly in the procedure of collective bargaining. The government participates in industrial relations either to reenforce the interests of one side or the other or, in ethical terms, to promote a general interest. In a broad sense, the areas of government intervention in industrial relations may include trade unions, industrial action and disputes, terms of employment, and working conditions such as working hours and safety. Since our major concern is industrial conflict, the term "government intervention in industrial relations" (GIR) in this study is narrowly defined as "the government control aimed at industrial action".

The role and strategies of the state in industrial relations are addressed either directly or indirectly to "the problem of control". Government strategy in industrial relations are thus interpreted in terms of a series of choices which are linked to policy goals such as system performance, low levels of industrial conflict and so on (Poole, 1986). The state may play a major role in the institutionalization of collective bargaining. The state can enact a law providing for mediation in labor-management disputes. The right to unionize, which affects the centrality and strength of unions, is formally recognized by the state. The government can also rule that collective agreements are legally binding as a peace obligation for the parties.

More precisely, government control of industrial actions can be observed in two forms---"internal control" and "external control". Internal control of industrial relations can be established by means of the role of trade unions and labor

collectivities, which connects with different modes of political relationship between the state and unions. The government may intervene into internal affairs of trade unions to ensure that the collective actions of labor would not be out of control in the bargaining process. The external control, usually referred to as legal regulation of industrial conflict, involves direct attempts by government to legally restrict or prohibit industrial actions. A common form of such an external control is the provision of government regulations (or services) for conciliation, mediation, and arbitration with a view to facilitating the settlement of industrial disputes. The primary objective of legal regulation in industrial action is to bring the parties together via legislative measures and thereby forcing employer-labor interaction and dealings to be attained. Under some conditions, peace-keeping procedures are recognized to be useful to help resolve disputes and thus avoid using the weapon of strike or lockout. These could take place by means of judicial settlement through labor court, or by government-sponsored mediation and arbitration or voluntary arbitration for these industrial disputes.

While it is true that the restrictions on both management and labor, either in political forms or in legal forms, have the effect of limiting the general area of decision-making left in private hands, an important consequence of these various forms of government intervention is to reduce the area of decision-making left to the parties of workers and employer (Woods, 1968). Put in another way, it can be argued that a variety of government control in industrial relations actually imply the scope and extent of the "area of choice" left to the parties, and confined by the public authority, in the labor relations process. The legislative measures, for example, of conciliation, mediation, or arbitration, are designed to either assist or force parties in negotiation to reach an agreement and thereby reduce the possibility of choosing strike or lockout between the parties.

It should be noted that, while we deal with the role of the state, we do not

intend to imply that the nature of government policy instruments should be the sole source of the sustained industrial peace. Rather, by recognizing the relevance of other factors, what we try to point out is that government strategies in industrial relations do make differences in the level of industrial conflict. The initial appeal of government intervention not only sheds some new lights in the study of industrial relations but also offers a new angle through which to better understand realistic causes of industrial conflict or industrial peace.

Research Methods: A Combined Strategy

Our research strategy seeks to combine quantitatively cross-national analysis and qualitatively historical investigations. With regard to the quantitative method, this study undertakes a cross-national analysis of six countries, including four OECD countries and two East Asian countries. The selection of these six countries is based on three modal types of industrial relations systems alternatives--centralized/coordinated system (Sweden, Norway); decentralized/pluralist system (United States, Canada); and decentralized/developmental system (South Korea, Taiwan). The six-countries case is a deliberately constructed sample where each pair of countries is from a different area. Our strategy of sample selection is to choose each pair of countries which are most closely approximate from centralized and decentralized wage-bargaining system, respectively [1].

1.The classifications for Sweden and Norway are the only pair of countries showing the closest and consistent rankings across three studies conducted by Blyth (1977), Bruno and Sachs (1985), and Calmfors and Driffill (1988). The United States and Canada Thhave a similar character. Regarding the group of East Asian NICs, on the one hand, Hong Kong is not a typical "developmental state" in that Hong Kong is a "city economy" ruled by a colonial government that has basically followed the laissez-faire principle in economic affairs. On the other hand, the reason that we do not choose Singapore as the sample country of decentralized/developmental system for quantitative analysis is simply because Singapore's records of industrial disputes of 1969 and from 1978 to 1986 are not available. Accordingly, Singapore's data of industrial disputes may not be appropriate for a pooled

In addition to the criterion of typical representativeness, there are two reasons of this study for this "purposive sampling" (Dixon, Bouma, and Atkinson, 1987: 139-140) research design. First, by mapping out these countries across three areas, we may avoid the selection bias of concentrating on countries in particular area, and thus look into cases beyond OECD countries. Second, it can be assured that considerable variations in the measure of government intervention and industrial disputes can be obtained across countries as well as over time.

In order to overcome the problem of small sample size, we will employ pooled cross-sectional and time series data analysis so that the total number of observations is 162 for the six-countries sample during 1960 to 1986 [2]. The pooling of cross-sectional and time series data promised to resolve some statistical controversies as it reduced the intercorrelation among the independent variables and greatly increased the degrees of freedom. Our general strategy in the data analysis is to estimate two statistical models commonly used in pooled data analysis : (1) Ordinary Least Squares (OLS) mode as a natural starting point in pooled data analysis; and (2) Least Squares with Dummy Variables (LSDV) model, also called "fixed effect model" by incorporating three region-dummies and six country-dummies, respectively.

A core issue of our model is how to measure the policy variables over time. It is clear that an empirical test of the hypothesis of this study requires the identification of quantifiable attributes of government policy. In order to transform policy trends into quantified variables, we create a standardized and generalized scale that

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cross-sectional and time series data analysis.

2.The main reason that we use 1986 as the ending point is because of the considerations that the updated information of government policy and regulations in industrial relations are rarely available for each of those six countries among existing published studies or reports. Accordingly, we would feel more confident if the availability and reliability of the data can be assured.

combines two distinct properties: (1)government control over unions, and (2)legal regulations in industrial action. This measure not only has to be able to capture directly the degree of internal control and external control of industrial action by government but also needs to be applicable to different countries in different areas. For the purpose of tapping the policy variable being studied, we will conduct historical-institutional investigations by utilizing numerous government document and reports, reference books of comparative industrial relations and labor law, and relevant articles and papers. The method of tapping policy variables into scales may not be perfect, but it is acceptable and useful as long as we keep logical consistency in scoring various policy periods. Furthermore, we will conduct statistical tests of the policy indices to examine the validity and reliability of the scale being constructed.

IV.The Policy Indexation and Policy Scores of Government

Intervention in Industrial Relations

In a broad sense, the areas of government intervention in industrial relations can be comprised of union organizations, settlement of disputes, terms of employment, and working conditions (e.g.: health and safety). Since industrial conflict is our major concern, we employ two direct measures of government intervention affecting fluctuation of industrial disputes: government control over union organizations, and legal regulation in industrial action. We select these measures based on two main reasons: (1) These two measures, which represent internal control and external control of industrial action by government, respectively, are an appropriate proxy of measuring the "direct impact" of government control on industrial conflict; (2)they are viewed as general forms of government control that can be applicable to different policy contexts of each

country, ranging from laissez-faire to interventionism policy.

Government intervention in industrial relations that is directly related with industrial conflict can be seen mainly in two aspects of control. On the one hand, the government may establish an affiliated or close relationships with unions, in one way or another, in order to make industrial actions more controllable and manageable. On the other hand, the state may attempt to avoid frequent work stoppages through procedural restrictions on the right to strike. Thus an appropriate proxy for measuring the degree of government intervention in industrial relations can be presented in such a way that--- Index of government interventions in industrial relations = Score of government control over unions + Score of legal regulation of industrial action (for each year in varying policy period).

To indicate the measures as meaningful and consistent scales, further clarification must be undertaken to tighten our operational definition in the following.

(A) Government control over union organizations

The pattern and level of the strike is to a large extent determined by non-legal factors such as the position and autonomy of the trade union movement. The obverse of union autonomy, the internal control by government, is used here to denote the degree to which the government can control or interfere in the internal affairs and collective bargaining activities of labor organizations. Basically, the greater the control of the government over the collective activity of trade unions, the smaller is the freedom of the unions to deviate from settlements that are preferred by the government. If strikes by unions represent to some extent a behavioral manifestation of union autonomy and if, the amount of that autonomy varies among countries over time, then we might expect the structural constraints of union autonomy to influence the level of strike activity.

The numerical score of government control over unions is weighted and

classified as follows:

(1) 1.0 ---- voluntary/liberal policy, in which the government acts as a neutral third party providing rules for the parties to organize and interact with each other.

The philosophy behind voluntary policy can be termed "industrial pluralism" (Tomlins, 1985). Its adherents conceive of management and labor as self-governing equals who, through collective bargaining, jointly determine the terms and conditions of sale of labor power; and they see the historic purpose of labor relations law as nothing more than the facilitation of this process (Stone, 1981). Voluntary policy also implies that the government should play a minimal role in the internal control of labor organization, since the government intervention in the internal affairs of social organizations would represent a denial of organizational autonomy.

(2) 2.0 ---- government may control union activities through statutory restrictions on union recognition, registration, and representation.

In most developed countries, unions may receive recognition without, or with limited, interference in their internal affairs and activities. However, the law usually permits selection among unions, e.g. giving support only to those with certain standards of representativeness; hence, it indirectly controls them. This is the case where representativeness is control "from outside" on the basis set up by the government. For example, in the case of the United States, control over trade unions and collective bargaining such as exclusive representation has been explicitly addressed by the Labor-Management Report and Disclosure Act in 1959 and by court interpretation of the duty to bargain. Somewhat similar controls are granted to federal industrial courts in Australia (Cella and Treu, 1985: 217). Another vehicle of government control on unions, introduced in some developed countries, is typically the registration or recognition procedure.

(3) 3.0 ---- government may control unions through institutional linkage

between the government and the unions, while unions remain larger extent of union autonomy than that under the situation of direct government-control.

The most revealing example is the countries where labor parties participate in government with an institutional linkage between pro-labor government and trade unions. In this case, the presence in government of a left party with close ties to the labor movement gives the unions greater assurance that the government are in the hands of political forces whose destiny is dependent on labor support and that policy-makers are more likely to understand and attend to labor's interests. As a result, unions are more likely to restrain aggressive industrial action and commit to neutralize potential sources of militancy at the grass roots as a reward and support to government's favorable policies.

In turn, the traditional fraternity and institutional and personnel linkages between labor unions and the government to some extent would secure the compliance of the union's rank and file with the policy of restraint in the use of strikes. As Marks argues, in the discussion of relations between incomes policy and socialist participation in government, "social democratic governments may manipulate traditional fraternity within the working class to create industrial peace.." (1986: 257-258). Also, the regular liaison and personnel exchange at the national level between union confederation and government more or less make unions leaders to be inclined to hold militant strike activities in check, avoiding embarrassing pro-labor government.

However, it should be noted that such an institutional affiliation between government (or ruling party) and trade unions might occur not only in societal-corporatist countries but also in state-corporatist nations, the former being fraternal pattern and the latter being paternalistic pattern. Precisely, the latter case is a situation where the government relaxes its direct control over unions, and thus unions gain union autonomy to a larger extent than that of "direct control" situation

but remain institutional ties with the government.

(4) 4.0 ---- government may impose direct control over unions.

The direct control over union actions is often based on the principle that the interests of the state, as representative of national interests, take precedence over the interests of labor or other special-interest groups. Since union federations are sponsored or restructured by the government, the union movement is dominated by the government (or ruling party) rather than union leaders. Under this policy network, unions are expected to play "productionist" roles supportive of national economic development. Unions usually become administrative arms of government. In particular, unions are often asked to educate, train, and discipline members; raise productivity; explain government policies to members; and restrain labor-management conflict. Therefore, the autonomy of state-affiliated unions are basically determined by the government policy, implying that the role and activity of unions are subject to government direction. The government's direct control could be conducted by restructuring or establishing union federations, selection of union leaders, financial support, and so on.

There is one major difference between "direct control by government" (4.0) and "institutional influence by government" (3.0). In the former situation, while union policy and activity are under control of the government, union autonomy rarely can be found in the collective bargaining process. However, in the latter situation, although the government may influence or control union activity through its institutional ties with the union system, unions basically retain their autonomy to a large extent.

(B)Legal Regulation of Industrial Action

Government intervention in industrial relations (GIR) is usually presented as a form of institutional development or legislative enactment and the fashioning of machinery for the resolving of disputes which has become legalized. The

government may intervene with direct legislation to solve some of the problems of industrial conflict. In a general sense, labor standard law, labor relations law, and regulation of industrial action illustrate this approach. Another approach of government policy is to place heavy reliance on private negotiation and private agreement in the belief that what the parties find acceptable to them will be consistent with the public interest (Woods, 1968). While it is true that the legal restrictions on both management and labor have the effect of limiting the general area of decision-making left in private hands, the legal system of industrial disputes settlement reflects various degrees of the government intervention in industrial actions. However, the organization, jurisdiction, composition, and procedures of labor dispute-settlement mechanisms vary widely in minor details throughout the world. As a comparative policy research, this study focuses primarily on qualitative distinction of general legal conditions and principles for industrial action which can be found across various legal systems.

The score of legal regulation of industrial action is weighted and classified as follows:

(1) 1.0 --- encouraging collective bargaining by voluntary mediation and arbitration, and specified peace obligation.

This policy generally emphasizes the voluntary character of negotiations and considerable autonomy for the bargaining parties, with little legal restriction and often a high degree of informality. It is based on the belief that management and labor are able to resolve their mutual problems through a system of self-government. However, the parties are offered, if labor-management disputes occur, the services of mediators or conciliators who will assist them in their negotiations. But such a voluntary conciliation or arbitration will be undertaken only when both parties agree to choose conciliation or arbitration. Also, the mediator or conciliator cannot compel them to reach agreement; he can only assist them to do so. If agreement is

not forthcoming, the parties are free to mount economic pressures in order to force the opposite party to make concessions. The most common form of pressure is a strike or lockout.

The bargaining parties may choose to contractually waive the right to strike or lockout. Such waiver, known as "peace clause," must be expressly made part of the collective agreement. If the parties undertake industrial action in breach of a peace clause, their conduct is unprotected. This specified peace obligation is confined to the specified duration of a collective agreement, which is not always in practice a guarantee that peace will be maintained (Jacobs, 1993).

(2) 2.0 --- voluntary arbitration, specific peace obligation, but the right to strike being prohibited in public/essential services.

In fact, the government role in the situation of specific peace obligation is identical with that in the first category (1.0), facilitating services for voluntary conciliation and arbitration. An important distinction between category (1) and (2) concerns the limitation on the right to strike in public service or in essential services. Strikes in these areas tend to victimize the public and sometimes even threaten the whole economy. Thus in many countries disputes in these areas have for a long time been prohibited. Generally speaking, the range of options open to governments in respect of public/essential service-disputes includes: (a) establishing an inquiry into the dispute by a court or committee; (b) compulsory mediation, or compulsory arbitration; (c) forceful intervention.

Most industrial countries recognize some restrictions on industrial action for the protection of the general public. For instance, the United States has laws prohibiting public employees from resorting to work stoppage activities. In Sweden there are special restrictions on the freedom to resort to industrial action in the public sector. The Basic Agreement Act contains a chapter dealing with the handling of disputes threatening essential societal functions (Jacobs, 1993: 437).

(3) 3.0 --- "general peace obligation" in which, based on statute or public authority, strikes and lockouts are illegal during the term of a collective agreement or to negotiate an agreement, and all lawful strikes or lockouts can only be allowed until various peace-making measures such as compulsory mediation have been exhausted.

General peace obligation, as opposed to specified peace obligation, is based on statute or public authority. General peace obligation normally prohibits a union from giving official support to a strike which may have started as an unofficial stoppage (Birk, 1982). A system of general peace obligation is always coupled with labor court and compulsory mediation or arbitration. The term "compulsory arbitration" is referred as a procedure which does not contain voluntary elements. Namely, government intervention may eliminate private decisions in these collective agreements by substituting compulsory arbitration as the normal means of setting industrial conflict. Compulsory mediation or arbitration can be seen as a discretionary measure which may be initiated by some government authority such as state mediator or state arbitrator, labor courts, or other forms of judiciary machinery. But this does not mean that the right to strike has been destroyed. Rather, the use of strike and lockout is lawful only after legally regulated procedures have been exhausted.

(4) 4.0 --- discouraging collective bargaining and prohibiting strikes in which literally any form of strike and lockout is unlawful.

In this case, labor relations laws have the function of prohibiting the employers and workers from exercising the weapons of strike or lockout, so the peace obligation can be observed. The prohibition of strike covers not only the public sector but also private sectors. In such a case, while private collective-bargaining is mostly displaced by government involvement, compulsory arbitration is treated as the final appeal in lieu of the use of ultimate weapons of industrial action, which is

somewhat different from the sense of government mediation or arbitration in category 3 (3.0). Obviously, the resort to compulsory arbitration initiated by government implies that government policy discourages collective bargaining activities in labor-management relations. Thus an official strike is in theory impossible, but unofficial work stoppage could be possible, depending upon whether public authority strictly, or leniently, enforces the policy of banning strikes.

Each indicator is scored for each year of the period from 1960 to 1986. The annual index of government intervention for each country ranges from 2.0 to 8.0. As a comparative policy research, clearly, this policy variable not only reflects cumulative features of various industrial relations policies ranging from voluntary policy to restrictive policy, but also is an intervening variable that could be manipulated by alternative policies. The government intervention represented with the combination of internal control and external control in our model is based on the assumption that both political/ institutional aspect and legal aspect of state intervention have significant and sensible impacts on the fluctuations of industrial conflict. A higher score of GIR means a higher degree of government involvement and more regulative features in labor relations policy in a given period. Recognizing the fact that there exist different patterns of government control in industrial relations such as the facilitating control in Nordic countries, or the paternalistic control in East Asian NICs, our strategy in this research is to focus on the dimensionality of the relative degree of government control in industrial relations[3],

3. We must emphasize here that a high degree of government intervention in industrial relations does not necessarily mean an anti-labor or anti-union policy. On the contrary, it might be preferred by workers, especially when unions want to end a protracted impasse between labor and management and thus call for government intervention. Recall that, in the cases of Nordic countries, the government may play an interventionist role in incorporating labor and management into the decision-making process and maintain its facilitating control relationship with the trade unions. To reward government policy favored by workers, trade unions share responsibility in wage demand

by which the policy scores can be consistently utilized in quantitative hypothesis-testing. This measurement represents our careful attempt to meet the demands of the conceptual framework of government role and strategies. We believe that the GIR setting with objective criteria is a practical way of measuring policy variable.

One should note that the mere presence of particular forms of government or specific forms of legal regulations may not be a sufficient reason for assigning a fixed score in particular policy periods. Rather, a dynamic-historical investigation of policy trends must be undertaken in accordance with realistic "historical facts" by looking into the interplay between the government policy and political-economic context in a more comprehensive sense. The description of policy scores and the data sources of policy trends for the six countries are presented in Appendix A and Appendix B, respectively.

V. The Models and Empirical Results

Model Specification

Our primary hypothesis is that a higher degree of government intervention is more likely to bring down the level of industrial conflict. Put differently, government control or coordination is positively associated with industrial peace; namely, the government policy in industrial relations is a crucial factor in maintaining industrial peace.

In order to evaluate our refined model, the analyses start to estimate the equation of the original model:

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and strike regulations. On the other hand, even in the cases of East Asian NICs, where government intervention restrains the unions' power in collective bargaining, workers may benefit from the low unemployment rate and relative equality of income distribution. The fruit of sustained prosperity makes it possible that unions are willing to cooperate, or comply, with the government policy even if their ultimate weapon of industrial action is limited by the state.

$ID_t = f(\Delta GDP_t, \Delta Wt, Ur_t, \Delta P_t, Union_t, GIR_t, Trend)$, $_t$= 1960-1986.

Where: ID_t = Industrial disputes, measured as the number of workers involved in work stoppage per 1,000 civilian labor force in year t;

ΔGDP_t = Annual growth rate of real GDP (Gross Domestic Production);

ΔW_t = Annual change rate of money wage;

UR_t = Unemployment rate in year t;

ΔP_t = Annual percentage change in Consumer Price Index (CPI);

$Union_t$ = Union membership as a percentage of the civilian labor force in year t;

GIR_t = Policy variable of the degree of government intervention in industrial relations in year t;

Trend = Linear time trend.

In developing our model we employ a number of economic and organizational variables that were among the major variables used by researchers of industrial conflict. An inspection of the measure of dependent variables, as well as the expected sign of explanatory variables included, is presented below.

(A)Measures of industrial disputes[4]

According to the Yearbook of Labor Statistics published by the International Labor Office, there are three measures of industrial disputes: (1) frequency--a measure of the number of strikes and lockouts; (2) breadth--a measure of the number of workers who participate in the work stoppage; and (3) duration--the length of work stoppage, usually in man-days of work lost. However, the key

4.The data sources of industrial disputes are from I.L.O. Yearbook of Labor Statistics, various issues; Executive Yuan, Employment and Earnings Statistics in Taiwan Area, R.O.C, various issues; and Council of Labor Affairs, Yearbook of Labor Statistics (Taiwan), various issues.

criterion in selecting a measure of industrial disputes should be the availability and reliability of the measure. In this comparative policy research, we choose the number of workers involved in industrial disputes, divided by labor force size, as the indicator of industrial conflict because it is a relatively consistent measure in terms of cross-national comparison[5].

(B)Economic variables

(1) Growth rate of real GDP --- The growth rate of real GDP is used here to capture the business prosperity, or as an indicator of business cycle. Sustained economic growth may afford the opportunity to reward the workers with higher wages, thus reducing the probability to strike. Therefore, it might be expected that the rate of economic growth and levels of strike activity will vary negatively over the long term (Craig, 1990). On the other hand, it could be assumed that economic prosperity increase union wage expectations since they will want an "equitable share" of profit gains, and thus increase the likelihood of a strike (Walsh, 1975). However, these are simply the hypothetical alternatives in predicting the relationship between strike levels and economic growth. Thus our study is intended to test whether one hypothesis prevails or not by employing pooled cross-national and time series analysis.

5.For Korea and Taiwan, the data of working days lost are inaccurate and missing for a given period. With regard to the measure of frequency, the problem of inconsistency exists not only across countries but also within country. For example, Canada's data of industrial disputes excludes the number of disputes in which the time-lost is less than 10 man-days; the profile of the United States, beginning from 1980, excludes disputes involving less than 1,000 workers and lasting less than a full day. But Taiwan and Korea report every case of industrial disputes even if it was a dispute involving only five workers.

As a matter of fact, most studies on which we comment use one of two standard measures: number of industrial disputes and number of workers involved.

(2)Money-wage change[6] --- Following a line of reasoning developed by Kaufman (1982), we use money wage change as a measure of worker well-being. Both Kaufman and A & J (1969) predict a negative relationship between wage increases and strikes, based on the assumption that workers' desires are largely satisfied by large wage increases for a given level of inflation. However, there is an opposite hypothesis that large wage increases raise workers' expectations and lead to more strikes. While both sets of motives probably exist, the money-wage change variable will be used to determine whether one motive predominates.

(3)Unemployment rate[7]--- Rees (1952) argued that the "principal economic factor affecting union behavior is the state of the labor market--the amount of employment available" (p.380). Most economic interpretations use the unemployment rate as a labor market indicator of business condition and expect it to influence the level of industrial disputes negatively, since rising employment simultaneously increases the probability of striking workers' finding alternate employment and decreases the possibility of the employer's finding strike replacements. However, it is worthy of noting that the opposite observations have been raised by comparative political economists particularly in analyzing the European countries. Cameron (1984) and Craig (1990) argue that employment is the good exchanged for industrial peace, namely, workers are more likely to restrain militancy in exchange for the guarantee of full employment by the government. Thus they claim that nations with low levels of unemployment tend also to have low levels of industrial conflict.

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6. Sources of money-wage change are from: International Labor Office (ILO) Yearbook of Labor Statistics, various issues (for the OECD countries and Korea); and Council for Economic Planning and Development, Taiwan Statistical Data Book, various year(Taipei).

7.Data are from I.L.O., Yearbook of Labor Statistics, various issues(Geneva); OECD, Economic Outlook, various issues(Paris); and CEPD, Taiwan Statistical Data Book, 1990(Taipei).

(4) Inflation [8]---The inflation variable is used for determining how price changes affect industrial conflict. Most studies found a positive association between price change and strike activity, arguing that inflationary pressure may increase the likelihood that unions demand higher wages, and thus the occurrence of industrial disputes increases. The inflation variable may reflect the tightness of the product market and the perceived vulnerability of the employer to meet the demands from unions or workers.

(C)Labor-organizational variables and time trends

(1) Union density[9] ---Union membership is divided by labor-force size so that its effect on strike activity will not reflect the simultaneous influence of labor force on both variables. Since union density is assumed as a proxy measure of organizational strength of labor, it is hypothesized to have positive effects on the strike levels. This is based on the assumption, according to Shorter and Tilly (1974), that the mobilization, or organizational capacity for collective action, of workers (measured as union membership) will be the most powerful predictor of strike fluctuations.

(2)Trends---The trend coefficient represents whether there is a significant secular decline or increase in the level of industrial disputes over time. The inclusion of a time trend in the model is intended to provide a tentative indication of the extent to which bargaining relationships mature and become more responsible with the mutual understanding for some institutional reasons.

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8. Inflation is estimated as the change in the consumer price index (CPI). Data are from International Financial Statistics Year Book, 1991; and CEPD, Taiwan Statistical Data Book, 1992.
9. The statistical data of union membership of Sweden, Norway, Canada, and the United States are from Visser, 1991, "Trends in Trade Union Membership", Employment Outlook, Paris: OECD; the data of union membership of Korea and Taiwan are from Council of Labor Affair(Taiwan), Yearbook of Labor Statistics, various year; Korea(Republic of), 1988, Yearbook of Labor Statistics, Seoul.

(D)Policy variables: GIR

The policy variable of government intervention in industrial relations reflects cumulative features of various industrial relations policies ranging from voluntary policy to restrictive policy. This is the most creative part as well as primary focus in our refined model. Government intervention in industrial relations can be seen mainly in two dimensions. The government may establish an affiliated or close relationships with unions, in the form of internal control, in order to make industrial actions more controllable and manageable. On the other hand, the government may attempt to avoid frequent work stoppages through procedural restriction on the use of strike or lockout, which can be seen as an external control over industrial action.

Based on the policy scores of GIR presented in Section IV, we will run regressions of the refined models by incorporating the policy variable in order to test whether or not there is a close correspondence between the variations of industrial relations policy and the levels of industrial disputes. Since tremendous attention has been given to the conditions of the labor market, we are also interested in sorting out the following questions: can we find consistency and strength in explanatory power from economic variables? Can we discover the significance of independent variables other than labor market factors?

To figure out those puzzles, we will test various models steps by steps.For the purpose of comparison, we will regress the second model with lagged independent variables[10]:

Model (2) $ID_{t+1} = f(\Delta GDP_t, \Delta W_t, Ur_t, \Delta P_t, Union_t, GIR_t, Trend)$, t= 1960-1986.

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10. In the literature of industrial conflict, there are various scales for the lagging time such as moving average of previous three years, lagging one quarter or two quarters(half a year), etc. Considering the fact that the annual profiles of industrial disputes are a common form of data in ILO's publication, our research chooses the most frequently used scale, one-year lag.

Second, we also regress the fixed-effect model with regional dummies, taking the general system/regional difference into account. The fixed-effect models are intended to examine whether or not the significance of GIR is largely reduced under the context that the system/regional dummies were controlled. Thus we have two fixed-effect models:

$ID_t = f(\Delta GDP_t, \Delta W_t, Ur_t, \Delta P_t, Union_t, GIR_t, Trend, Noram, Noreu)$; and

$ID_{t+1} = f(\Delta GDP_t, \Delta W_t, Ur_t, \Delta P_t, Union_t, GIR_t, Trend, Noram, Noreu)$, t= 1960-1986;

where Noram = North America; Noreu = North Europe; and base category = East Asia.

Third, the models with two policy variables separately representing the two dimensions of government intervention, government control over unions (GIRA) and legal regulation of industrial action (GIRB), will be tested against the original model such that we have the models with GIRA and GIRB altogether:

$ID_t = f(\Delta GDP_t, \Delta W_t, Ur_t, \Delta P_t, Union_t, GIRA_t, GIRB_t, Trend)$; and

$ID_{t+1} = f(\Delta GDP_t, \Delta W_t, Ur_t, \Delta P_t, Union_t, GIRA_t, GIRB_t, Trend)$, t= 1960-1986.

Another potential issue with which economists are often concerned in this model is regarding the impact of the theoretical relationships of some economic variables on the model. Considering the Phillips-type model of wage change and unemployment rate, one may argue that there may exist an exact collinear relationship between money-wage change and unemployment rate, and thus affect the estimated coefficients of the model. Theoretically, the Phillips-type model is widely accepted in the sense that the rate of the change of money wage is closely affected by the change of unemployment rate (Barro, 1984: Chapter 9). Following this line of argument, we may specify the first structural forms of the model as:

$ID_t = f(\Delta GDP_t, \Delta W_t, Ur_t, \Delta P_t, Union_t, GIR_t, Trend)$;
$W_t = f(UR_t)$, t= 1960-1986.

The first question is whether the "wage change" is merely passing on the influence of unemployment rate to strike activity, without adding any explanatory power. If it does act as a mere transmitter of the factor of unemployment rate, does the remaining non-unemployment rate portion of wage change help explain the variations in the level of industrial conflict? More importantly, what will happen to the coefficients of GIR and the other explanatory variables when eliminating the portion of wage change determined by unemployment rate?

To clarify these questions, we will be using a form of "two-stage least squares" (TSLS) to test the structural equations. By eliminating the impact of the unemployment rate on wage change, we should be able to test whether there exists specification bias in the models. We first regress the equation $\Delta W_t = f(UR_t)$, and obtain "the residual of Wage" (reW), which will then be substituted for the wage variable in the first equation. Thus we may see whether there are significant changes in the estimated coefficients of the explanatory variables. Another plausible relationship can be derived from the model of money-wage and price determination. Since the increase rates of money wage often go together with the inflation rate, one may argue that the price variable should also be included into the wage equation (Gujarati, 1988: 559-560). Thus we have the second structural equations of industrial conflict model:

$ID_t = f(\Delta GDP_t, \Delta W_t, UR_t, \Delta P_t, Union_t, GIR_t, Trend)$;
$W_t = f(UR_t, \Delta P_t)$, t= 1960-1986.

Furthermore, from a macroeconomic perspective, it can be assumed that the economic growth rate may affect the magnitude of wage changes as well as workers' wage expectations (Walsh, 1975; Barro, 1984). Hence, we construct the third

structural equations to be tested with TSLS method:

$ID_t = f(\Delta GDP_t, \Delta W_t, Ur_t, \Delta P_t, Union_t, GIR_t, Trend)$;
$W_t = f(UR_t, \Delta P_t, GDP_t)$, t= 1960-1986.

Finally, several statistical techniques, including internal consistency test, Cronbach Alpha test, and the criterion validity test, will be conducted to examine the validity and reliability of the policy indices that we construct in this study.

Empirical Results

The results of fitting the original model and the time-lagged model to the data for the period 1960-1986 are presented in Table 1(See the Appendix C). The first thing to notice about Table 1 is that the signs and coefficients of GIR in two equations are consistent with our hypothesis that the government intervention has a significant impact on the level of industrial disputes. The t-ratios of GIR in both two models, -7.28 and -6.52, respectively, are significant at the 0.01 significance level. This means a significantly negative relationship exists between the degree of government involvement in industrial relations and the likelihood of militant industrial action, that is, the higher degree of government intervention in industrial relations, the greater is the chance of avoiding work stoppage. The R-square of model 1 indicates that 37.3 percent of the total variation of industrial disputes was explained by the model, which performs reasonably well in terms of the overall explanatory power.

On the other hand, the coefficients for growth rate of GDP, money-wage change, unemployment rate, inflation, and union membership are not statistically significant, even at the relatively undemanding 0.1 significance level. It should be noted that, however, the signs of coefficients of unemployment rate and inflation are consistent with the results of most economic studies in industrial conflict although they are not statistically significant.

By comparing two models in Table 1, we observe that the t-ratio of GIR of model 1 is higher than that of model 2, which implies that the original model performs better than time-lagged model in terms of the explanatory power of the policy variable. This result makes sense to us since government control and regulation are more likely to yield immediate impacts (limitations or opportunities) on the behavior of the parties in industrial action as soon as the government action was initiated in a given time period. Note also that, according to Durbin-Watson d Statistics Tables, the interval of "no significant autocorrelation" at 0.01 level of significance for the models 1 and 2 is between 1.722 (Du) and 2.278 (4-Du), and thus the D-W coefficients of models 1 and 2 fall into the level of "no significant autocorrelation". On the other hand, Variance Inflation Factor (VIF) test shows there is no significant multicollinearity among the independent variables[11].

The Models 3 and 4 shown in Table 2 present a test of fixed-effect model by including regional dummies. The regional dummies can also be interpreted as dummy variables of wage bargaining systems, since each group of countries are the most closely typical system in wage bargaining, as we mentioned earlier. The coefficient of GIR remains significant at 0.01 level in model 3 and at 0.05 level in model 4, even when controlling for system/regional difference, while union density and the dummy variable of North Europe become significant at 0.05 level. Nonetheless, there are two statistical problems in the models 3 and 4: (1) the results of VIF test signal there exists significant collinearity between union density and North Europe; (2) the problem of serious collinearity in turn distorts the parameter estimates of regional dummies such that the parameter estimates of dummy

11. A potential statistical issue in this model is the presence of collinearity in the independent variables. We use the Variance Inflation Factor(VIF) test to detect whether collinearity is significant or not. Theoretically, if VIF coefficient is greater than 10, it signals a significant collinearity.

variables do not actually reflect the mean level-difference among the three areas[12].

However, a statistical issue should be noted in discussing the fixed-effect model. If the objective of the analysis is not only prediction but also reliable estimation of the parameters, serious multicollinearity will be a problem because it leads to a large standard errors of the estimators (Gujarati, 1988: 307-308). But if the primary concern of the analysis is not on the parameter estimations of dummy variables, which our research is not, collinearity may not pose a serious problem since it violates no regression assumptions. Obviously, our primary concern in the models is focused on the performance of policy variables along with other variables, rather than the estimation of the parameters of regional dummies. Therefore, at theoretical level the fixed-effect model may still make sense to us in terms of examining the performance of GIR by controlling regional/system dummies.

Furthermore, we also test the fixed-effect models with country dummies. Again, the results are similar to those of the fixed-effect models with regional/system dummies: (1) in the present model (ID_t), GIR remains significant at

12. There are basically two alternatives to detect this statistical problem: either dropping "union density", or excluding "North Europe". We first test the models with dropping out "Union". With "union density" excluded, the GIR becomes the only significant explanatory variable again and the VIF coefficients have been moderated to insignificant level. We then test the models by dropping out "North Europe". Similarly, the GIR is the only significant independent variable and collinearity is no longer highly significant with the removal of "North Europe".
It is not difficult to figure out why union membership is highly collinear with regional dummies by looking into the variations of the data, since the collinearity is essentially a data (sample) phenomenon. The three regional dummies could be interpreted as three types of institutional framework. Meanwhile, there exists an approximately constant difference of union membership between each pair of the countries in three areas: for the United States and Canada, the general level of union density ranges from 25% to 35%; for Taiwan and Korea, it ranges from 15% to 25%; and it ranges from 65% to 90% for Sweden and Norway. In reality, such a particular pattern of distribution in union density is parallel with three regional dummies representing a constant level of difference.

the 0.01 significance level in the context of controlling country-specific dummies; (2) in the time-lagged model (ID_{t+1}), GIR is less significant (P=0.16) than that of the present model (See Table 8).

One crucial issue in the statistical analysis of the models is with regard to the validity and reliability of the policy indices in the models. To examine the internal consistency between two dimensions of the GIR, government control over unions (GIRA) and legal regulation of industrial action (GIRB), we regress industrial disputes on the model with two sub-policy variables altogether. In Table 3, model 5 shows some impressive results: (1) both coefficients of GIRA and GIRB are significant at the 0.01 significance level, each with an almost identical t-ratios (-3.858 and -3.580, respectively); (2) the R-square of model 5 (0.373) is the same as that of model 1; (3) the sum of the t-ratios of GIRA and GIRB is approximate to the t-ratio of GIR in model 1 (-7.282). This seems to imply that, even if the GIR was divided into two independent variables, both aspects of the government control in industrial relations still perform reasonably well in determining the level of industrial conflict. This is a type of internal consistency in which the overall score corresponds to the scores of its components.

Recall that, as we mentioned earlier, the original model (model 1) performs better than the time-lagged model (model 2). This is also true for the model with GIRA and GIRB, as can be seen in Table 3. This can be reasonably understood since, for instance, the probability of the parties to engage in industrial action is less likely to be affected by the obsolete legislative regulation if the labor relations law has been changed in an earlier period. The significance of GIRA in model 6 also indicates that government-union relationships seem to have somewhat longer effects of restrain-ing or influencing strike activity.

To examine further the explanatory power of GIR, we also run regressions of the original models (models 7 and 10), the fixed-effect models (models 8 and 11),

and the models with GIRA and GIRB (models 9 and 12) for the sample of four Western countries by excluding the data from Taiwan and Korea. The results shown in Table 4 are consistent with those results derived from the six-countries sample in many respects: (1) as can be seen from model 7, GIR is significant at the 0.01 level while the other variables are not significant even at 0.1 significance level; (2) in model 8, GIR remains significant at the 0.01 level with the inclusion of regional dummy; and (3) model 9 shows that both GIRA and GIRB also perform well in determining the probability of the parties to engage in work stoppage. Thus we may say that the results indicated in Table 4 appear to strengthen our argument concerning the importance of government policy [13].

Table 6 demonstrates the statistical results for three structural equations of the original models. The results of the three structural equations are consistent with those of the previous models we discussed earlier: the coefficients of GIR are consistently significant at the 0.01 level; economic and organizational variables do not yield a significant impact on the variations of industrial conflict, even at the relatively undemanding 0.1 level. Compared with the original model 1, the t-ratios (-7.282) and P-values (0.0001) of GIR remain significant at the 0.01 significance level for the three models with instrumental variables; on the other hand, throughout these three models the economic variables, including the unemployment rate, inflation, and GDP growth rate, merely have little changes in coefficient estimates, which are still insignificant at the 0.1 level. The results of the three time-lagged models with instrumental variables, shown in the Table 7, have the same scenario as those of the Table 6. Clearly, the above evidence indicates that the

13. Again, Table 5 reveals that the coefficients of the policy variables in time-lagged models are not so strong as those of the Table 4. But the overall performance of the time-lagged models are still gratifying.

performance of GIR is really robust and consistent[14].

Moreover, the "construct validity" can be found from our regression results. Construct validity has to do with the ability of the scale to measure variables that are theoretically related to the variable that the scale purports to measure (Sirkin, 1994: 70-71). If the theoretical attributes of GIR are consistently and significantly associated with the level of industrial disputes, we should be able to empirically confirm the construct validity of our policy indices. Table 8 summarizes the coefficient estimates of the policy variables, including GIR, GIRA, and GIRB, as revealed in the various models we have tested above. As can be seen in this table, almost every coefficient of GIR in these models is different from zero at the 0.05 significance level, except the lagged fixed-effect model with country dummies and the lagged fixed-effect model for four OECD data. However, even if the two exceptions are the cases in which GIR's coefficients are less significant than the 0.05 level, the policy variable is still suggestive in explaining the variations of industrial conflict because: (1) its sign consistently shows a predicted direction; (2) the significance level of the GIR's coefficients in the two cases are still relatively more significant than most of the other variables; and (3) the two models resulting in less significant coefficients are in the context of significant multicollinearity

14. To confirm the validity of the policy index, criterion validity must be noticed. If the index has criterion validity, those scoring higher on GIR would also be expected to perform well in industrial peace. We run a model with all dummies of GIR's criteria ranging from 2.0 to 8.0. The parameter estimates of the models are all significant at the 0.01 level and generally consistent with the ranking of the scoring criterion, which means that the policy index we constructed does have criterion validity.

Also, the correlation analyses for GIRA and GIRB show the evidence of internal consistency of the policy variables. The high coefficient of Cronbach Alpha (0.828) implies that high degree of government control over unions is likely accompanied with high degree of legal regulation in industrial action. Furthermore, the Pearson correlation coefficient, 0.712 (P=0.001), appears to justify the appropriateness of GIR that combines GIRA and GIRB in the original model.

between union density and specific country dummies, which might in turn influence the performance of GIR. [15] As a whole, the impressive performance and consistent significance of GIR provides strong evidence to support our theoretical claims regarding the role of government policy and strategy in industrial relations.

Discussions

Several points from these empirical results should be stressed. First of all, the regression results exhibit strong evidence to underpin our primary hypothesis, that is, the significant coefficients of government intervention in industrial relations (GIR) are consistently, and generally, revealed at the 0.05 level of significance in the number of workers involved in industrial disputes (per 1,000 civilian labor force) for almost all the models we have tested except two cases, as we discussed earlier. Conversely, in the context of pooled data analysis across six countries, there is little if any evidence of a significant effect of economic or organizational variables on the fluctuations of industrial conflict.

The insignificance of economic and organizational variables is not altogether unexpected since the reader will recall that those explanatory variables are often ambiguous and uncertain in the relations with the level of industrial conflict. For example, the unemployment rate may be negatively associated with strike activity in the U.S. and Canada, based on the conventional proposition regarding the tightness of the labor market. Nonetheless, according to Craig (1990) and Cameron (1984), the unemployment rate was assumed to positively affect the strike level in the European countries since full employment is the good in exchange for industrial

15. Recall that every coefficient of GIR in the present model (IDt), as indicated on the left side of the Table 9, is significant at the 0.01 significance level. Hence we may argue that the government policy or regulations are more likely to impose immediate impact on the behavior of the parties to initiate militant industrial action, assuming the government policy in industrial relations are often anticipated by workers and employers.

peace. Thus, the insignificant coefficient of unemployment rate may be arising out of the offset between the opposite impacts of the different types of countries. Similarly, the union membership is not statistically significant in the original model, even at the relatively undemanding 10 percent level. In fact, it is hardly possible to expect a significant coefficient of union density resulting from a pooled data analysis if the low-level industrial disputes occurred not only in countries with high-level union density (e.g. Sweden and Norway) but also in countries with low-level union membership (e.g. Korea and Taiwan).

What do these results signal to the students of industrial relations? Our answer will be consistent with the comments regarding the limitations of previous studies we discussed in the literature review section: those variables representing labor market conditions, which have long been utilized by previous researchers in strike studies, may be significant in industrial disputes in the context of single countries over a given time period, but it is fairly clear that those economic and organizational variables fail to render consistently significant coefficients when expanding the observations across multiple countries and areas. Ironically, the policy variables that previous studies have overlooked in the past decades yield consistently significant effects on the likelihood of the parties to engage in work stoppages.

Since the beginning of the twentieth century, no aspect of strike activity has received more attentions than the relationships between the variations of strike level and changing economic conditions. For several decades, the mainstream thought in industrial conflict has generally addressed why and under what conditions economic factors will cause a change in the propensity of labor to strike and of management to take a lockout. They may contribute a better understanding of industrial conflict for single countries, however, it is evident from this research that the basic propositions made by some writers of economic models of industrial conflict and expanded organizational models do not present an accurate or useful

generalization for the study of comparative industrial relations.

The empirical results can also be interpreted by way of a policy-maker's perspective: in a general sense, a union's decision to take militant action is formulated largely on the government policy and regulations, rather than purely economic conditions--- degree of labor market tightness, cost of living measures, and wage improvement. It does appear that the government policy and restrictions were perceived by the workers and employers to be the major reasons to refrain from militant industrial action. Put in another way, government's control and restrictions on both management and labor have the effects of limiting the general area of decision-making left in private hands and thus reducing the probability that the parties will initiate the use of strike or lockout. It also tends to indicate that, if government policy in industrial relations is aimed toward the principle of "laissez-faire", increasing work stoppage would be more likely to ensue.

Another important interpretation derived from the empirical results is concerned with the issue of whether industrial conflict can be merely controlled by strict legal regulations. It appears that the better performance of government control over unions, compared with legal regulation of industrial action, is perceived as being more a sensitive policy measure in reducing industrial disputes. In reality, we may argue that, regardless of the government-unions relationship, the sole use of legal norms and sanctions is considered as a blunt instrument in shaping labor-management relations. Namely, the government intervention in industrial relations that combines internal control and external control has more effective and comprehensive effects in controlling industrial action.

VI. Conclusions: Implications and Suggestions

Based on the historical-institutional investigations combined with quantitative analyses, this study explores the idea that the character of government involvement

in industrial relations is the common, as well as the most pivotal, causal mechanism in determining the level of industrial conflict, or strictly speaking, the "width dimension" of industrial conflict. Differences in industrial relations policy appear to account for the probability of the unions and employers to initiate work stoppages. These research results not only confirm the crucial role of the government in labor-management relations but also provide a broader and robust perspective for the study of industrial conflict and industrial relations. Our study goes beyond the limitations of previous literature by developing the policy variable that was overlooked in the quantitative analyses of industrial conflict and by utilizing a refined methodology that can be applied to future cross-national analysis in industrial conflict.

Secondly, one of the academic contributions that this research may have made can be revealed by bridging two gaps in the industrial conflict study---one is the gap between the descriptive study of industrial relations policy and labor relations law and the quantitative study of strike activity; the other is between the state-centered theory and quantitative analysis of industrial conflict. For a long time, the descriptive study of labor relations law appears to have developed as an insulated arena which never cross the border of the descriptive and static circle. Our study might be the pioneer work that attempts to integrate labor relations law and quantitative analysis of industrial conflict. Similarly, the intellectual emergence of state-centered theory has been largely underpinned by comparative-historical studies dealing with the roles of the state in a wide-ranging context. The dominant research agenda of the state-centered approach rarely spoke of quantitative hypothesis-testing, not even mentioning quantitative analysis of industrial conflict. This research is suggestive of the insights about the causes and consequences of state intervention that might be explored in the field of industrial relations and industrial conflict. Obviously, the idea of scoring policy variables in industrial relations is the key element for the success to fill those important gaps. There is a

clear need for more comparative case studies of industrial relations policy in order to accumulate a stock of real-world knowledge from which more meaningful quantitative models might draw their inspiration.

Finally, our study undertakes investigations beyond the limited scope of OECD countries in order to build up a more generalized and more applicable conceptual framework that may make sense of the phenomenon not only within but also without OECD nations. This comparative policy research to some extent has overcome the limitations of previous studies which were mostly based on case studies of Western countries. Expanding observations across different areas can put our judgement about government roles, policy process, and outcomes into a broader and more refined perspective. It might be fruitful for the researchers of industrial conflict and comparative industrial relations to look into the differing policies in industrial action across various areas of the world. But such kind of study is to some extent restrained by the limited availability of relevant data. Obviously, much more work and research are needed if we are to gain a full understanding of the causes of industrial conflict or industrial peace. We hope this research may provide some new lights for future research agenda in industrial conflict and industrial relations.

APPENDIX A

Policy Scores of GIR for Six Countries

(1) Sweden

1960-1969 (GIR=6.0 / A=3.0; B=3.0): (A) Social Democratic Party was in power and institutionally tied with unions (LO). (B) Under the government's coordination and surveillance, general peace obligation and compulsory mediation were in effect.

1970-1971 (GIR=4.0 / A=2.0; B=2.0): (A) Internal conflicts and tensions on the wage policy have been generated within union federation (LO, SACO, and SR); government lost its institutional control over unions. (B) Government did not take the initiative to secure general peace obligation by resorting to compulsory mediation or arbitration.

1972-1976 (GIR=6.0 / A=3.0; B=3.0): (A) Social Democratic government and the LO took the political initiative to coordinate the demands of different member unions, and institutional control of unions was restored. (B) The Parliament enacted a special law which fixed wages at the level of the latest offer by the board of mediation, restating old collective agreement and restored general peace obligation.

1977-1979 (GIR=5.0 / A=2.0; B=3.0): (A) The Conservative Party won the election; the institutional linkage between the government and unions was disconnected.

1980-1981 (GIR=4.0 / A=2.0; B=2.0): (B) Collective agreement expired, but national wage negotiations had not been achieved, partly due to government inexperience as well as the fact that Conservative government policy did not enjoy the confidence of unions. The government was not able to secure general peace obligation.

1982-1986 (GIR=5.0 / A=3.0; B=2.0): (A) Social Democratic party regained power in government, but centralized bargaining broke down and general peace obligation was not maintained.

(2)Norway

1960-1965 (GIR=6.0 / A=3.0; B=3.0): (A) Labor party was in office and institutionally controlled union confederation; (B) general peace obligation, compulsory mediation, and compulsory arbitration were in effect.

1966-1971 (GIR=5.0 / A=2.0; B=3.0): (A) Conservative party was in office and the institutional linkage between the government and unions was disconnected.

1972-1973 (GIR=6.0 / A=3.0; B=3.0): (A) Labor party was back in office.

1974-1976 (GIR=5.0 / A=3.0; B=2.0): (B) Under the pressure of wage explosion, the government policy of general peace obligation with compulsory mediation changed, allowing decentralized wage negotiations.

1977-1981 (GIR=6.0 / A=3.0; B=3.0): (B) Government initiated the negotiating round by inviting the parties of labor market organizations and farmer's representatives for settling the problems of inflation and wage, and thus restoring the general peace obligation.

1982-1986 (GIR=5.0 / A=2.0; B=3.0): (A) In the end of 1981, the Conservative Party won the election and was in office alone during 1982-1983, and Center/Right coalition was in power during 1983-86.

(3) The United States

1960-1968 (GIR=4.0 / A=2.0; B=2.0): (A) The Labor-Management Reporting and Disclosure Act regulates certain aspects of internal union affairs, including union recognition, union representatives, union funds, and the right and freedom of workers vs. unions. (B) There has been a specific peace obligation for private sector,

in which the peace clause may voluntarily be specified in collective agreement by both parties; public employees gained the right to unionize but not to strike or bargaining collectively over wages and benefits.

1969-1980 (GIR=3.0 / A=2.0; B=1.0): (B) There was judicial leniency for enforcing the no-strike prohibition in the public sector; Unofficial work stoppage appeared to be allowed in public service.

1981-1986 (GIR=4.0 / A=2.0; B=2.0): (B) The Reagan administration made highly publicized efforts to enforce prohibitions against public employee work stoppage.

(4)Canada

1960-1966 (GIR=3.0 / A=1.0; B=2.0): (A) The government adopted a non-interventionist policy toward trade unions, encouraging self-governing between labor and management in the private sector. (B) The peace clause could be voluntarily included in collective agreement at the firm level; the right to strike was prohibited and the collective bargaining was restrained in the public sector.

1967-1982 (GIR=2.0 / A=1.0; B=1.0): (B) In 1967, the federal government of Canada enacted the Public Service Staff Relations Act, which enlarged the scope of collective bargaining for the public sector throughout the countries; federal employees were given not only the right to bargain collectively over wages, benefits and most other aspects of employment relationship but also the right to strike.

1983-1986 (GIR=3.0 / A=1.0; B=2.0): (B) The government initiated public sector wage restraint programs, which imposed restrictions and prohibition for certain aspects on collective bargaining in public service.

(5)Korea

1960- (GIR=5.0 / A=3.0; B=2.0): (A) The leadership of the Federation of Korean Trade Unions was institutionally dominated by the government; (B) Labor

Disputes Law stipulated a mechanism for collective bargaining, and the right to strike was prohibited in public sectors.

1961-1969 (GIR=6.0 / A=4.0; B=2.0): (A) In 1961, Park's Government restructured the unions along industry-lines and established the Korean Federation of Trade Unions (KFTU) under direct government control.

1970-1972 (GIR=7.0 / A=4.0; B=3.0): (B) The Special Act Concerning the Trade Union Activity and Disputes Settlement in Foreign Enterprise, and a Special Mediation Committee was established to regulate the peace obligation between the parties and facilitate compulsory mediation of industrial disputes.

1973-1979 (GIR=8.0 / A=4.0; B=4.0): (B) The amendment of the Trade Union Law prohibited trade unions from engaging in political activities; the special measure concerning national security was enacted, the Labor Disputes Adjustment Act was also amended, and thereafter strikes were prohibited until 1979.

1980-1981 (GIR=5.0 / A=2.0; B=3.0): (A) After the assassination of President Park in November 1979, the government lost control over unions, while the statutory restrictions on union activity were still in effect; (B) Strikes and lockouts were made legal only after compulsory arbitration.

1982-1984 (GIR=6.0 / A=3.0; B=3.0): (A) The Ministry of Labor was established to oversee union activity through institutional channels.

1985-1986 (GIR=5.0 / A=2.0; B=3.0): (A) In a period of political transition, government control over trade unions was lifted.

(6)Taiwan

1960-1970 (GIR=8.0 / A=4.0; B=4.0): (A) The government and the ruling party (KMT) established an affiliated productionist union system; unions at all levels were subject to government control and surveillance; The Chinese Federation of Labor and its affiliated federations acted as the administrative arms of the state.

(B) Labor-Management Dispute Act and Martial Law were in effect; strike and lockout were prohibited; and the collective bargaining activity was discouraged.

1971-1972 (GIR=7.0 / A=3.0; B=4.0): (A) During the period when Taiwan withdrew from the United Nations and faced subsequent diplomatic crises, the government control over unions was relaxed.

1973-1975 (GIR=6.0 / A=3.0; B=3.0): (B) In the period of oil shock and economic recession, government policy became lenient toward unofficial work stoppages and walk-outs; compulsory mediation and arbitration are still required in the resolution of industrial disputes.

1976-1983 (GIR=7.0 / A=4.0; B=3.0): (A) The Trade Union Act was amended to legitimize and restore government control over the union system.

1984-1986 (GIR=6.0 / A=3.0; B=3.0): (A) The Labor Standard Law was passed to improve worker's rights and minimum terms of employment; government control over unions was relaxed, but the institutional ties between the KMT government and union federations still exists.

APPENDIX B

Data Sources of the Policy Scores in Six Countries

The policy scores of Sweden and Norway are based on the following sources: G. Marks, "Neocorporatism and Incomes Policy in Western Europe and North America," Comparative Politics, April (1986) pp. 253-77; Juris, Thompson, and Daniels, eds., Industrial Relations in a Decade of Economic Change (Madison, Wisc.: IRRA,1985); Heclo and Madsen, Policy and Politics in Sweden (Philadelphia: Temple University Press, 1987); W. Korpi, "Sweden: Conflict, Power and Politics in Industrial relations" in P. B. Doeringer ed. Industrial Relations in International Perspective (New York: Holmes & Meier, 1979); F. Schmidt, Law and Industrial Relations in Sweden (Stockholm: Almqvist & Wiksell, 1977); L. Forseback, Industrial Relations and Employment in Sweden (Uppsala, Sweden: Swedish Institute, 1980); S. Edlund and B. Nystrom, "Main Features of the Settlement of Labor Disputes" in T. Hanami and R. Blanpain eds., Industrial Conflict Resolution in Market Economies (Deventer, Nethherlands: Kluwer, 1987); R. B. Peterson, "Swedish Collective Bargaining--A Changing Scene," British Journal of Industrial Relations, Vol.24 (1), 1987; W. M. Lafferty, "The Political Transformation of a Social Democratic State: As the World Moves in, Norway Moves Right," Western European Politics, Vol.13, 1990; The Norwegian Joint Committee on International Social Policy, Labour Relations in Norway (Oslo: The Norwegian Joint Committee, 1975); W. Galenson, A Welfare State Strikes Oil: The Norwegian Experience (Lanham: University Press of America, 1986); and A. C. Keil, Continuity and Change: Aspects of Contemporary Norway (Scandinavia University Press, 1993); A. Michels and H. Slomp, "The Role of Government in Collective Bargaining: Scandinavia and the Low Countries," Scandinavia Political Studies, Vol.13 (1), 1990; J. Stephens, The Transition from Capitalism to Socialism (London: The MacMillan, 1979); R. Blanpain and C. Engels, Comparative Labour

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APPENDIX C

Statistical Results of Various Models

Table 1 The Original Model and Time-Lagged Model of Industrial Conflict

	Model 1 (ID_t)	Model 2 (ID_{t+1})	VIF
Intercept	59.83 (5.011)	55.22 (4.452)	0.0
GDP	0.18 (0.344)	0.32 (0.577)	1.68
ΔW	0.34 (1.333)	0.246 (0.918)	1.60
Union	0.009 (0.102)	0.035 (0.377)	2.40
UR	-0.91 (-0.90)	-0.559 (-0.532)	2.87
ΔP	0.054 (0.221)	0.119 (0.470)	1.27
GIR	-9.216*** (-7.282)	-8.576*** (-6.521)	2.40
Trend	-0.08 (-0.401)	-0.159 (-0.750)	1.16
R^2	0.373	0.333	
D-W	1.813	1.781	

Notes: The t-statistics for the regression coefficient estimates are in parentheses
N = 162; VIF = Variance Inflation Factor
R^2 = The Buse Raw-moment R^2
D-W= DURBIN-WATSON statistics
* significant at .10 level in a two-tailed test
** significant at .05 level in a two-tailed test
*** significant at .01 level in a two-tailed test

Table 2 The Fixed-Effect Models of Industrial Conflict

	Model 3 (ID_t)	Model 4 (ID_{t+1})	VIF
Intercept	48.89 (2.723)	28.07 (1.519)	0.0
ΔGDP	-0.06 (-0.113)	0.098 (0.177)	1.77
ΔW	0.32 (1.238)	0.27 (1.021)	1.66
Union	0.43** (2.211)	0.54*** (2.684)	11.65
UR	-0.898 (-0.884)	-0.76 (-0.723)	2.97
ΔP	0.11 (0.443)	0.25 (0.975)	1.35
GIR	-7.88*** (-3.881)	-5.32** (-2.547)	6.33
Trend	-0.15 (-0.717)	-0.19 (-0.882)	1.23
Noram	-3.22 (-0.369)	5.83 (0.650)	7.91
Noreu	-26.28** (-2.369)	-28.25** (-2.474)	12.81
R^2	0.396	0.370	
D-W	1.878	1.843	7

Notes: The t-statistics for the regression coefficient estimates are in parentheses

N = 162; VIF = Variance Inflation Factor

R^2 = The Buse Raw-moment R^2

D-W = DURBIN-WATSON statistics

* significant at .10 level in a two-tailed test

** significant at .05 level in a two-tailed test

*** significant at .01 level in a two-tailed test

The estimate of intercept is treated as base-category of East Asia.

Table 3 The Original Models of Industrial Conflict with GIRA and GIRB

	Model 5 (ID_t)	Model 6 (ID_{t+1})	VIF
Intercept	59.87 (4.997)	54.73 (4.422)	0.0
ΔGDP	0.191 (0.355)	0.235 (0.424)	1.70
ΔW	0.34 (1.310)	0.282 (1.050)	1.62
Union	0.01 (0.113)	0.023 (0.246)	2.41
UR	-0.92 (-0.904)	-0.435 (-0.414)	2.89
ΔP	0.05 (0.203)	0.163 (0.641)	1.28
GIRA	-8.978*** (-3.858)	-11.327*** (-4.713)	2.65
GIRB	-9.50*** (-3.580)	-5.288* (-1.929)	2.69
Trend	-0.077 (-0.372)	-0.212 (-0.985)	1.19
R^2	0.373	0.341	
D-W	1.811	1.793	

Notes: The t-statistics for the regression coefficient estimates are in parentheses

N = 162; VIF = Variance Inflation Factor

R^2 = The Buse Raw-moment R^2

D-W= DURBIN-WATSON statistics

* significant at .10 level in a two-tailed test

** significant at .05 level in a two-tailed test

*** significant at .01 level in a two-tailed test

Table 4 The Three Original Models of Industrial Conflict for 4OECD Countries

	Model 7 (ID_t)	Model 8 (ID_t)	Model 9 (ID_t)
Intercept	81.52 (4.30)	76.64 (3.143)	80.07 (4.150)
ΔGDP	-0.29 (-0.28)	-0.25 (-0.235)	-0.167 (-0.153)
ΔW	0.24 (0.402)	0.29 (0.464)	0.246 (0.402)
Union	0.18 (1.145)	0.26 (0.92)	0.206 (1.210)
UR	-2.33 (-1.383)	-2.55 (-1.39)	-2.20 (-1.283)
ΔP	0.058 (0.082)	0.091 (0.126)	0.037 (0.052)
GIR	-14.97*** (-6.247)	-13.97*** (-3.536)	
GIRA			-13.41*** (-3.138)
GIRB			-16.63*** (-3.722)
Trend	0.07 (0.188)	-0.115 (0.287)	0.066 (0.175)
Noreu		-7.22 (-0.319)	
R^2	0.373	0.374	0.375
D-W	2.023	2.025	2.018

Notes: The t-statistics for the regression coefficient estimates are in parentheses

N = 108;

* significant at .10 level in a two-tailed test

** significant at .05 level in a two-tailed test

*** significant at .01 level in a two-tailed test

Table 5 The Three Lagged Models of Industrial Conflict for 4 OECD Countries

	Model 10(ID_{t+1})	Model 11(ID_{t+1})	Model 12 (ID_{t+1})
Intercept	63.79 (3.182)	36.83 (1.446)	67.69 (3.333)
ΔGDP	0.337 (0.303)	0.575 (0.517)	-0.0024 (-0.002)
ΔW	0.058 (0.091)	0.324 (0.492)	0.055 (0.085)
Union	0.169 (0.096)	0.583* (1.946)	0.123 (0.687)
UR	-0.988 (-0.554)	-2.223 (-1.163)	-1.336 (-0.739)
ΔP	0.895 (1.185)	1.078 (1.426)	0.951 (1.259)
GIR	-12.118*** (-4.777)	-6.583* (-1.696)	
GIRA			-16.34*** (-3.632)
GIRB			-7.616 (-1.619)
Trend	-0.287 (-0.722)	-0.039 (-0.094)	-0.274 (-0.690)
Noreu		-39.95* (-1.692)	
R^2	0.307	0.327	0.316
D-W	1.942	1.951	1.948

Notes: The t-statistics for the regression coefficient estimates are in parentheses

N = 108;

* significant at .10 level in a two-tailed test

** significant at .05 level in a two-tailed test

*** significant at .01 level in a two-tailed test

Table 6 The Three Structural Forms of Original Models of Industrial Conflict

	Model 13 (ID_t) (The 1st Equations)	Model 14 (ID_t) (The 2nd Equations)	Model 15 (ID_t) (The 3rd Equations)
Intercept	64.04 (5.206)	63.02 (5.192)	61.71 (5.143)
ΔGDP	0.184 (0.344)	0.184 (0.344)	0.404 (0.746)
reW	0.343 (1.333)	0.343 (1.333)	0.343 (1.333)
Unio	0.009 (0.102)	0.009 (0.102)	0.009 (1.333)
UR	-1.036 (-1.023)	-1.064 (-1.049)	-1.018 (-1.006)
ΔP	0.054 (0.221)	0.205 (0.893)	0.199 (0.874)
GIR	-9.216*** (-7.282)	-9.216*** (-7.282)	-9.216*** (-7.282)
Trend	-0.082 (-0.401)	-0.082 (-0.401)	-0.082 (-0.401)
R^2	0.373	0.373	0.373
D-W	1.813	1.813	1.813

Notes: N = 162

R^2 = The Buse Raw-moment R2

D-W = DURBIN-WATSON statistics

The t-statistics for the regression coefficient estimates are in parentheses

* significant at .10 level in a two-tailed test

** significant at .05 level in a two-tailed test

*** significant at .01 level in a two-tailed test

Table 7 The Three Structural Forms of Time-Lagged Models of Industrial Conflict

	Model 16 (ID_{t+1}) The 1st Equations)	Model 17 (ID_{t+1}) (The 2nd Equations)	Model 18 (ID_{t+1}) (The 3rd Equation)
Intercept	58.23 (4.557)	57.51 (4.559)	56.58 (4.537)
ΔGDP	0.319 (0.577)	0.319 (0.577)	0.477 (0.848)
reW	0.246 (0.918)	0.246 (0.918)	0.246 (0.918)
Union	0.035 (0.377)	0.035 (0.377)	0.035 (0.377)
UR	-0.649 (-0.617)	-0.669 (-0.635)	-0.636 (-0.605)
ΔP	0.119 (0.470)	0.226 (0.953)	0.224 (0.940)
GIR	-8.576*** (-6.521)	-8.576*** (-6.521)	-8.576*** (-6.521)
Trend	-0.159 (-0.750)	-0.159 (-0.750)	-0.159 (-0.750)
R^2	0.333	0.333	0.333
D-W	1.781	1.781	1.781

Notes: N = 162

R^2 = The Buse Raw-moment R^2

D-W= DURBIN-WATSON statistics

The t-statistics for the regression coefficient estimates are in parentheses

* significant at .10 level in a two-tailed test

** significant at .05 level in a two-tailed test

*** significant at .01 level in a two-tailed test

Table 8 The Summary of the Parameter Estimates of GIR in Various Models of Industrial Conflict

Dependent variable	ID_t	ID_{t+1}
The Original Model	-9.216***	-8.576***
(with Regional Dummies)	-7.879***	-5.322**
The Fixed-Effect model (with Country Dummies)	-7.089***	-3.338 (P=0.16)
The Original Model with GIRA & GIRB	(A)-8.978*** (B)-9.50***	(A)-11.33*** (B)-5.288*
The Original Model (4 OECD)	-14.97***	-12.12***
The Fixed-Effect Model (4 OECD)	-13.97***	-6.583*
The Original Model with GIRA & GIRB (4 OECD)	(A)-13.41*** (B)-16.63***	(A)-16.34*** (B)-7.62 (P=0.108)
The 1st Structural Equations	-9.216***	-8.576***
The 2nd Structural Equations	-9.216***	-8.576***
The 3rd Structural Equations	-9.216***	-8.576***

Notes:

* significant at .10 level in a two-tailed test

** significant at .05 level in a two-tailed test

*** significant at .01 level in a two-tailed test

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政府介入與工業衝突：比較政策研究

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摘　要

本研究旨在於針對現存有關工業衝突的文獻，提出不同的新觀點。過去工業衝突的相關文獻大多是西方國家的個案研究；另一方面，這些研究大多用勞動市場的背景因素來解釋工業衝突的現象（譬如：失業率、工資變動率、通貨膨脹以及工會組織率等變項），但這些研究未提出在理論意義上具有一致性的結論來解釋影響工業衝突的因子。爲了克服過去相關文獻所出現的方法論上的限制和實質的缺點，本研究將觀察的對象擴展爲跨越洲際的六個國家，其中包括美洲的美國、加拿大，歐洲的瑞典、挪威，以及東南亞的台灣、南韓，進而建立一個較具解釋力的分析架構。

本文的主要假設是工業衝突的變化受到政府在工業關係上的介入程度所影響。爲了檢定假設，我們採用整合性的策略，即融合歷史制度分析方法（historical-institutional analysis）和混合部門間與時間序列資料分析法(pooled cross-sectional and time series data analysis)

研究結果一致顯示：政府對於工業關係的介入程度，在解釋勞資爭議的變化上的確具有相當強的解釋力。換言之，工業關係政策的差異顯著地影響勞資雙方採取衝突行動的機率高低。另一方面，經由跨國資料的假設檢定，我們也發現過去研究模型中的勞動市場因素或勞工組織因素並不見有明顯而一致的解釋效力。

(收稿日期： 1996 年 12 月 6 日；接受刊登日期： 1997 年 5 月 1 日)