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THE GROWTH OF EMPLOYEE BENEFITS AND THE DECLINE IN

AMERICAN LABOR

by

Gilbert Brian Davis

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ABSTRACT

THE GROWTH OF EMPLOYEE BENEFITS AND THE DECLINE

IN AMERICAN LABOR

By

Gilbert B. Davis

Previous work examining the determinants of the union status of workers ignores the effect that the provision of benefits by employers will have on the willingness of workers to vote for union representation. This omission is important for two aspects. First, unionized workers are found to have a greater percentage of their total compensation in the form of benefits than do non-unionized workers. Thus, it is likely that non-unionized workers will vote for union representation to obtain benefits. Second, there is a debate in the industrial relations literature that non-union employers attempt to remain nonunion by providing their current workers with a compensation packages approximating those obtained by union negotiations, the management substitution hypothesis. Similarly, the government may be providing benefits to workers, thereby decreasing the demand for union representation by

workers, the government substitution hypothesis. Therefore, it is necessary to determine whether benefits affect the willingness of workers to vote for union representation.

To determine the effect benefits may have on the willingness of workers to vote for union representation two empirical studies are done. The first is a cross-section study. The results of the cross-section study show that benefits affect the willingness of workers to vote for union representation. In particular, the desire for medical benefits is found to have a strong effect. The second empirical exercise in the dissertation is a simulation using the coefficients from the cross-section results and the variation in the mean levels of benefits in the economy as a whole. The purpose of the simulation exercise is to determine whether the growth in the level of benefits since 1950 has resulted in a decline in the willingness to vote for union representation. The findings of the simulation study suggest that the growth in the level of benefits and earnings may account for as much as 22 percent of the decline in the success rate of unions in representation elections.

It appears that the management substitution hypothesis may play a serious role in further declines in the success of labor unions in representation elections.

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CHAPTER ONE

INTRODUCTION

One of the more interesting social phenomena of recent years is the steady decline in the United States of both the percentage of workers who are unionized and the number of workers who are unionized. As Table 1.1 shows, the percentage of nonagricultural private sector employees who are unionized reached a high point in the early 1950s but has since declined. During this time period, the success of labor unions in union representation elections has also declined. Whereas unions won more than 70 percent of representation elections during the early 1950s, at the present time unions are winning less than 50 percent of the elections.

The reasons for the decline in the success rate of unions in representation elections are many and may be represented by the forces of the supply and demand for union services. The primary focus here will be the demand for union services. Specifically, this dissertation will explore the possibility that the government and employers have become major providers of benefits which were once supplied only as a result of the collective bargaining process. With the provision of benefits by the government and employers, the demand for union representation on the part of unorganized workers has declined. The resulting decline in the demand for union

TABLE 1.1

Union Membership as a Percentage of Employees in Nonagricultural Establishments[1]

Year	Percentage	Year	Percentage
1930	11.6	1960	31.4
1931	12.4	1961	30.2
1932	12.9	1962	29.8
1933	11.3	1963	29.1
1934	11.9	1964	28.9
1935	13.2	1965	28.4
1936	13.7	1966	28.1
1937	22.6	1967	27.9
1938	27.5	1968	27.8
1939	28.6	1969	27.0
1940	26.9	1970	27.3
1941	27.9	1971	27.0
1942	27.9	1972	26.4
1943	31.1	1973	25.8
1944	33.8	1974	25.8
1945	35.5	1975	25.5
1946	34.5	1976	24.7
1947	33.7	1977	24.8
1948	31.9	1978	23.6
1949	32.6	1979	
1950	31.5	1980	23.0
1951	33.3	1981	
1952	32.5	1982	
1953	33.7	1983	
1954	34.7	1984	18.8
1955	33.2	1985	17.5
1956	33.4	1986	18.0
1957	32.8	1987	17.3
1958	33.2	1988	16.0
1959	32.1		

[1]Data for 1930 to 1978 are from Handbook of Labor Statistics Bulletin 1070 (Washington, D.C.: U.S. Government Printing Office, 12980): 412. Data for 1987 and 1988 are from Employment and Earnings, 34 (January 1987(:. 21. Data for 1984 are from Employment and Earnings, 33 (January 1986): 213.

representation may be responsible for the decline in the success rate of labor unions in representation elections.

Focusing on the demand for union services as an explanation for the decline in the success rate of unions is appropriate in light of the most recent work done on the supply of union services. Labor unions have a choice between allocating scarce resources for representing current members or spending funds to organize new members.[2] The spending of funds on organizing activities represents the supply of union services to unorganized workers. A reduction in union organizing expenditures would explain the decline in the success rate of unions in representation elections. Recent studies of the supply of union services conclude that while organizing is a very expensive undertaking for unions, it is economically rational for unions to continue their organizational efforts.[3] Additional work finds total organizing expenditures on the part of unions have not declined in recent years.[4] Furthermore, there is little reason to believe that the concentration of unions into a few relatively highly organized sectors has retarded union growth by leading unions to spend less on organizing.[5] The results of the studies of the supply of union services indicate

[2]Richard N. Block. "Union Organizing and the Allocation of Union Resources," Industrial and Labor Relations Review, 34 (October 1980): 101-113.

[3]Paula B. Voos. "Union Organizing: Costs and Benefits," Industrial and Labor Relations Review, 36 (July 1983): 582-584.

[4]Paula B. Voos. "Trends in Union Organizing Expenditures, 1953-1977," Industrial and Labor Relations Review, 38 (October 1984): 60-63.

[5]Paula B. Voos, "Union Organizing Expenditures: Determinants and Their Implication for Union Growth," Journal of Labor Research, 8 (Winter 1987): 23.

that it is unlikely that the declining success rate of unions in representation elections may be traced to a reduction in the supply of union services.

The idea that actions of either the government or employers may lessen the demand for union services by providing services which substitute for the services normally thought to be provided by unions is not a new one. As discussed below, the provision or control of the terms and conditions of employment by the government is something organized labor has opposed in the past. The opposition to action by the government stems from the fear that there will be a reduction in the demand for union services. The movement of management into the areas of providing unilateral improvements in the terms and conditions of employment, thereby providing a substitute for union services, is an action organized labor experienced with the "welfare capitalism" schemes of the 1920s.

More recent concern over the substitution of union provided services by either management or the government has its clearest explanation in the work of Garbarino.[6] Garbarino argues that the American system of industrial relations may no longer be thought of as a simple dichotomy between the unionized and nonunionized sectors. In addition to the collective bargaining model of industrial relations, there are three other major employee relations systems: the administrative model; the civil service model; and the legal model. These four systems of industrial relations exist simultaneously and act as possible substitutes for each other. In particular, the legal model of industrial relations represents the provision of benefits

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[6]Joseph W. Garbarino, "Unionism Without Unions: The New Industrial Relations?", Industrial Relations 23 (Winter 1984): 40-51.

by substantive labor law. For example, the provisions of the Fair Labor Standards Act, the Occupational Safety and Heal Act, the Employees Retirement Income Security Act, Social Security legislation, and civil rights legislation all may act to substitute for the actions of labor unions in the collective bargaining process, thereby reducing the demand for the services of labor unions. Strauss points out that substantive labor laws "have given many workers most of the benefits and protections commonly provided by unionization" (and that) "their net impact has been to make union organizing more difficult."[7] Garbarino states the importance of the legal system of industrial relations is likely to be greatest where the size of the employer is small. The reason for the importance of the legal system for the small employer is that small employers lack the internal management structure necessary for the administrative model.[8]

With Garbarino's administrative model of industrial relations the employer is seen as unilaterally establishing the terms and conditions of employment. The unilaterally established terms and conditions of employment include paid vacations graded by length of service, paid holidays, insurance benefits, premium pay for working unusual schedules, annual pay increases, allowances for changes in the consumer price index, the uses of seniority in determining promotions, layoffs, and the scheduling of work and vacations, a formal disciplinary procedure, and some

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[7]George Strauss, "Industrial Relations: Time of Change," Industrial Relations 23 (Winter 1984): 5.

[8]Joseph W. Garbarino, "Unionism Without Unions: The New Industrial Relations?", Industrial Relations, 23 (Winter 1984): 46.

effort to minimize the instability of employment.[9] These items are normally provided by an employer only after negotiations with a labor union and the signing of a formal collective bargaining agreement. The substitution argument is that if the employer provides terms and conditions of employment usually obtained through the collective bargaining process, then workers will see less need for the organization of a union and negotiating with an employer. As a result of the decline in the perceived need for a union, workers will be less willing to vote for union representation.

The possible result that the substitution effects of management and government provision of services may have on the number of workers who are unionized in the United States is illustrated by a simple stock flow model showing how changes in union membership result from two sources.[10] Changes in union membership in a given year may be decomposed into gains and losses:

Changes in Union Membership = Gains - Losses.

Or more formally,

$$\delta U_t \equiv O_t + \phi_1 U_t - \phi_2 U_t, \qquad \text{Eq. 1-1}$$

where U_t is union membership at time t; δU_t is the change in union membership from t-1 to time t; O_t is the net number of workers organized into unions in the previous time period, that is, workers organized into new bargaining units minus those lost through decertification elections; ϕ_1 is the rate of automatic increase in

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[9]Joseph W. Garbarino, "Unionism Without Unions: The New Industrial Relations?", Industrial Relations, 23 (Winter 1984): 43-44.

[10]Michael Goldfield, The Decline of Organized Labor in the United States, (Chicago, The University of Chicago Press, 1987): pp. 78-81.

unionized jobs due to the expansion of the work force in union shops; and ϕ_2 is the rate of automatic loss in unionized jobs due to layoffs, plant closures, or runaway shops. Equation 1-1 shows that changes in the number of union members may result from two factors. First are those factors which determine employment levels in the already organized sectors of the economy, U_t. For example, steel imports have resulted in a decrease in the demand for domestically produced steel, which in turn has resulted in a decline in the number of employed unionized steel workers. Changes in union membership and employment levels in already organized industries will be identical if a union security provision such as a union shop is assumed.

The second factor affecting the number of union members, and the concern of this dissertation, is that which affects union organizing, O_t, the willingness of unorganized workers to vote for union representation. In light of recent research, concern with the factors affecting union organizing is especially important as changes in neither the occupational mix of the labor force nor the industrial mix of the economy are found to explain much of the decline in unionization.[11] Before reviewing the literature concerned with the management and government substitution effects and how actions by employers and the government may decrease the demand for union services, it is necessary to outline how workers obtain union representation

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[11]William T. Dickens and Jonathan S. Leonard, "Accounting for the Decline in Union Membership, 1950-1980," Industrial and Labor Relations Review, 38 (April 1985): 333.
    and
    Henry S. Farber, "The Recent Decline of Unionization in the United States," Science, 238 (November 1987): 916-917.

and to acknowledge other factors contribution to a decline in the demand for union services.

THE INSTITUTIONAL PROCESS OF UNION ORGANIZING

There are three ways in which a worker may obtain union representation. First, an employer may voluntarily agree to recognize a group of employees as a bargaining unit and engage in collective bargaining with that group. The second and most common mechanism for the formation of a union is an election under the guidelines of the National Labor Relations Act. The success of labor unions in these elections is determined largely by the demand for union services on the part of the workers. The final and most infrequently utilized manner in which a union may be organized is through a court order.

The voluntary recognition of a union by an employer is most commonly done after a neutral third party compares the union authorization cards signed by the employees with the payroll list of the employer. If a majority of the employees have signed authorization cards, the employer may voluntarily recognize the union so as to avoid the tribulation of a representation election.

The statutory procedures for an authorized election are set forth in Section 9 of the National Labor Relations Act. Prior to an election, the union must show the Board there is a significant "showing of interest" on the part of the workers to merit a representation election. The showing of interest is accomplished by union authorization cards or by a petition signed by at least 30 percent of the employees

in the requested bargaining unit. Although the Act requires that the union seeking representation only acquire signatures of 30 percent of the members of the prospective unit, the union usually attempts to secure signatures from at least 50 percent of the prospective unit in order to be more assured that it's success in the actual representation election.

Upon receipt of the representation petition, a field examiner or attorney from a regional office of the National Labor Relations Board, N.R.L.B., investigates the petition to determine whether the Board has jurisdiction over the case, whether there is a true question of representation in an appropriate bargaining unit, and if the filing of the petition has been timely. The regional office will attempt to encourage the parties to enter a "consent election" agreement. If an agreement can be reached then the date, place, and necessary voter list is established and an election will be held without the holding of a formal hearing.

When a consent election agreement cannot be reached, the regional office of the Board will conduct a formal hearing. The object of the hearing is to develop a full record on such issues as jurisdiction, the appropriateness of the unit, questions of representation and timeliness. The hearing officer then forwards to the regional director a report summarizing the evidence and analyzing the issues, but making no recommended decision. The regional director makes a decision on the disputed matters and either orders an election or dismisses the petition. In recent years, the time period between the director's orders and the election has increased dramatically, contributing to the lack of success for unions in representation elections.

When an employer is deemed to have committed such "outrageous" and "pervasive" unfair labor practices that a fair representation election cannot be held, the Board may certify the proposed bargaining unit without an election. In these cases the Board will rely on "convincing evidence of majority support" such as a union-called strike or strike vote or possession of authorization cards from a majority of the employees in the bargaining unit when certifying the bargaining unit.[12]

FACTORS LEADING TO THE DECLINE IN DEMAND FOR UNION REPRESENTATION

This section of the dissertation examines factors other than the provision of benefits by either the government or by employers which have possibly led to a decline in the demand for union services. These factors include: delays in the election process by either the N.L.R.B. or by the parties themselves, the hiring of management consultants, and discrimination against union organizers by management.

The first concern is with the election process itself. With regard to the election process, there is the possibility that one of the reasons why unions have experienced a steady decline in their success rate in representation elections is an increase in the time from the petitioning of the N.L.R.B. for an election to the

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[12]National Labor Relations Board v. Gissel Packing Company, 395 U.S. 575 (1969).

holding of the election. Prosten states that pre-election time delays are "the most likely source of labor's problem."[13]

Concern over the timeliness of a representation election is very legitimate on the part of unions. When elections are concluded within two months of petition, unions are likely to be the winner, whereas when elections are concluded more than two months after petitioning the N.L.R.B., unions are likely to lose.[14] The research of Cooke confirms the importance of a relatively short campaign on the probability of a successful union election. In 1979, Cooke found the probability of a union victory was fourteen percentage points higher in a consent election than in the more lengthy stipulated election.[15]

Roomkin and Block examine the possibility that delays in the election process may be attributable to the actions of the N.L.R.B. They point out the N.L.R.B. is committed to improving case processing time, as the Board recognizes "unnecessary delays are incompatible with the rights and obligations created by the National Labor Relations Act."[16] Even thought the Board is committed to the timely

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[13]Richard Prosten, "The Longest Season: Union Organizing in the Last Decade, a/k/a How Come One Team Has to Play With Its Shoelaces Tied Together?", Proceeding of the Thirty-First Annual Meeting, Madison, Industrial Relations Research Association, 1978, p. 241.

[14]Myron Roomkin and Richard N. Block, "Case Processing Time and The Outcomes of Representation Election: Some Empirical Evidence." University of Illinois Law Review, 1981: 75-97.

[15]William N. Cooke, "Determinants of the Outcomes of Union Certification Elections." Industrial and Labor Relations Review, 36 (April 1983): 402-414.

[16]Myron Roomkin and Richard N. Block, "Case Processing Time and The Outcomes of Representation Election: Some Empirical Evidence." University of Illinois Law Review, 1981: 75.

processing of representation elections, there is no legally specified time period within which an election must be completed.[17]

Concern over increased delays in representation elections led the N.L.R.B. to adopt a new managerial process in 1961. This new approach delegated authority to the regional directors of the N.L.R.B. and is credited with shortening the time necessary to process a representation case. During the period 1973 through 1978 "the overwhelming portion of elections took place in a relatively short time: 42% within one month of petition, 83% within two months, 92% within three months, and 94.5% within four months."[18] As a result of the research of Roomkin and Block, the suggestion that the increased time period between the petition of an election and the holding of an election is due to the actions of the Board itself may be rejected.

An alternative explanation for the increase in the delay rests with the actions of the parties to the election, the employer and the union. One of the key areas where the actions of either the employer or the union may result in a delay in the election process is the increase in the number of stipulated elections. Stipulated elections result in an increase in the amount of time from union petition to the election due to the time necessary for a hearing.[19]

With the stipulated election, employers are able to question the appropriateness of the proposed bargaining unit. The question of what constitutes

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[17]N.L.R.B. v. Isthmian S.S. Co., 126 F. 2nd 598 (2nd Cir. 1942).

[18]Myron Roomkin and Richard N. Block, "Case Processing Time and The Outcomes of Representation Election: Some Empirical Evidence." University of Illinois Law Review, 1981: 79.

[19]Ibid., p. 80.

an appropriate bargaining unit is one which is extremely important, often difficult to decide, and therefore time consuming.

The importance of the bargaining unit is twofold. First, the bargaining unit determination delineates which workers will be able to vote in the representation election. Second, the bargaining unit determines the group of workers covered by the collective bargaining contract resulting from negotiations with the certified labor organization. Those workers who are excluded from the unit are not represented by the labor union and must adjust their employment problems on an individual basis, or they may constitute a separate bargaining unit under certain conditions.[20]

The National Labor Relations Act empowers the N.L.R.B. to decide unit determination issues. The Act gives the Board only the most modest guidance in doing so. Section 9(b) of the Act begins:

> The Board shall decide in each case whether, in order to assure to employees the fullest freedom in exercising the rights guaranteed by this Act, the unit appropriate for the purposes of collective bargaining shall be the employer unit, craft unit plant unit, or subdivision thereof...

With this language the Board possesses a considerable amount of discretion in the establishment of a bargaining unit. When exercising its discretion the Board utilizes a series of guidelines when establishing a bargaining unit. These guidelines have a common denominator, the establishment of a unit which will have a "community of interest" in the exercise of the collective bargaining process.

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[20]Black and Decker Mfg. Co., 147 N.L.R.B. 825 (1964), 70.

The vagueness of Section 9 had led to an increase in the number of stipulated elections. Employers, knowing the vagueness of the law, and also knowing the law is designed to protect the interests of differing groups of workers as well as themselves, may request a Board hearing prior to the election. The employer may be seeking to establish a proper bargaining unit out of his or her own concern, concern over the rights of the employees in the bargaining unit, or simply as a delaying tactic. The use of the hearing as a delaying tactic may have as its goal the defeat of the union in the representation election.[21]

Cooke makes an additional comment regarding the difference between consent and stipulated elections, which proves to be important when modeling worker choice for union representation.[22] With a consent election, employers are "signalling" to the workers in the proposed unit that they do not strongly oppose collective bargaining. Therefore, workers will tend to increase their expected utility from unionization. With a stipulated election, a "signal" is given to the workers that the employer is opposed to unionization and will more actively campaign against the union. In addition, increased management opposition may be expected during subsequent negotiations. As a result, workers facing a stipulated election will have a lower expected utility from unionization.

In addition to the effect that employers may have on the outcome of representation elections by delaying the election, there are other employer actions

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[21]William N. Cooke, "Determinants of the Outcomes of Union Certification Elections." Industrial and Labor Relations Review, 36 (April 1983): 407.

[22]Ibid., p. 406.

which may have a negative impact on election outcomes. The actions by employers, resulting in a decline in the success rate of unions, are summarized by Lawler and West in the following manner:

> First, employers may attempt to bar prounion influences (filtering); discrimination against union supporters, for example, eliminates sources of agitation. Supervising training often emphasizes techniques for enforcing nonsolicitation and nondistribution rules, helping to insulate the organization from disquieting influence. Another external substrategy consists of activities which modify the election process and may prevent the expression of worker's true preferences. Extreme (and presumably rare) examples include stuffing ballot boxes, outright bribery, and intimidation of voters; more common examples include interference with the union's campaign by failing to provide an accurate Excelsior address list, delaying the election through procedural challenges, and attempting to alter the composition of the election unit. A third substrategy involves altering contextual constraints directly; for example, increasing pay or implementing an employee grievance procedure during an organizing campaign.[23]

The effect of these external strategies on the outcome of union representation elections has been a matter of heated debate since the publication of Union Representation Elections: Law and Reality, by Getman, Goldberg, and Herman in

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[23]John J. Lawler and Robin West, "Impact of Union Avoidance Strategy in Representation Elections." Industrial Relations, 24 (Fall 1985): 409.

1976. In that study of several campaign tactics in N.L.R.B. representation elections, the authors concluded that: (1) Workers pay little attention to either union or company campaigns; (2) Most worker's minds are made up far in advance of the major union and company campaigning; (3) Unlawful campaigning has no greater effect on workers' votes than does legal campaigning; and (4) It is impossible to discriminate between "successful" and "unsuccessful" campaigns.[24]

In contrast to the findings of German, Goldberg, and Herman, there is an increasing body of research arguing that external strategic behavior has played a major role in the declining success rate of unions in representation elections. Indeed, the results of one study concluded that "as for the decline in union election success in the last 20 years, the salient determinant appears to be stepped-up employer resistance."[25]

One form of management behavior, alleged to result in a decline in the union success rate in representation elections, is the practice of hiring management consultants or lawyers prior to the election in the hopes that they may be able to provide assistance in defeating the union's campaign. The use of consultants is a relatively recent phenomenon but becoming increasingly widespread. It is estimated that 80 percent of all employers engaged in a representation campaign are now

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[24]Julius G. Getman, Stephen B. Goldberg, and Jeanne B. Herman, Union Representation Election: Law and Reality (New York: Russell Sage Foundation, 1976) pp. 139-146.

[25]Ronald L. Seeber and William N. Cooke, "The Decline in Union Success in N.L.R.B. Representation Elections." Industrial Relations, 22 (Winter 1983): 43.

using consultants.[26] Although the effect of consultants on the outcomes of representation elections has not been covered by much research, the following conclusions may be drawn. First, the presence of a consultant may reduce the probability of union support by 28 percent.[27] Second, the presence of a consultant may result in approximately a 6 percent loss of union support at the time of an election.[28] Both of the factors show that the effect of a consultant is not large. This is not to say that the use of a consultant will not affect the outcome of an election. As Roomkin and Block point out, the typical election is decided by between six and ten votes. Therefore, the effect of the consultant does not have to be large in terms of either percentage or number of voters influenced to have a significant effect on the outcome of an election.[29] Third, the effect of a consultant is greater when the level of union density within an industry is low.[30]

Discrimination against employees advocating unionization is another management practice leading to the decline in the success rate of unions in

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[26]James A. Craft and Martin Extejt, "New Strategies in Union Organizing," Journal of Labor Research, 4 (Winter 1983): 29.

[27]John J. Lawler, "The Influence of Management Consultants on the Outcome of Union Certification Elections," Industrial and Labor Relations Review, 38 (October 1984): 46.

[28]John J. Lawler and Robin West, "Impact of Union Avoidance Strategy in Representation Elections," Industrial Relations, 24 (Fall 1985): 416.

[29]Myron Roomkin and Richard N. Block, "Case Processing Time and The Outcomes of Representation Election: Some Empirical Evidence," University of Illinois Law Review, 1981: 92.

[30]John J. Lawler and Robin West, "Impact of Union Avoidance Strategy in Representation Elections," Industrial Relations, 24 (Fall 1985): 416-418.

representation elections. Here violations of Section 8(a) (3) of the National Labor Relations Act are encountered. Under Section 8(a) (3) it is an unfair labor practice for an employer to discriminate "in regard to hire or tenure of employment or any term or condition of employment to encourage or discourage membership in any labor organization..." This clause was included in the Act to eliminate the most effective weapon that employers possessed in their fight against union organization drives, the firing of those employees who either supported a drive for unionization or who were leading the drive. Section 8(a) (3) has been in the Act since its passage in 1935 and substantial case law has been developed so that the meaning of this section should be clear to all employers. Yet employers continue to dismiss employees who choose to exercise their right to organize under the Act.

The reason behind the dismissal of employees for their union activities is simple. Those employees who are dismissed are unable to vote in the representation election. As noted above, the majority of elections are decided by only a few votes; therefore the employer need only dismiss a few workers in order to affect the outcome of many elections. In addition, the dismissal of key union advocates will give a "chilling" message to the remaining workers, reducing their participation in the union campaign, or, in other words, reducing the demand for representation by a labor union.[31]

The number of 8(a) (3) violations was high immediately after the passage of the National Labor Relations Act, but as employers became aware of the law, the

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[31]Morris M. Kleiner, "Unionism and Employer Discrimination: Analysis of 8(a) (3) Violations," Industrial Relations, 23 (Spring 1984): 235.

number of such violations declined. Beginning in the late 1950s the number of such violations began to increase dramatically. The number of 8(a) (3) unfair labor practice charges has increased approximately 300 percent since 1960. It may be alleged that such charges may be a "sour grapes" reaction on the part of labor unions to the decreasing success rate in certification elections. However, with the number of backpay awards also increasing 500 percent it appears that the concern over the increase in 8(a) (3) violations is legitimate. Also the number of violations being found to be meritorious has not varied widely over time even though the political makeup of the N.L.R.B. has varied from being predominately Democratic to Republican in nature. The political makeup of the N.L.R.B. has been found to lead to bias in the decisions of the Board, so it is surprising that there has not been a wide range in the percentage of 8(a) (3) cases which have been found to be meritorious.[32]

A review of the literature dealing with union representation elections, compels the following conclusions. Management behavior has an effect on the outcome of union representation elections. Management may reduce the likelihood that a union will be successful in a representation election by demanding a stipulated election rather than a consent election. Raising of spurious unit determination issues by management results in delay in the election process. The hiring of consultants appears to enable employers to reduce the success rate of unions in elections. Finally, the willingness of employers to violate the National

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[32]William N. Cooke and Frederick H. Gautschi III, "Political Bias in N.L.R.B. Unfair Labor Practice Decisions," Industrial and Labor Relations Review, 35 (July 1982): 548.

Labor Relations Act by discriminating against employees engaged in union activity contributes to a decline in the demand for union representation

MANAGEMENT AS A SUBSTITUTE PROVIDER OF UNION BENEFITS AND THE DECLINE IN THE DEMAND FOR UNION REPRESENTATION

The possibility that the provision of benefits by management services as a substitute for those negotiated by a union and thereby results in a decline in the demand for union representation is a topic receiving some attention in the literature. One of the first researchers to examine the possibility that non-union firms would attempt to match the compensation levels of union firms in order to avoid unionization was Rosen.[33] Rosen argues that once an industry begins to be organized by a union, the unorganized firms within the industry are faced with the dilemma of either risking unionization or attempting to forestall unionization by providing a compensation package approximating that of the unionized firms. In Rosen's work, the payment of a compensation package by non-union firms approximating that paid by the unionized firms so as to avoid unionization is known as the "threat effect."

More recent work in area of the management substitution hypothesis considers the provision of a compensation package approximating that paid by unionized firms as a strategic choice by management. The provision of benefits by

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[33]Sherwin Rosen, "Trade Union Power, Threat Effect and the Extent of Organization," <u>Review of Economic Studies</u>, 36 (April 1969): 192.

employers represents Garbarino's second alternative to the traditional collective bargaining model and is termed the "administrative model" of industrial relations. Under the administrative model the terms and conditions of employment are established unilaterally by the employer and are administered through the hierarchical structure of the organization.[34] With the administrative model, the rules and procedures of the employer are either formally established in the form of personnel policies or handbooks, or are the result of customs or practices known to the employees and a part of their expectations of future behavior. The informal rules of the administrative model form an implicit contract, where the various characteristics of the wage-employment relationship are not specifically negotiated but are generally accepted to exist by both parties.[35] The administrative model is in contrast to the typical collective bargaining model of employee relations systems, where the terms and conditions of employment are determined by means of a bilateral negotiation between the employer and the elected representative of the employees. Under the collective bargaining model, implicit contracts are kept to a minimum with most of the terms and conditions of employment being established in a formal contract signed by the representative of both parties.

With the administrative model of industrial relations, management often takes the initiative in bargaining demands and personnel practices. In unorganized firms, personnel policies often go beyond the goal of matching provisions in the

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[34]Joseph W. Garbarino, "Unionism Without Unions: The New Industrial Relations?", Industrial Relations, 23 (Winter 1984): 43.

[35]Ibid., p. 43.

unionized firms, in an effort to keep unions out.[36] The introduction of personnel practices designed to keep a firm unorganized represents a "strategic choice" on the part of management. In recent years there has been a fundamental change in the industrial relations system.[37] As one group of researchers state:

> Not since the twenties has it been as socially and politically acceptable for American management to embrace publicly a "union-free" approach. Many companies now make union avoidance or union containment a very high priority. The pluralistic assumption of industrial relations researchers that independent worker organizations have a legitimate role seemingly are not shared by the majority of American employers. This change in management's view has coincided with a rearranging of many firm's industrial relations/human resources function, transferring power from labor relations staffs to those human resource functions associated with union avoidance.[38]

Initial work on the effectiveness of human resource policies as a strategic option for management to reduce the demand for unionization began with case studies of several firms. Kochan, McKersie, and Cappelli, not that in the case of Emerson Electric, where 10 percent of division managers' bonuses were tied to

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[36]Thomas A. Kochan, Robert B. McKersie, and Peter Cappelli, "Strategic Choice and Industrial Relations Theory," Industrial Relations, 23 (Winter 1984): 19.

[37]Ibid., p. 23.

[38]Ibid., p. 18.

keeping plants union free, the firm had lost only one of thirty-four representation election campaigns in the last decade.

Foulkes' survey of twenty-six large nonunion companies expands the case study-interview type research into the area of the strategic behavior of large nonunion firms.[39] Foulkes finds management making many strategic choices in an effort to keep their firms nonunion. Important for the work here, all of the nonunion companies surveyed had a stated policy of compensating their employees at average or above-average levels for the industry and plant location. In addition to paying as liberally or more liberally than their unionized competitors, the compensation plans at the companies studied had several other features in common. First, management usually set wages for production and maintenance workers according to local labor markets rather than adopting a national standard. Second, the companies closely monitored union settlements in order to maintain equal or superior compensation. Third, these companies communicated their pay and benefit policies well, and in many cases had been doing so before the passage of the Employees Retirement and Income Security Act of 1974.[40] The conscious effort to pay wages equal to or in excess of those paid by unionized firms represents a clear example of the substitution effect of management.

Being aware that employees are concerned not only with wages but with the total compensation package, the nonunion companies attempted to be leaders, or as

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[39]Fred K. Foulkes, "Large Nonunionized Employers," in U.S. Industrial Relations 1950-1980: A Critical Assessment, Industrial Relations Research Association Series, 1981, pp. 129-158.

[40]Ibid., pp. 148-150.

least competitive in the benefits they offered. Foulkes finds that many of the nonunion companies have actually been the first in their industry with innovative profit-sharing, medical, or other benefit plans.[41]

The final strategic practice by management to keep their firms nonunion is effective communications. Foulkes finds that management devised a number of communications programs to disseminate information to its workforce and to elicit employees' attitudes about the company's treatment of its workforce. The purpose of these communication programs is to give employees the opportunity to voice their complaints and to crate a climate in which it is legitimate to request and receive help.[42] The existence of the communication programs in the nonunion firms presents an interesting counter argument to the exit-voice hypothesis of Freeman and Medoff, and represents yet another effort by management to provide similar terms and conditions of employment in their nonunion setting as could be found in a unionized setting.

Kochan, McKersie, and Chalykoff extend the research into how corporate decision-making can bring about changes in industrial relations at the workplace with an analysis of data from the 1983 Conference Board Survey.[43] This survey elicited information from leading companies in the United States on a broad

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[41]Fred K. Foulkes, "Large Nonunionized Employers," in U.S. Industrial Relations 1950-1980: A Critical Assessment, Madison, Industrial Relations Research Association Series, 1981, p. 150.

[42]Ibid., pp. 151-152.

[43]Thomas A. Kochan, Robert B. McKersie, and John Chalykoff, "The Effects of Corporate Strategy and Workplace Innovations on Union Representation," Industrial and Labor Relations Review, 39 (July 1986): 487-501.

spectrum of human resource policies, including employee participation programs, profit-sharing, employer-employee communication, grievance systems, and flexible work schedules. The respondents to the survey were also asked to indicate how many certification elections were held in the company during the preceding five years and how many of these elections were won by unions. Where the firms placed a high priority on union avoidance, the effect of the implementation of the practices reduced the likelihood of the plant being organized by more than twenty percentage points. These results are very important in light of the fact that this means that union election victories added relatively few new members compared to the number of union members lost due to management strategies.[44]

Their analysis led Kochan, McKersie, and Chalyoff to draw the following conclusions:

> management innovation and union avoidance strategies substantially reduced the probability of organization of new plants; union representation election victories have not offset these management strategies; and larger union that were able to obtain either neutrality pledges or voluntary recognition from management have had a more substantial offsetting effect than unions that have attempted to gain recognition via the election process.[45]

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[44]Thomas A. Kochan, Robert B. McKersie, and John Chalykoff, "The Effects of Corporate Strategy and Workplace Innovations on Union Representation," Industrial and Labor Relations Review, 39 (July 1986): 496.

[45]Ibid., pp. 496-497.

Also using the Conference Board Survey, Fiorito, Lowman, and Nelson expand the research of management substitution effects.[46] In particular, their utilization of a logistic quantal choice model and estimation by multivariate maximum likelihood techniques provides additional evidence in support of the substitution hypothesis. Employee participation and communication policies emerge as effective means to reduce unionization. Work sharing programs actually enhance the probability of union success. Grievance systems and pay-for-knowledge schemes inhibit union success, whereas, all-salaried schemes have a positive impact on the success rate of unions.[47]

Of the control variables utilized by Fiorito, Lowman, and Nelson, only employer opposition to unions gave consistent results. The size of the bargaining unit, whether or not there had been wage reductions, the change in the wage rate, and the wage rate itself surprisingly had no statistically significant effect on the results. The insignificance of the size of the bargaining unit may be due to the fact that size is highly correlated with the implementation of human resource policies so that its effect cannot be separated.

Fiorito, Lowman, and Nelson reach the conclusion that "human resource

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[46]Jack Fiorito, Christopher Lowman, and Forrest D. Nelson, "The Impact of Human Resource Policies on Union Organizing," Industrial Relations, 26 (Spring 1987): 113-126.

[47]Ibid., pp. 122-123.

policies which are often part of employers' union substitution efforts do inhibit unionization."[48]

In summary, the following strategic choices are found to contribute to a decline in the success rate of unions in organization elections: the size of the plant, the geographic location of the plant, the presence of a form of employment security scheme, the promotion of employees from within, the presence of training and educational opportunities, effective communication between management and workers, employee participation plans, the presence of an employee grievance systems, pay-for-knowledge programs, wage payment on a salary basis, fringe benefits either comparable to or in excess of those paid in the unionized sector, and a wage level either comparable to or in excess of that paid in the unionized sector. It is important to note that none of the studies of the management policies attempted to determine the effect of such policies on the actual willingness of workers to vote for union representation.

The adoption of many of the current human resource practices appears to parallel closely the practices of the 1920s. During the 1920s, managers of large corporations maintained a sturdy opposition to trade unionism in areas where it had not yet effectively penetrated. In accordance with the "enlightened" precepts of the "new economic era" they instituted employment policies in which welfare work, company unions, and employee-representation plans, played a large part. The

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[48]Jack Fiorito, Christopher Lowman, and Forrest D. Nelson, "The Impact of Human Resource Policies on Union Organizing," Industrial Relations, 26 (Spring 1987): 124.

increase in the real income of wage earners during the 1920s also contributed to the decline in trade union organization.

Other changes in the 1920s parallel those today. One of the marked trends of the 1920s was that fewer persons were attached to manufacturing and agriculture as the years passed, while a larger proportion of the employed workers were found in the transportation, communication, clerical, and service occupations.[49] This occupational shift resulted in a decline in number of those workers most likely to seek union representation.

The development of "welfare capitalism" in the 1920s also served to lessen the appeal for unionism. Here the provision by management of higher real wages, and policies of direct benefits to employees in the form of improvements in the physical conditions of employment, insurance against sickness and accidents and death benefits, pension plans, social, recreational, and educational facilities, company housing projects, and health and safety work were rapidly expanded.[50] These policies are remarkably similar to the ones adopted by firms since the 1970s to avoid the unionization of their work force.

A further similarity with current developments was the advent of "scientific" management, resulting in the development of human resource policies or personnel administration. These policies introduced a formalization of personnel policies restricting the sometimes arbitrary power of foremen by entitling workers to a

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[49]Harry A. Mills and Royal E. Montgomery, The Economics of Labor, Volume 3, Organized Labor (New York: McGraw-Hill Book Company, 1945), p. 156.

[50]Ibid., p. 158.

hearing before an allegedly impartial individual or committee. As a result of these policies, "the leaders of organized labor found themselves without defensive formula or effective mode of procedure."[51] This is the apparent situation many labor leaders find themselves in today.

GOVERNMENT AS A SUBSTITUTE PROVIDER OF UNION BENEFITS AND THE DECLINE IN THE DEMAND FOR UNION REPRESENTATION

The possibility that the government serves as a provider of benefits, thereby lessening the demand for union representation, is something the leadership of the American labor movement has debated for many years. For example, organized labor was initially cool to the idea of the Fair Labor Standards Act. The reason for the opposition to the Act was labor "probably feared that government regulation of wages and hours would remove these two components from collective bargaining."[52] Even John L. Lewis objected to the Act on the grounds that it would interfere with collective bargaining.[53] Eventually Lewis supported the Act, but the leadership of the American Federation of Labor continued to express fear that the provisions of

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[51]Harry A. Millis and Royal E. Montgomery, The Economics of Labor, Volume 3, Organized Labor (New York: McGraw-Hill Book Company, 1945), p. 160.

[52]Horst Brand, "The Evolution of Fair Labor Standards: A Study in Class Conflict," Monthly Labor Review, 106 (August 1983): 27.

[53]Ibid., p. 27.

the Act could interfere with the collective bargaining of its affiliated unions.[54]

As mentioned above, the government as a substitute provider of union negotiated benefits is termed the legal model of industrial relations by Garbarino.[55] The legal model of industrial relations has two variants. The first variant is the law of labor-management relations, for example the National Labor Relations Act. This law is primarily procedural as it establishes and regulates the framework within which union-management relations are conducted. The second variation of the legal model deals with substantive regulation of the employee-employer relationship. Examples of substantive legislation are the Fair Labor Standards Act, the Occupational Safety and Health Act, the Employees Retirement Income Security Act, the Civil Rights Act, and Social Security legislation.[56] The legal system of employee relations applies to all workers, whether they be union or nonunion, and to all employers, with some exceptions by industry.

Substantive labor law has expanded tremendously since the end of the Second World War. If the government substitution hypothesis is correct, then substantive labor legislation may have become an alternative for union representation. Garbarino states the "legal system's expansion in the sixties and seventies into the areas of discrimination, health and safety, income protection and other phases of employment relations may be the most serious threat to the labor movement's future

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[54]Harry A. Millis and Royal E. Montgomery, The Economics of Labor, Volume 3, Organized Labor (New York: McGraw-Hill Book Company, 1945) p. 320.

[55]Joseph W. Garbarino, "Unionism With Unions: The New Industrial Relations?", Industrial Relations, 23 (Winter 1984): 44-45.

[56]Ibid., p. 45.

growth."[57] The threat of the legal model to the growth of the labor movement is a particular possibility in smaller firms, firms with fewer than 500 employees, because they are less likely to have an administrative type of industrial relations system than are the larger firms. Without the existence of an administrative system, or the presence of a collective bargaining system of industrial relations, the legal system is likely to be the only functioning employee relations system. With the average size of the unit in representation elections being fifty employees, if the substitution hypothesis has validity it is likely its effects will be greatest where unions are attempting the majority of their organizing efforts.[58]

Empirical tests of the government substitution hypothesis are few, with the major work being that of Neumann and Rissman.[59] Neumann and Rissman focus their work on two possible substitutes for union services: social welfare expenditures and judicial limitations to the employment-at-will doctrine.

Turning first to social welfare expenditures as a substitute for union services, Neumann and Rissman consider government spending on unemployment compensation, worker's compensation, educational expenditures, and welfare benefits as their measure of social welfare expenditures. The argument is that these funds represent benefits which unions could provide their workers. With their provision

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[57]Joseph W. Garbarino, "Unionism With Unions: The New Industrial Relations?", Industrial Relations, 23 (Winter 1984): 49.

[58]Herbert G. Heneman III and Marcus Sandver, "Predicting the Outcome of Union Certification Elections: A Review of the Literature," Industrial and Labor Relations Review, 36 (July 1983): 537.

[59]George R. Neumann and Ellen R. Rissman, "Where Have All The Union Members Gone?", Journal of Labor Economics, 2 (April 1984): 175-192.

by government there will be a decline in the demand for union services. A time-series analysis of the period 1904 through 1970 shows a slight substitution effect for these expenditures, and therefore some support for the substitution hypothesis.

In a critique of Neumann and Rissman, Freeman finds that variations in social welfare expenditures across countries have no effect on union organizing.[60] Freeman also looks at cross-state variations in social welfare spending to see if there was any effect on change in union density. Again, no effect was found. Freeman concludes his critique of the findings of Neumann and Rissman by stating, "my reading of their calculations is that the negative welfare effect is sufficiently frail that almost any change in model specification, period covered, or measure of social welfare would yield the insignificant results found in the shorter period."[61]

It is important to note two things about the studies of Neumann and Rissman and of Freeman. First, neither study attempts to determine whether or not the social welfare expenditures considered are factors which actually affect a worker's willingness to vote for union representation. The social welfare expenditures examined do not include the legislation which Garbarino hypothesized would result in a substitution effect. Second, the social welfare expenditures may not be the sort of benefits for which unions negotiate. As a result, they may not be substitutes for union representation. That these social welfare expenditures are not substitutes for union negotiated benefits may account for the lack of effect on union organizing.

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[60]Richard B. Freeman, "Unionism and Protective Labor Legislation," Proceedings of the Thirty-Ninth Annual Meeting, Barbara D. Dennis, ed., Madison, Industrial Relations Research Association Series, 1987, p. 260-267.

[61]Ibid., p. 266.

The second possible government substitute examined in the literature are judicial changes in the employment-at-will doctrine. The basic statement of this doctrine may be found in <u>Payne v. Western & Atlantic Railroad</u>, 81 Tenn. 507: "All may dismiss their employee(s)-at-will, be they many or few, for good cause, for no cause or even for cause morally wrong without being thereby guilty of legal wrong."

In recent times the employment-at-will doctrine has been eroded on several fronts by state court decisions and it is this erosion which may be a possible substitute for the employment security provisions found normally only with a union contract. The state court decisions limiting the employment-at-will doctrine are based on one of three theories: the violation of public policy theory, the existence of an implied contract theory, and the covenant of good faith and fair dealing theory.

The public policy exception to the employment-at-will doctrine is the most widely accepted. Under this exception, an employer may not fire an employee who is following public policy. Typical cases involve the firing of an employee for refusing to give false testimony at a trial or administrative hearing, serving on a jury, reporting illegal conduct by an employer, "whistle-blowing," refusing to violate a professional code of ethics, filing a worker's compensation claim, or refusing to take a polygraph test.[62]

The implied contract exception to the employment-at-will doctrine exists if the courts in a state recognize an exception stemming from an employer's policy

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[62]<u>Peterman v. International Brotherhood of Teamsters, Local 396</u>, 174, C. A. 2d 184, (1959), <u>Trombetta v. Detroit, Toledo and Ironton R. Co.</u> 81 Mich. App. 489 (1978).

manual, handbook, or other representation. This exception is also referred to as the implicit contract exception.[63]

The covenant of good faith exception occurs if courts have based a decision on good faith and fair dealing in employment contracts. Thus, an employee may be discharged at will but in doing so the employer must act in good faith.[64]

Neumann and Rissman utilize cross-sectional analysis to test for the effect of the court limitations across states. Their results indicate a slight but significant negative effect on union organizing success.[65] In another study of the impact of employment-at-will judicial decisions on the outcomes of representation elections, Block, Mahoney, and Corbitt found no impact of the judicial decisions during the period January 1973 through August 1985.[66] They concede that in drawing their conclusions two caveats must be noted. First, it is unclear if any of the voters in the representation elections are covered by the exceptions to the employment-at-will doctrine. Second, they are not sure how many voters in the representation elections are aware of the exclusions to the employment-at-will doctrine.

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[63]Foussant v. Blue Cross and Blue Shield of Michigan, 408 Mich. 579, (1980). Pugh v. See Candies Inc. 116 Cal. App. 3d 311 (1981). Weiner v. McGraw-Hill, 83 A.D. 2d 810 (1981).

[64]Fortune v. National Cash Register, 373 Mass. 96 (1977). Cleary v. American Airlines Inc., 111 Cal. App 3d 443 (1980). Gates v. Life of Montana Insurance Co. Mont. Sup Ct. No. 83-468, (1980).

[65]George R. Neumann and Ellen R. Rissman, "Where Have All The Union Members Gone?", Journal of Labor Economics, 2 (April 1984): 186-190.

[66]Richard N. Block, Christine L. Mahoney, and Leslie Fay Corbitt, "The Impact of Employment-At-Will Judicial Decisions on the Outcomes of NLRB Elections," Proceedings of the Thirty-Ninth Annual Meeting. Barbara D. Dennis, ed., Madison, Industrial Relations Research Association Series, 1987, pp. 268-275.

The caveats noted by Block, Mahoney, and Corbitt are important in light of the fact the exceptions to the employment-at-will doctrine apply to only a small proportion of the individuals who are discharged each year. As Stieber points out:

> The overwhelming majority of discharged employees are fired for such everyday occurrences as: excessive absenteeism or tardiness, sleeping on the job, fighting in the workplace, horseplay, insubordination, using abusive or profane language, falsifying company records or application forms, dishonesty, theft, disloyalty to their employer, negligence, incompetence, refusal to accept a job assignment, refusal to work overtime, and possession or use of intoxicants or drugs. In more than half of the discharges for the above reasons, arbitrators selected under union-management agreements have found insufficient evidence to support the discharge penalty and have reinstated the employee with full, partial, or no backpay depending on the circumstances in each case. Yet none of these discharges would qualify as an exception to the employment-at-will doctrine if they occurred in a non-unionized company.[67]

The current exceptions to the employment-at-will doctrine are very limited and would not be relevant in the vast majority of discharge cases. The current exceptions are limited effectively as they are: "used almost exclusively by executives, managerial, and higher-level employees, who constitute a small minority of all

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[67]Jack Stieber, "Most U.S. Workers Still May Be Fired Under the Employment-At-Will Doctrine," Monthly Labor Review, 107 (May 1984): 36.

employees...Typical job titles of plaintiffs in wrongful discharge cases are: company vice presidents, sales managers, marketing directors, foremen, physicians, sales representatives, pharmacists, and department managers."[68] Stieber argues that this limitation to higher-level employees is due to several factors. First, such employees are more likely to consult attorneys and pursue their claims because of higher expectations of successful legal action. Second, there is an inherent bias in the nature of the public policy and implied contract exceptions. Lower-level employees are unlikely to have access to company records nor are they usually in a position to detect dangerous or illegal acts. Finally, the implied contract exception has little relevance to lower-level employees because they are rarely in a position to inquire about future job security when they apply for a job. "Nor are they likely to read carefully an employee handbook which may give rise to an implied contract obligation. Even if they were aware of such a handbook provision, most employees would not realize it could be used to bring a court suit for wrongful discharge."[69]

Given the limitations noted by Stieber, it is not surprising that the work by Neumann and Rissman as well as that by Block, Mahoney, and Corbitt finds little, if any, impact of the employment-at-will judicial decisions on the outcomes of representation elections. What the current exceptions give is protection for many of those individuals who are not even covered by the National Labor Relations Act. Furthermore, the individuals to whom exemptions apply have not been found to vote

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[68]Jack Stieber, "Most U.S. Workers Still May Be Fired Under the Employment-At-Will Doctrine," Monthly Labor Review, 107 (May 1984): 36.

[69]Ibid., p. 36.

for union representation. Neither study attempts to control for the type of workers, thereby making their results suspect. Therefore, to disregard the union substitution hypothesis on the results of these studies would be unwise.

In summary, past research into the questions of the government providing benefits to workers and thereby decreasing the demand for union representation is lacking in two aspects. First, the items considered as possible substitutes, social welfare expenditures and exemptions to the employment-at-will doctrine, are unlikely to be substitutes for benefits negotiated by labor unions. Second, none of the studies develops a model to show how the existence of benefits provided by the government actually reduces the demand for union representation by testing the effect of government provided benefits on the willingness of workers to vote for union representation.

CHAPTER TWO

A TRUE TEST OF THE SUBSTITUTION HYPOTHESES

The review of the literature points out that there are two major weaknesses in the previous research examining the substitution hypotheses. The first of these weaknesses is the lack of an economic model showing how the provision of benefits by either the government or employers will affect the willingness of workers to vote for union representation. The second weakness is absence of a test of the effect benefits have on the willingness of workers to vote for union representation. In this chapter both of these shortcomings will be corrected.

In previous work, the decision whether or not to vote for union representation is analyzed in terms of the benefits and costs of doing so. If the expected benefits from voting for union representation exceed the costs, it is economically rational for an individual to vote for union representation.[70] In this work, the discussion of the expected benefits of unionization is limited primarily to higher levels of wages and implied benefits such as protection from discriminatory practices by management for

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[70]Henry S. Farber and Daniel H. Saks. "Why Workers Want Unions: The Role of Relative Wages and Job Characteristics." Journal of Political Economy 88 (April 1980):349-369.

black and other minority workers.[71] To determine the effect wages and benefits may have on the willingness of workers to vote for union representation, a model of the economic decision to vote for union representation is modified to consider not only wages but also benefits in the compensation package of the worker. The economic model to be modified is Oswald's.[72]

Oswald begins by stating workers attempt to maximize the following indirect utility function:

$$v(w) = \underset{h}{\text{Max}}[u(c,h) \mid c = wh], \qquad \qquad \text{Eq. 2-1}$$

where c represents the consumption of goods and services, w the wage rate, and h the number of hours worked. Oswald assumes unions control the wage level, while individuals choose the number of hours they wish to work, and firms determine the number of individuals who will be employed. The number of individuals employed by the firms within the industry depends on a continuous labor demand function, $N = N(w)$, where N is the number of individuals employed and w is the wage rate.

Oswald proposes the following example. Suppose a union is to be formed within an industry by M workers who are currently receiving some non-union wage rate W_{NU}. The question becomes how will the workers benefit from unionization and the expected higher union wage level, W_U, they believe they will negotiate? An economically rational worker knows with a higher wage level, W_U, fewer workers will

[71]Ibid., pp. 365-366.

[72]Andrew J. Oswald. "The Microeconomic Theory of the Trade Union." Economic Journal 92 (Septembeer 1982):577-589.

be employed by the firms within the industry. In fact, workers can expect with a probability q to be employed at the higher union wage rate after unionization and to be unemployed with a probability of 1-q, where

$$q = \frac{N(W_U)}{M}.$$

Following Oswald and assuming an unemployed worker is able to find another job at the non-union wage rate, W_{NU}, the expected utility of each worker from the formation of a union is

$$E(W_U) = qv(W_U) + (1-q)v(W_{NU}). \qquad \text{Eq. 2-2}$$

To determine the individual worker's expected benefit from unionization, Oswald subtracts $v(W_{NU})$ from equation 2-2 leaving

$$B(W_U) = q[v(W_U) - v(W_{NU})]. \qquad \text{Eq. 2-3}$$

According to Oswald's model, workers faced with voting in a union representation election union will compare their expected union wage, W_U, and their nonunion wage, W_{NU}. If the workers believe they will be employed at the higher union wage, they will vote for union representation.

Oswald's model is based on the assumptions that unions control the wage level, individuals choose the number of hours they wish to work, and firms determine the number of workers. These assumptions are overly rigid, as there are constraints on the union's ability to fix the wage rate. Individuals do not have complete ability to choose the number of hours they wish to work due to standardized work-week requirements of most employers. Finally, certain union contracts limit the employer's ability to determine the number of workers employed.

For the work here, Oswald makes yet another simplifying assumption. He considers only wages and not wages and benefits in the expected utility function. The omission of benefits is important for the testing of the substitution hypotheses. Furthermore, the omission of benefits must be corrected for three additional reasons.

First, there is the legal perspective. Under Section 8(d) of the National Labor Relations Act employers and unions are required to bargain in good faith over "wages, hours and other terms and conditions of employment." The phrase "terms and conditions of employment" is interpreted broadly by the National Labor Relations Board and by the Supreme Court. With the decision in N.L.R.B. v. Wooster Division of Borg-Warner Corporation, 356 U.S. 342 (1958), the National Labor Relations Board and later the Supreme Court established certain "mandatory items" of collective bargaining. These mandatory items include such things as subcontracting,[73] stock purchase plans,[74] profit sharing plans,[75] pension and employee welfare plans,[76] work loads and production standards,[77] and plant rules.[78] Thus, the mandatory items of collective bargaining include not only wages but benefits as well.

The second reason why other terms and conditions of employment cannot be ignored is the evidence from earlier research on the attitudes of workers towards

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[73] Fibreboard Paper Products v. N.L.R.B., 379 U.S. 203 (1964).

[74] Richfield Oil Company, 110 N.L.R.B. 356 (1954).

[75] Dicten & Masch Manufacturing, 129 N.L.R.B. 112 (1960).

[76] Inland Steel Company v. N.L.R.B., 336 U.S. 960 (1949).

[77] Beacon Piece Dyeing & Finishing Company, 121 N.L.R.B. 953 (1958).

[78] Miller Brewing Company, 116 N.L.R.B. 90 (1967).

unions and the effect of unions on the provision of fringe benefits. The work of Kochan shows that the major reason why workers prefer unionization is that unions improve both wages and fringe benefits.[79] In addition, Woodbury finds some fringe benefits and wages are substitutes in the utility functions of workers.[80]

The findings of Freeman show that in organized firms the fringe benefit share of total compensation is raised. In particular, unions have their greatest effect on pensions, on life, accident, and health insurance, and on vacation and holiday pay.[81]

Therefore, when modeling why workers choose to vote for union representation, the expected utility function should include not only wages but benefits as well. The expected utility of each worker will no longer be

$$E(W_U) = qv(W_U) + (1-q)v(W_{NU}) \qquad \text{Eq. 2-2}$$

but rather,

$$E(W_U,\beta_U,) = qv(W_U,\beta_U) + (1-q)v(W_{NU},\beta_{NU}). \qquad \text{Eq. 2-2a}$$

In equation 2-2a W_U represents the union wage, β_U a vector of benefits a worker will receive if the employer becomes unionized, W_{NU} the non-union wage level, and β_{NU} the vector of benefits the worker will receive if the firm remains non-union. In a similar fashion, $q = \dfrac{N(W_U,\beta_U)}{M}$, and the demand for labor in the industry is

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[79]Thomas A. Kochan. "How Amewrican Workers View Labor Unions," Monthly Labor Review 102 (April 1979):24.

[80]Stephen A. Woodbury. "Substituion Between Wage and Nonwage Benefits," American Economic Review 73 (March 1983):174-179.

[81]Richard B. Freeman. "The Effect of Unionism on Fringe Benefits," Industrial and Labor Relations Review 34 (July 1981):502.

$N = N(W_U, B_U)$, reflecting the cost of total compensation of the workers to the employers.

With the inclusion of benefits in the analysis the expected benefit from unionization for the individual worker is

$$B(W_U, \beta_U) = q[v(W_U, \beta_U) - v(W_{NU}, \beta_{NU})]. \qquad \text{Eq. 2-3a}$$

Equation 2-3a allows one to see how the provision of benefits by either management or government may affect workers' willingness to vote for union representation. What Neumann and Rissmann argue in their discussion of the employment-at-will doctrine is that one of the benefits in the union benefit vector is a form of protection against unjust discharge and that the various state court rulings have the effect of giving non-union workers the same level of protection against unjust discharge as union workers. Although one of the benefits unions negotiate for their members is some form of progressive discipline procedure, Stieber's argument that the employment-at-will remedies are used primarily by management employees make this an inadequate test of the government substitution hypothesis as management employees are not usually union members.

The second test of the government substitution hypothesis of Neumann and Rissman is that the level of government social welfare expenditures affects the willingness to vote for union representation. Again, these expenditures are unlikely to be found in the vector of benefits negotiated by a union, β_U. Thus, the conclusions of Neumann and Rissmann are not likely to be valid.

The goal of the management substitution hypothesis, as articulated by Foulkes, is to compensate employees at average or above average levels for the

industry and plant location.[82] In terms of the union choice model of equation 2-3a, the goal of this managerial policy will be to equate the workers' expected utility from the nonunion compensation package, $v(W_{NU}, \beta_{NU})$, with the expected utility of the union compensation package, $v(W_U, \beta_U)$, thereby reducing the likelihood that workers will find the expected benefits of unionization large enough to vote for union representation.

To test the validity of the substitution hypotheses, two basic pieces of information are needed. The first is a measure of total compensation received by the workers. Data are needed which provide information on both the level of earnings and the extent of coverage by various fringe benefits. This data will allow a comparison between the compensation packages of union and nonunion workers. Second, there must be a measure of the willingness of the worker to vote for union representation. By combining the information on total compensation and the willingness to vote for union representation, we overcome the major problems of the earlier work.

Data for the testing of the substitution hypotheses are available from the 1977 Cross Section of the Quality of Employment Survey, QES. The QES provides measures of employee compensation for earnings and benefit coverage. In addition, the QES contains information on the willingness of an individual to vote for union representation. (For a discussion of the variables utilized in the analysis see Appendix A of Chapter 2.) Of the fringe benefits workers receive, only three,

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[82]Fred K. Foulkes. "Large Nonunionized Employers," in U.U. Industrial Relations 1950=1980; A Critical Assessment (Madison, Industrial Relations Research Association Series, 1981): 148-150.

medical insurance, retirement benefits, and paid vacations, occur in enough cases to allow further analysis. Table 2-1 compares the means of earnings and the relative frequency of the fringe benefits between unionized and nonunionized workers.

Table 2-1 has only one result not in keeping with the idea that unionized workers have greater total compensation. First, the earnings of the workers covered by a union contract are significantly greater than those of the non-union workers. Second, unionized workers are more apt to have medical insurance, 94 percent, than are non-union workers, 72 percent. Third, unionized workers are more likely to have retirement benefits, 91 percent, than are non-union workers, 59 percent. Fourth, there is no statistical difference between union and non-union workers regarding vacations, with each reporting the presence of vacation benefits in approximately 83 percent of all cases.

Due to the binary nature of the response, the results should be interpreted with caution. Although the zero-one nature of the data gives a narrow measure of each benefit, a preferred measure would include the dollar value of such benefits. For example, if the less frequently occurring medical insurance plans in the non-union sector are all available with no co-payment, whereas all of the medical benefits for the unionized workers require a large co-payment, it may be argued that although unionized workers are more likely to receive medical insurance, the non-union workers have a better medical insurance benefit. Another example of the weakness of the binary data is provided by the vacation variable. Although there is no statistical difference between the availability of vacation benefits, the data provide no information as to the length of time allotted for vacations.

Table 2-1

Current Fringe Benefits by Union Affiliation

Benefit	Mean	Std. Dev.	Cases
Union Workers			
Earnings	15133.	7409.	323
Medical Benefits	.937	.241	418
Retirement Benefits	.907	.289	413
Vacation Benefits	.828	.377	420
Super Medical Benefits	.949	.219	434
Super Retirement Benefits	.935	.245	434
Want Super Medical Benefits	.345	.476	434
Want Super Retirement Benefits	.737E-01	.261	434
Want Super Vacation Benefits	.322E-01	.176	434
Nonunion Workers			
Earnings	13882.	11283.	640
Medical Benefits	.724	.447	794
Retirement Benefits	.588	.492	792
Vacation Benefits	.825	.379	793
Super Medical Benefits	.671	.469	983
Super Retirement Benefits	.609	.488	983
Want Super Medical Benefits	.342	.474	983
Want Super Retirement Benefits	.157	.364	983
Want Super Vacation Benefits	.467E-01	.211	983

Table 2-1 also shows the means for five additional variables: super medical benefits, super retirement benefits, want super medical benefits, want super retirement benefits, and want super vacation benefits. These variables are constructed to provide broader measures of benefits. The super medical benefit variable, SMED, has a value of one if the respondent has either medical, surgical, or hospital insurance that covers any illness or injury which may occur while off the job, or sick leave with full pay, or dental benefits, or eyeglass or eyecare benefits. The super retirement benefits variable, SRET, has a value of one if the respondent has either a retirement program, a profit-sharing plan, stock options, or a thrift or savings plan. Of these two variables, SMED is of particular importance for the government substitution hypothesis as it is an indicator of the type of benefits to be provided if a national medical insurance program were to enacted.

The results in Table 2-1 show broad medical coverage, SMED, is much more likely with a unionized employer, 95 percent, than a non-union employer, 67 percent. The presence of broad retirement benefits is also found to be more likely with union employers, 94 percent of all cases, as opposed to 61 percent of the non-union cases.

The final set of variables in Table 2-1, want super medical benefits, WSMED, want super retirement benefits, WSRET, and want super vacation benefits, WSVAC, represents measures of the desire for broad medical, retirement, and vacation benefits on the part of those workers who do not have such benefits. The mean desire for the broad measure of medical benefits is the same for both union and non-union workers: 34 percent. The desire for broad retirement benefits is twice as prevalent for non-union workers, 15 percent, as for union workers, 7 percent. The

desire for improved vacation benefits is also larger for the non-union workers, 5 percent, as opposed to 3 percent for union workers.

Given the comparisons of the means of the primary fringe benefits as well as the earnings of the union and non-union workers, we offer the following hypotheses. First, the willingness of a worker to vote for union representation will be affected by the presence of medical benefits. Those workers who do not have medical benefits are more likely to vote for union representation than are those who have medical benefits. Second, the workers who do not have retirement benefits will be more likely to vote for union representation. Third, it is unlikely that vacation benefits will have any effect on the willingness of a worker to vote for union representation. Fourth, the lower the level of earnings the more likely an individual will be to vote for union representation. The inverse relationship between earnings and the willingness to vote for union representation represents a straight forward example of the management substitution hypothesis. If non-union employers are willing to pay a level of wages approximating the higher wages of the union employer, then they will reduce the demand by workers for union representation.

To test the hypothesis that the availability of fringe benefits will affect the willingness of a worker to vote for union representation a probit analysis is utilized. The hypothesis is: the more extensive the compensation package, the less likely workers are to wish to vote for union representation.

In recognition of the fact that certain personal characteristics of workers are found to influence an individual's willingness to vote for union representation, four control variables are included in the initial analysis. The first control variable is

BONW, indicating whether or not a worker is black or other non-white race. This variable is included, as non-white workers are more willing to vote for union representation than white workers.[83] This control variable should have a positive coefficient. Second, is a control variable for the sex of the respondent, FEML. This control in necessary as past research indicates women are more likely to vote for union representation than are men.[84] The third control variable included is for the region of the country. Prior research indicates workers in the South are less likely to vote for union representation than are workers in other regions of the country.[85] The fourth control variable is the age of the respondent. Older workers are found to be less likely to vote for union representation.[86]

In addition to the control variables for the personal characteristics of the workers, three control variables are included to provide measures of employment stability. The first of these control variables, LAYOFF, is whether or not the worker experienced a period of layoff in the last year. The second control variable, XLO, is whether or not the worker expects to be laid off in the forthcoming year. A positive response to either of these variables is expected to be related with the

[83]Henry S. Farber. "The Determinants of the Union Status of Workers," Econometrica 51 (September 1983):1431.

[84]Henry S. Farber. "Trends in Worker Demand for Union Representasentation." American Economic Review 79 (May 1989):167.

[85]Henry S. Farber. "The Determinants of the Union Status of Workers." Econometrica 51 (September 1983):1431.

[86]Henry S. Farber and Daniel H. Saks. "Why Workers Want Unions: The Role of Relative Wages and Job Characteristics," Journal of Political Economy 88 (April 1980):362.

willingness to vote for union representation. Finally, a control variable, FOJ, is included as a measure of the workers belief in their ability to obtain another job with wages and benefits similar to the one they presently have. This control variable provides a measure of q in equation 2-3a and should have a positive coefficient.

The dependent variable in the analysis is the response by workers who are neither self-employed, members of a labor union, nor covered by a collective bargaining agreement to the following question in the QES: "If an election were held with secret ballots, would you vote for or against having a union or employees' association represent you?" Thus, the QES provides a direct measure of the willingness of the respondent to vote for union representation. The dependent variable is indicated as VFU in the results. It is important to note, that unlike previous studies on the management and government substitution effects, a direct measure of the willingness of a worker to vote for union representation is utilized.

The results of the initial analysis, shown in column 1 of Table 2-2, indicate that the level of earnings, ERN, is related negatively to the willingness to vote for union representation. Second, the presence of medical insurance, MED, has the expected negative coefficient but is not statistically significant. The coefficient for retirement benefits, RET, and vacation benefits, VAC, are positive, contrary to expectations, but neither is satistically significant.

The coefficient for black or non-white workers, BONW, is positive and significant. The coefficient for sex, FEML, is positive. Contrary to expectations, the coefficients for region, SOUTH, and age, AGE, are positive. The coefficient for region is statistically significant.

Table 2-2

**Maximum Likelihood Estimates
Current Fringe Benefits and the Willingness to
Vote for Union Representation**

Variable	1	2	3
CONSTANT	-.696****	-1.446***	-1.300****
	(.258)	(.441)	(.429)
ERN	-.224E-04****	-.109E-04***	-.120E-04***
	(.833E-05)	(.901E-05)	(.899E-05)
MED	-.329E-01	.475E-01	.465E-01
	(.175)	(.185)	(.186)
RET	.438E-01	.159	.113
	(.146)	(.163)	(.166)
VAC	.940E-01	.578E-01	.473E-01
	(.196)	(.205)	(.209)
BONW	.898****	1.001****	1.006****
	(.210)	(.222)	(.223)
FEML	.255***	.249**	.201**
	(.139)	(.158)	(.152)
SOUTH	.248***	.337***	.281***
	(.133)	(.141)	(.142)
AGE	.914E-03	.136E-02	.875E-03
	(.177E-02)	(.398E-02)	(.288E-02)
LAYOFF	.293	.106	.132
	(.443)	(.453)	(.454)
FOJ	-.246	.261E-01	.192E-01
	(.130)	(.139)	(.137)
XLO	.616	.617****	.662****
	(.199)	(.207)	(.208)
<12YED		.786E-01	.381*
		(.265)	(.254)
12YED		.179	.447***
		(.221)	(.217)
12-16YED		-.237	-.535E-01
		(.229)	(.229)
CDGR		-.136	-.355E-01*
		(.245)	(.256)
<1YT		.376***	.442***
		(.188)	(.185)
1-5YT		.333***	.376***
		(.159)	(.156)

Table 2-2
(Continued)

Variable	1	2	3
<50		.179E-01	.494E-01
		(.176)	(.183)
50-499		-.422E-01	.345E-01
		(.178)	(.179)
CLR		.117	
		(.203)	
CFT		-.660E-01	
		(.228)	
OPR		.593****	
		(.240)	
TOP		.800***	
		(.418)	
SER		.471***	
		(.233)	
MIN			-.958**
			(.592)
CON			-.259
			(.368)
MFG			.155
			(.208)
TRN			-.166
			(.308)
WHL			-.535*
			(.397)
RTL			-.293*
			(.225)
FIN			-.169
			(.256)
BRS			-.115
			(.359)
PSR			-.102
			(.450)
PUB			-.207
			(.278)
Log-L	-283.76	-269.55	-272.34
Chi-Sq.	56.60	86.01	80.43
Sample Size	494	494	494
Mean of VFU	.328	.328	.328

Standard errors in parentheses.
* Significant at the 0.15 level
** Significant at the 0.10 level
*** Significant at the 0.05 level
**** Significant at the 0.01 level
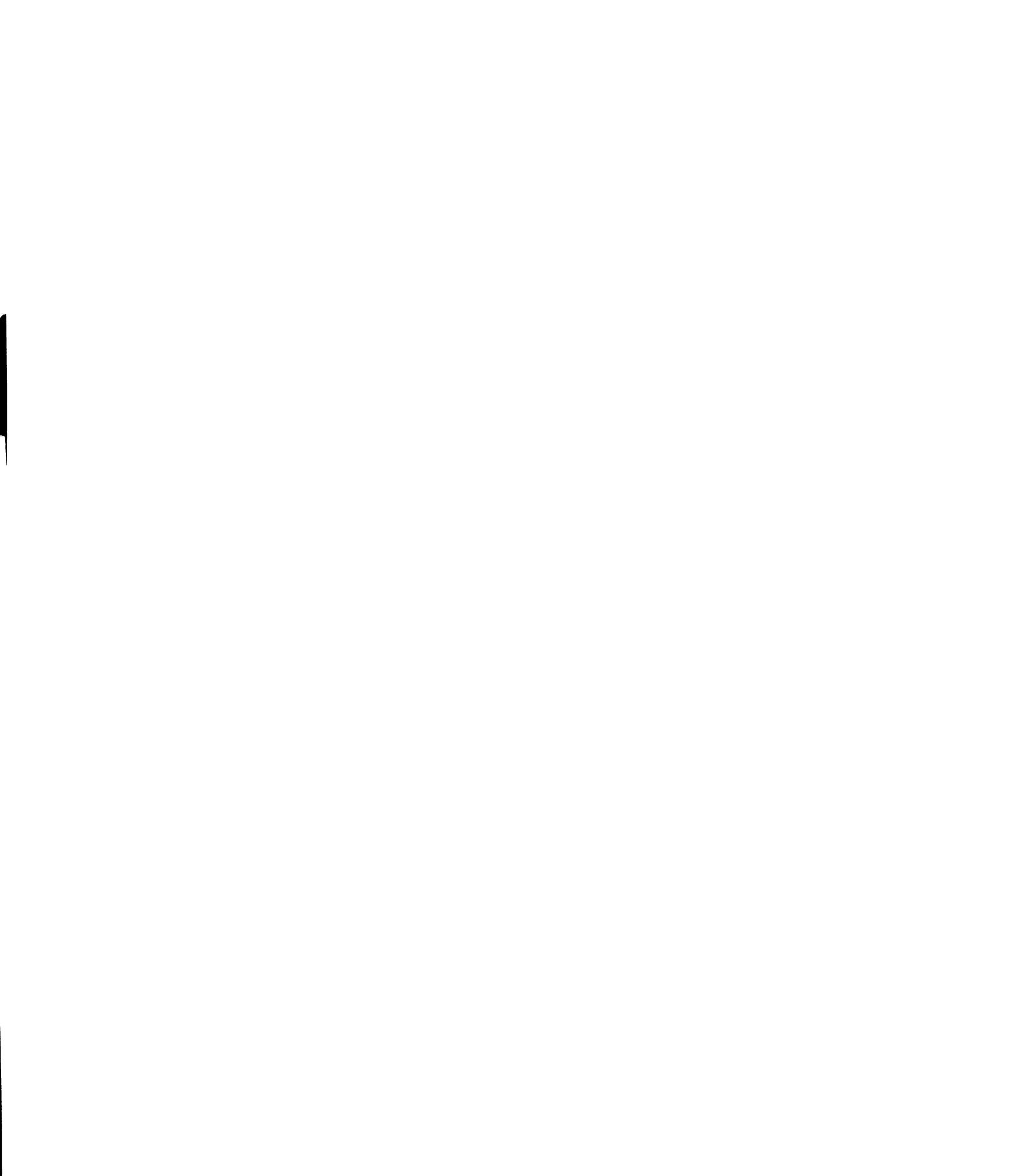
The control variables for the layoff, LAYOFF, and expected layoff, XLO, have the expected positive signs, with the coefficient for expected layoff being significant. The control for the ability of workers to find another job has a negative coefficient, contrary to what is expected.

This initial analysis gives mixed support for the possibility of either a government substitution hypothesis or a management substitution hypothesis. The negative and significant results for earnings and medical benefits support the substitution hypotheses. The negative and significant coefficient for retirement benefits does not support to the substitution hypotheses.

In recognition that other worker characteristics have an effect on the willingness of workers to vote for union representation, the analysis is expanded to include controls for occupation, industry, educational attainment, and tenure with the employer. Occupational controls are included for clerical and kindred workers, CLR, craftsmen and kindred workers, CFT, operatives, except transport, OPR, transport equipment operative, TOP, and service workers, SER. Occupational controls are included because of the wide variation in the level of unionization across occupations.[87] Industrial controls are included for mining, MIN, construction, CON, manufacturing, MAN, transportation, communications, and other public utilities, TRN, wholesale trades, WHL, retail trades, RTL, finance, insurance, and real estate, FIN, business repair services, BRS, personal services, PSR, and public

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[87] Richard B. Freeman and James L. Medoff. "New Estimates of Private Sector Unionism in the United States," Industrial and Labor Relations Review 32 (January 1979):162-165.

administration, PUB. These controls are included due to the variation in unionization across industries.[88]

Educational controls are included for those workers with less than twelve years of education, <12YED, workers who had completed a high-school education, 12YED, workers with some college, 12-16YED, and finally those workers who had graduated from college, CDGR. Those workers with an educational attainment of a high-school degree or less, <12YED or 12YED, are likely to vote for union representation, while those workers with some college, 12-16YED, and college graduates, CDGR, are unlikely to vote for union representation. In addition, control variables are included for the size of the employer. Controlling for the size of the employer is necessary for two reasons. First, as noted above, most of the recent union elections have taken place in a bargaining unit of fifty or less workers. Therefore, a control variable, <50, is included for employers of a size of fifty or less. Second, because the administrative model of industrial relations usually does not develop until an employer size of at least 500 employees, another control variable, 50-499, for employer size of between fifty and 499 employees is included. Furthermore, with an employer size of less than 500 employees the legal model of industrial relations is likely to be the dominant form of industrial relations system. With the dominance of the legal model of industrial relations the possibility of the government substitution hypothesis is larger. The coefficients for both of the size variables are expected to be negative under the government substitution hypothesis.

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[88]Ibid., pp. 155-161.

A second set of variables is included to control for the tenure of the employee with the firm. Here two variables are added. The first of the two control variables is for those individuals who have less than one year with the employer, <1YT, and the second is for those employees who have between one and five years of tenure, 1-5YT, with the employer. The reason for the inclusion of these additional control variables is twofold. First, the availability of some benefits is related to the seniority an employee has with a firm. Some benefits are not available to employees until they accumulate a contractually stipulated amount of seniority. Second, familiarity with the terms and conditions of employment, either in terms of available benefits or actual working conditions is a learning process and those workers with the least amount of tenure are less likely to be fully aware of the true conditions. As tenure with an employer increases, both knowledge and availability of benefits increases. Therefore, increases in tenure are related negatively to the willingness to vote for union representation. The two measures of tenure included, less than one year, <1YT, and between one and five years of tenure, 1-5YT, should have positive coefficients. Column 2 of Table 2-2 presents results for the additional controls of age, education, occupation, tenure with the employer, and employer size. Column 3 of Table 2-2 presents results for industrial controls. In both cases, earnings, ERN, remains related negatively to the willingness to vote for union representation. None of the coefficients for the benefit variables, MED, RET, or, VAC, have the negative signs necessary to offer support to the substitution hypotheses. The control for sex is positive and significant. The regional control variable remains positive and significant, counter to what is expected. All of the controls for job stability have the

expected positive coefficients, with the coefficient for expected layoff, XLO, being statistically significant. The controls for education produce the expected results. Workers with lower levels of educational attainment, <12YED and 12YED, are found to be willing to vote for union representation. The workers with higher levels of educational attainment, 12-16YED and CDGR, are not found willing to vote for union representation. The controls for tenure of the employees have the expected positive coefficients, and in the case of the occupational controls the coefficients are significant. The controls for the size of the employer produced mixed results. In the case of the occupational controls the coefficient for firms of between fifty and 499 employees is negative as expected, but in all other cases the coefficients are positive, running counter to expectations. The results of occupational controls show that clerical, CLR, operatives, OPR, transport operatives, TOP, and service workers, SER, are all likely to vote for union representation. The results for operatives, transport operatives, and service workers are statistically significant. The coefficient for craftsmen, CFT, is negative but is not significant. Of the industrial controls only manufacturing, MFG, has a positive coefficient. The negative coefficients for mining, MIN, wholesale, WHL, and retail, RTL, are significant.

An expansion of the analysis to include the broader measures of medical insurance, SMED, and retirement, SRET, gives similar results. As shown in columns 1, 2, and 3 of Table 2-3, earnings, ERN continues to be related negatively to the desire for union representation. The broad measures of employee benefits offer mixed support for the substitution hypotheses. The coefficient for broad medical coverage, SMED, is negative when neither the occupational or industrial controls are

Table 2-3

Maximum Likelihood Estimates
Current Broad Based Fringe Benefits and the Willingness to Vote for Union Representation

Variable	1	2	3
CONSTANT	-.767****	-1.463****	-1.331****
	(.268)	(.430)	(.423)
ERN	-.126E-04***	-.474E-05	-.410E-05
	(.721E-05)	(.795E-05)	(.788E-05)
SMED	-.854E-01	.174	.195
	(.233)	(.249)	(.206)
SRET	-.128	-.309	-.922E-01
	(.189)	(.206)	(.206)
VAC	.721E-01	.458E-01	.843E-02
	(.203)	(.211)	(.215)
BONW	.913****	1.004****	1.004****
	(.202)	(.212)	(.213)
FEML	.312***	.290**	.243**
	(.136)	(.155)	(.149)
SOUTH	.219	.309***	.258*
	(.132)	(.140)	(.140)
AGE	.501E-03	.895E-03	.421E-03
	(.163E-02)	(.314E-02)	(.250E-02)
LAYOFF	.625**	.311	.402
	(.416)	(.433)	(.429)
FOJ	-.244	.118E-01	.143E-01
	(.128)	(.137)	(.135)
XLO	.581***	.589****	.638****
	(.194)	(.201)	(.202)
<12YED		-.857E-01	.387**
		(.261)	(.251)
12YED		.195	.469***
		(.218)	(.213)
12-16YED		-.222	-.388E-01
		(.224)	(.224)
CDGR		-.917	-.546E-02
		(.241)	(.250)
<1YT		.390***	.457****
		(.179)	(.177)
1-5YT		.355***	.408****
		(.153)	(.151)
<50		-.386E-01	.460E-02
		(.170)	(.177)

Table 2-3 (Continued)

Variable	1	2	3
50-499		-.571E-01 (.176)	-.129E-01 (.176)
CLR		.135 (.199)	
CFT		-.112 (.223)	
OPR		.542*** (.236)	
TOP		.929*** (.404)	
SER		.413*** (.232)	
MIN			-.961** (.589)
CON			-.367 (.361)
MFG			-.299 (.203)
TRN			-.104 (.297)
WHL			-.558* (.387)
RTL			-.333* (.217)
FIN			-.154 (.254)
BRS			-.191 (.351)
PSR			.128 (.449)
PUB			-.151 (.271)
Log-L	-292	-277.33	-288.21
Chi-Sq.	55.941	86.52	80.76
Sample Size	507	507	507
Mean of VFU	.327	.327	.327

Standard errors in parentheses.
* Significant at the 0.15 level
** Significant at the 0.10 level
*** Significant at the 0.05 level
**** Significant at the 0.01 level

included, thereby supporting the substitution hypothesis. The results for the retirement variable are negative in each case, but are not statistically significant. The results for the vacation variable, VAC, do not support the substitution hypothesis as the coefficients are positive. The control for race, BONW, is positive and significant in all cases. The coefficient for sex, FEML, is positive and the coefficient for region, South is positive, contrary to expectations.

The controls for employment stability all have the hypothesized positive signs, with the results for the control for expected layoff, XLO, being significant. The controls for tenure show that workers with little tenure, either less than one year, <1YT, or between one and five years of tenure, 1-5YT, are likely to vote for union representation. The results being statistically significant. The results of the employer size continue to support the notion of the government substitution hypothesis, as the coefficients for both variables, <50 and 50-499, are negative. The coefficient for employers of size fifty to 499 employees being significant. In the results for the occupational controls, clerical workers, CLR, operatives, OPR, tranport operatives, TOP, and service workers, SER, are all positive. The positive and significant effect for service workers is surprising, as it has been argued that the growth of the service sector, an occupation thought not to be receptive to unionization, is responsible for part of the relative decline in unionization.[89] The control for craftsmen, CFT, is negative but not significant. With the industrial controls little is revealed. With the exception of personal services, PSR, and public

[89]Richard B. Freeman. "Contraction and Expansion: The Divergence of Private Sector and Public Sector Unionism in the United States." Journal of Economic Perspectives 2 (Spring 1988):66.

Table 2-4

Maximum Likelihood Estimates
Desire for Broad Based Fringe Benefits and
The Willingness to Vote for Union Representation

Variable	1	2	3
CONSTANT	-.927****	-1.340****	-1.277***
	(.209)	(.356)	(.343)
ERN	-.128E-04***	-.486E-05***	-.453E-05***
	(.713E-5)	(.802E-05)	(.793E-05)
SMED	-.307****	.282***	.303***
	(.125)	(.130)	(.131)
SRET	.211	.153	.144
	(.159)	(.167)	(.167)
VAC	.383**	.334	.388*
	(.286)	(.303)	(.301)
BONW	.929****	.996****	.997****
	(.205)	(.216)	(.215)
FEML	.337****	.294***	.260***
	(.137)	(.155)	(.150)
SOUTH	.224**	.299***	.257***
	(.132)	(.140)	(.141)
AGE	.663E-03	.127E-02	.597E-03
	(.184E-02)	(.399E-02)	(.274E-02)
LAYOFF	.461	.162	.223
	(.424)	(.443)	(.440)
FOJ	-.527E-01	-.176	-.655E-02
	(.130)	(.138)	(.138)
XLO	.537****	.536****	.588****
	(.196)	(.204)	(.204)
<12YED		.528E-02	.327*
		(.257)	(.264)
12YED		.170	.459****
		(.217)	(.213)
12-16YED		-.235	-.444E-01
		(.223)	(.224)
CDGR		-.102	.248E-02
		(.240)	(.250)
<1YT		.285**	.346***
		(.182)	(.179)
1-5YT		.294***	.343***
		(.157)	(.154)
<50		-.744E-01	-.755E-02
		(.165)	(.174)

Table 2-4 (Continued)

Variable	1	2	3
50-499		-.859 (.175)	-.131 (.177)
CLR		.134 (.198)	
CFT		-.128 (.224)	
OPR		.532*** (.238)	
TOP		.895 (.412)	
SER		.425*** (.232)	
MIN			-.921** (.598)
CON			-.397 (.361)
MFG			.609E-01 (.204)
TRN			-.159 (.302)
WHL			-.633*** (.382)
RTL			-.398*** (.219)
FIN			-.230 (.256)
BRS			-.352 (.256)
PSR			-.162 (.447)
PUB			-.149 (.268)
Log-L	-286.69	-273.52	-275.79
Chi-Sq.	67.80	94.15	89.611
Sample Size	507	507	507
Mean of VFU	.327	.327	.327

Standard errors in parentheses.
* Significant at the 0.15 level
** Significant at the 0.10 level
*** Significant at the 0.05 level
**** Significant at the 0.01 level

employment, PUB, all of the coefficients are negative the coefficients for mining, MIN, retail trades, RTL, and wholesale trades, WHL, being significant. The OES also provides information on fringe benefits which the respondents do not currently have but they want, WSMED, WSRET, WSVAC. The next step in the analysis is to determine if the desire for these benefits has an effect on the willingness of the respondents to vote for union representation. With these variables, it is expected that non-union workers who want the benefits are willing to vote for union representation, as unionized workers are more apt to have the benefits. With the variables WSMED, WSRET, WSVAC, a positive coefficient will lend support to the substitution hypotheses. The results in columns 1, 2, and 3 of Table 2-4 provide support for the substitution hypotheses. The coefficients for earnings, ERN, are negative, thereby supporting the substitution hypotheses. The coefficients for desired broad medical benefits, WSMED, have the hypothesized positive sign and are significant. The coefficients for the measure of desired retirement benefits, WSRET, is positive, supporting the substitution hypotheses. The results for desired retirement benefits are significant only when neither the occupational nor industrial controls are included. The coefficients for the measure of desired vacation, WSVAC, is positive, supporting the substitution hypotheses, but is only significant when industrial controls are included.

The next step in the testing of the substitution hypotheses is to include both the broad measures of currently held fringe benefits, SMED, SRET, and VAC, and the broad measures of desired benefits, WSMED, WSRET, WSVAC. This analysis will show the joint effects of currently held fringe benefits as well as the desire for fringe benefits on the willingness to vote for union representation.

The results of the analysis with the six measures of fringe benefits are shown in columns 1, 2, and 3 of Table 2-5. Earnings, ERN, continue to be related negatively and significantly to the willingness to vote for union representation. The desire for broad medical coverage, WSMED, has a positive and significant effect on the willingness to vote for union representation. Therefore, medical benefits appear to be an important determinant in an individual's willingness to vote for union representation. The effect of the broad measure of retirement benefits on an individual's willingness to vote for union representation is less clear. The presence of retirement benefits, SRET, is related negatively to voting for union representation and the results are significant in two of the three cases, supporting the substitution hypotheses. On the other hand, with no controls or with the occupational controls, the desire for retirement benefits, WSRET, is found to be related positively to the willingness to vote for union representation, supporting the substitution hypotheses. These results are not significant.

With the finding the desire for broad medical coverage, WSMED, is the key fringe benefit in determining the willingness to vote for union representation, attention is turned to an estimation of the desire for broad medical benefit coverage. This estimation will show where the provision of medical benefits may have their greatest effect on the willingness to vote for union representation. To ascertain the factors which determine the demand for medical benefit coverage it is necessary to control for personal attributes of the workers, characteristics of the workplace, and

Table 2-5

Maximum Likelihood Estimates Current Broad Based Fringe Benefits, Desire for Broad Based Fringe Benefits and the Willingness to Vote for Union Representation

Variable	1	2	3
CONSTANT	-1.159****	-1.778****	-1.629****
	(.298)	(.454)	(.440)
ERN	-.133E-04***	-.608E-05***	-.510E-05***
	(.733E-05)	(.810E-05)	(.802E-05)
SMED	.160	.257	.267*
	(.237)	(.253)	(.249)
SRET	-.357**	.522E-01	-.122E-01*
	(.197)	(.212)	(.211)
VAC	.129	.962E-01	.717E-01
	(.210)	(.220)	(.222)
WSMED	.309****	.290***	.308***
	(.125)	(.131)	(.132)
WSRET	.219E-01**	.181	.156
	(.166)	(.173)	(.173)
WSVAC	.496**	.474	.508
	(.304)	(.321)	(.318)
BONW	.933****	1.013****	1.015****
	(.206)	(.217)	(.216)
FEML	.359****	.328****	.280***
	(.138)	(.158)	(.151)
SOUTH	.230***	.315***	.274***
	(.133)	(.141)	(.141)
AGE	.502E-03	-946E-03	.402E-03
	(.183E-02)	(.367E-02)	(.277E-02)
LAYOFF	.481	.201	.250
	-.447E-01	(.445)	(.442)
FOJ	(.421E-01)	-.797E-02	.304E-02
	.192	(.139)	(.138)
XLO	(.197)	.560***	.609****
		(.205)	(.206)
<12YED		-.857E-01	.395**
		(.264)	(.253)
12YED		-.213	.497***
		(.220)	(.215)
12-16YED		-.207	-.189
		(.225)	(.225)
CDGR		-.808E-01	.332E-01
		(.242)	(.252)

Table 2-5 (Continued)

Variable	1	2	3
<1YT		.334	-.383
		(.185)	(.182)
1-5YT		-.295	-.341
		(.158)	(.155)
<50		-.237E-01	-.150E-01
		(.172)	(.178)
50-499		-.698E-01	-.931E-02
		(.177)	(.177)
CLR		.900E-01	
		(.201)	
CFT		-.149	
		(.225)	
OPR		.495***	
		(.239)	
TOP		.879***	
		(.410)	
SER		.451***	
		(.233)	
MIN			-.936
			(.605)
CON			-.386
			(.363)
MFG			-.964E-01
			(.207)
TRN			-.180
			(.302)
WHL			-.656***
			(.384)
RTL			-.388***
			(.220)
FIN			-.256
			(.258)
BRS			.277
			(.357)
PSR			-.138
			(.444)
PUB			-.180
			(.271)
Log-L	-285.98	-272.28	-274.79
Chi-Sq.	69.22	96.63	91.60
Sample Size	507	507	507
Mean of VFU	.327	.327	.327

Standard errors in parentheses.
* Significant at the 0.15 level   *** Significant at the 0.10 level
** Significant at the 0.10 level   **** Significant at the 0.01 level

the industry and occupation of the worker. The personal attributes used as controls are the earnings of the individual, ERN, the age of the worker, AGE, the worker's race, BONW, the worker's sex, FEML, the number of children in the worker's household, CHLDRN, whether or not the worker is married, MARR, and the level of educational attainment of the worker, <12YED, 12YED, 12-16YED, CDGR. Controls are also included for tenure with the worker's employer, less than one year of tenure, <1YT, and between one and five years of tenure, 1-5YT. Earnings, the respondent's age, the sex of the respondent, the number of children, and higher levels of educational attainment, are expected to be related positively to the desire for medical benefits, WSMED. The controls used for the employer are, first, the size of the employer, <50, and 50-499. The size controls are included as smaller sized firms are possibly less likely to provide medical benefits and the workers in these firms will have a greater desire for such benefits. Second, industrial controls are included. A third employer control is an indicator of possible exposure to hazards at the workplace, DWC. If a worker is exposed to dangerous working conditions, it is likely the worker would desire medical coverage due to the increased risk of injury. An explanation for the construction of this control variable is in the Appendix B of Chapter 2.

Because the dependent variable, WSMED, is a zero-one variable, a probit analysis is utilized. The level of earnings, ERN, the age of the respondent, AGE, the length of tenure on the job, both less that one year, <1YT, and between one and five years, 1-5YT, as well as the relatively small firm size, of between fifty and 499 employees, 50-499, are all related positively and significantly to the demand for

TABLE 2-6

Maximum Likelihood Estimates
Desire for Broad Medical Coverage

Variable	1	2	3
Constant	-.363**	-.440***	-.496**
	(.264)	(.268)	(.279)
ERN	-.662E-05*	-.553E-05	-.798E-05**
	(.550E-05)	(.559E-05)	(.571E-05)
AGE	.103E-03	.229E-03*	.852E-04*
	(.740E-03)	(.753E-03)	(.740E-03)
BONW	.604E-01	.478E-01	.734E-01
	(.198)	(.199)	(.199)
FEML	-.358****	-.403****	-.314
	(.131)	(.142)	(.138)
CHLDRN	.277E-01	.313E-01	.208E-01
	(.419E-01)	(.426E-01)	(.199)
MARR	.727	.936E-01	.844E-01
	(.143)	(.144)	(.144)
<12YED	-.150	-.266	.229
	(.197)	(.211)	(.208)
12YED	-.199	-.176	-.945E-01
	(.165)	(.180)	(.175)
12-16YED	-.213	-.103	.951E-01
	(.178)	(.182)	(.186)
CDGR	-.499	-.658E-01	-.127
	(.199)	(.200)	(.208)
<1YT	.780****	.757****	.824****
	(.147)	(.149)	(.151)
1-5YT	.509****	.466****	.522****
	(.129)	(.131)	(.131)
<50	-.451****	-.421	-.417
	(.145)	(.147)	(.158)
50-499	.156E-01	.299E-01	.199
	(.158)	(.160)	(.162)
DWC	.101	.115	.124
	(.122)	(.127)	(.125)
CLR		.410***	
		(.180)	
CFT		.297**	
		(.188)	
OPR		.200	
		(.211)	

Table 2-6 (Continued)

Variable	1	2	3
TOP		.802E-01 (.356)	
SER		.664E-01 (.275)	
MIN			-.451* (.432)
CON			-.226 (.309)
MFG			.157 (.178)
TRN			.512 (.278)
WHL			.515 (.268)
RTL			.109 (.184)
FIN			.334 (.227)
BRS			.216 (.275)
PSR			-.122 (.351)
PUB			.167 (.240)
Log-L	-370.57	-367.14	-365.58
Chi-Sq.	60.95	67.81	70.94
Sample Size	610	610	610
Mean WSMED	.367	.367	.367

Standard errors in parentheses.
* Significant at the 0.15 level,
** Significant at the 0.10 level,
*** Significant at the 0.05 level,
**** Significant at the 0.01 level.

broad medical benefits, WSMED. None of the other variables has a significant effect on the demand for medical benefits. It is of interest that the broad measure of exposure to dangerous working conditions, DWC, although having a positive coefficient, is not statistically significant. The addition of occupational controls and industrial controls, presented in columns 2 and 3 of Table 2-6, did not change the results of the analysis.

In conclusion, the analysis of the demand for broad medical coverage, WSMED, shows the level of earnings, ERN, the age of the worker, AGE, minimal tenure, either less than one year, <1YT, or between one and five years of tenure, 1-5YT, and an employer's size of between fifty and 499 employees, 50-499, are important determinants of the demand for medical coverage. Neither the number of children of the worker, the sex of the respondent, the respondent's marital status, nor the level of educational attainment has any statistical effect on the demand for medical benefits. Also, the controls for hazardous working conditions add little to the analysis. The only control variable proving to be significant is for a dangerous employer. These results are important for the smaller employer, employers of less than 500 employees. By providing medical benefits to their employees these employers are likely to reduce the demand for unionization on the part of their workers allowing them to remain union free.

CONCLUSION

The results from the 1977 cross-section of the <u>QES</u> provide the first true test of the substitution hypotheses. The results of the analysis may be summarized in the following manner. In all of the analysis the level of earnings is negatively related to the willingness to vote for union representation. The negative relationship between the level of earnings and the willingness to vote for union representation represents clear support for the management substitution hypothesis. That is, if employers are willing to raise the level of earnings of their employees, it is very likely that the desire to seek union representation on the part of the employer's work force would be significantly reduced.

Of the benefits employers may provide, medical benefits play a key role in supporting the theory of a substitution effect. When employees have extensive medical coverage they are less likely to vote for union representation. Medical benefits are important for both the management substitution hypothesis and the government substitution hypothesis. For the management substitution hypothesis, employers will find that if they are willing to provide broad medical coverage, then the desire for union representation on the part of their employees will be reduced. In terms of the government substitution hypothesis, the institution of a broad national health insurance plan would reduce the demand for union representation, as medical benefits would then be available to all workers regardless of their union membership. This point is especially important, as the A.F.L.-C.I.O. has been one of the major forces in lobbying the Congress for the passage of such legislation. If
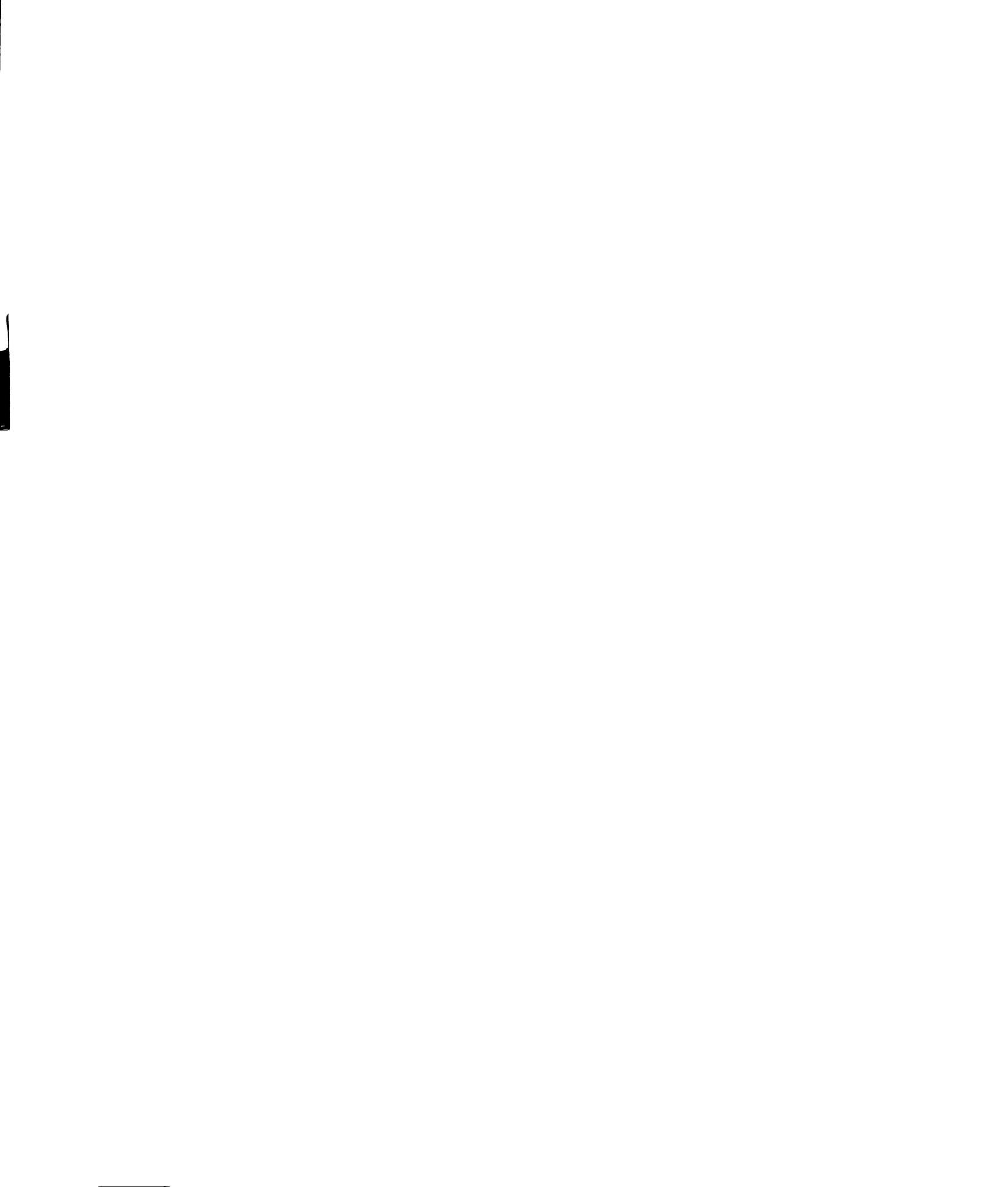
successful in its future lobbying of the Congress for a national medical insurance plan, the A.F.L.-C.I.O. may find that it has reduced one of the factors contributing to the demand for union services. A decline in the demand for union services would then contribute to an even further decline in success rate of unions in representation elections.

The mixed findings regarding retirement benefits may, in part, be explained by the presence of government "retirement" program already covering workers, OASI. That is, through the OASI program the government has already established a program which meets some of the needs retirement benefits would provide.

The continued negative result for the size of the employer does not bode well for organized labor. Having already organized many of the larger employers, organized labor is faced with attempting to organize the smaller employers. The results of this analysis indicate success in such efforts is likely to be remote. A lack of success in such firms is especially likely to be true if the employers in these firms provide their employees with medical benefit coverage. As discussed above, many of the remaining large non-union employers have adopted employee relations plans, which provide benefits approximating those provided by unionized firms, in an attempt to forestall unionization. The results of this work support the belief these employee relations system will be effective in limiting the growth of unions in large establishments.

CHAPTER THREE

THE GROWTH OF TOTAL COMPENSATION AND THE DECLINE IN THE
WILLINGNESS TO VOTE FOR UNION REPRESENTATION

With the findings in Chapter Two that the substitution hypotheses have validity, the next issue to be addressed is whether or not changes in the levels of benefit provision affect the willingness of workers to vote for union representation. In particular, the cross-section results indicate that medical benefits are likely to have an effect on the willingness of workers to vote for union representation. If increased numbers of workers have medical benefit coverage, the provision of medical benefits by employers may lessen the demand for union representation. This decrease in demand for union representation may explain some of the decline in the success rate of unions in representation elections. Such a finding will be a valuable addition to the labor relations literature, as it offers an alternative explanation for the decline.

To determine whether the presence of medical benefits leads to a decline in the willingness of workers to vote for union representation the period from 1950 to 1987 is examined. The reasons for selecting this time period are twofold. First, it covers the time period of a significant decline in the victory rate for labor unions in

representation elections administered by the National Labor Relations Board. Second, this is the period of the most rapid growth of fringe benefits. For example, while medical benefits were introduced by some firms prior to the Second World War, it was not until after the Circuit Court decision in 1949 in W.W. Cross and Company v. N.L.R.B. that significant growth in medical benefits occurred. The decision in Cross resulted in medical benefits becoming a subject of bargaining for which the parties to a collective bargaining agreement are required to bargain to impasse.[89] This is because the Cross decision recognized total compensation rather than just wages in collective bargaining.

> The word "wages," following the phrase "rates of pay" in the Act must have been intended to comprehend more than the amount of renumeration per unit of time worked or per unit of work produced. We think it must have been meant to comprehend emoluments resulting from employment in addition to actual "rates of pay."[90]

Similarly Inland Steel, required employers to bargain in good faith over pension and retirement plans.[91] With these decisions collective bargaining began to embrace the notion of total compensation.

By beginning the analysis in 1950, the entire time period of the possible effect of the growth of fringe benefits on the willingness to vote for union representation

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[89]W.W. Cross and Company v. N.L.R.B., 174, F. 2nd 875 (1st Cir. 1949).

[90]W.W. Cross and Company v. N.L.R.B., 174, F. 2nd 875 (1st Cir. 1949).

[91]Inland Steel Company v. N.L.R.B., 170 F2d. 247 (7th Cir. 1948), cert. denied, 336 U.S. 960 (1949).

is covered. The analysis ends with 1987, as this is the last year for which published data are available for the outcomes of representation elections.

A casual observation of the changes in success rate of unions in representation elections and the percentage of workers covered by medical benefits suggests the existence of a negative relationship between workers being covered by medical benefits and their willingness to vote for union representation.[92] The data in Table 3.1 show that while the percentage of workers receiving medical benefits increased from less than 20 percent in 1950 to approximately 60 percent in the mid-1980s, the victory rate of unions in representation elections declined from more than 70 percent to less than 45 percent.[93] While the percentage of workers receiving medical benefits was experiencing its most rapid growth, during the period from 1950 to 1965, the success rate of unions in representation elections was falling from nearly 75 percent to 60 percent. Furthermore, during the 1980s when the percentage of workers receiving medical benefits did not vary much, the union victory rate in representation elections remained relatively constant.

To go beyond the casual observation that medical benefit coverage and the willingness to vote for union representation appear to be related negatively, it is necessary to utilize the cross-section results from Chapter Two to construct a probability of workers voting for union representation. Once this probability is determined it is possible to ascertain how variations in total compensation will affect

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[92]The data for the success rate of unions in N.L.R.B. elections are from the Annual Reports of the N.L.R.B.

[93]For a discussion of the data that were used in this analysis see the Appendix A to this Chapter.

Table 3.1
Mean Medical Benefit Coverage and Union Victory Rates in N.L.R.B. Representation Elections, 1950-1987

Year	Medical Benefit Coverage	Union Victory Rate In N.L.R.B. Representation Elections
1950	16.4%	74.5%
1951	20.2%	74.0%
1952	23.8%	72.9%
1953	28.9%	71.9%
1954	32.7%	65.6%
1955	36.6%	67.6%
1956	38.6%	65.3%
1957	41.6%	62.2%
1958	43.6%	60.8%
1959	45.1%	62.8%
1960	47.7%	58.6%
1961	50.4%	56.1%
1962	51.5%	59.5%
1963	53.9%	59.0%
1964	58.8%	57.1%
1965	53.0%	60.8%
1966	58.1%	60.8%
1967	60.6%	59.0%
1968	59.9%	57.2%
1969	61.5%	54.6%
1970	63.9%	55.2%
1971	64.1%	53.2%
1972	63.6%	53.6%
1973	66.3%	51.1%
1974	66.5%	50.0%
1975	64.5%	48.2%
1976	64.3%	48.1%
1977	64.1%	46.0%
1978	63.7%	46.0%
1979	61.2%	45.0%
1980	61.9%	45.7%
1981	62.0%	43.1%
1982	61.7%	40.3%
1983	61.0%	43.0%
1984	59.8%	42.0%
1985	60.2%	42.4%
1986	60.1%	43.2%
1987	56.6%	43.9%

the probability an individual will vote for union representation. Total compensation is defined as annual earnings, medical benefit coverage, and retirement benefit coverage.

The probability of an individual's willingness to vote for union representation is obtained from the cross-section results in the following manner. The estimate coefficients for each of the variables from the cross-section are multiplied by their mean values, and the resulting products are summed over all of the variables in equation, with the probability determined from this sum.[94] In algebraic terms:

$$\text{PROB VFU} = F(\sum_{i=1}^{n} \hat{\beta_i} \bar{X_i}), \qquad \text{Eq. 3-1}$$

where $\hat{\beta}$ represents the estimated coefficient from the cross-section results, $\bar{X}$ represents the mean of each of the n variables in the cross-section results.

Without either the occupational or industrial controls the probability of the respondents in the cross-section sample being willing to vote for union representation is 41 percent. The estimated probability contrasts with the union victory rate in representation elections held by the N.L.R.B. during 1977 of 64.1 percent. The inclusion of occupational and industrial controls from the cross-section results in an estimated probability of approximately 30 percent in the case of industrial controls and 38 percent in the case of occupational controls for 1977. The difference in the estimated probability of voting for union representation is due to differences in the

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[94]G. S. Maddala, Limited-Dependent Qualitative Variables in Econometrics (New York: Cambridge University Press, 1983): 18-27.

sum of the coefficients for each estimation in Table 2.5. In each case the estimated willingness to vote for union representation is between 20 and 30 percentage points lower than the actual union victory rate for 1977.

To test the effect of the change in the level of medical benefit coverage on the willingness of an individual to vote for union representation, the basic procedure for determining the probability of voting for union representation is repeated. However, the mean value for medical benefits is not the cross-sectional sample mean but the mean medical benefit coverage for the work force as a whole and the mean desire for medical benefits. It is noted that while the mean of medical benefits, SMED, for the cross-section sample is nearly 81 percent, the mean level for all workers was significantly less at 64 percent. The difference between the two means is probably explained by the all inclusive manner in which the medical benefit variable is constructed for the cross-section work.[95] This probability simulation is shown algebraically in Equation 3-2, where $\text{PR\hat{O}B VFU}_t$ represents the estimated probability of voting for union representation in year t, $\overline{\text{MED}}_t$ represents the mean level of medical benefits for all workers in year t, and CONS, a constant is included to equate the simulated result in 1950 with the actual union victory rate in N.L.R.B. elections.

$$\text{PR\hat{O}B VFU}_t = F(\hat{\beta}_{SMED}\overline{\text{MED}}_t + \hat{\beta}_{WSMED}(1-\overline{\text{MED}}_t)$$
$$+ \sum_{i \neq MED}^{n} (\hat{\beta}\bar{X}) + \text{CONS}$$

Eq. 3-2

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[95]The analysis in the remained of this chapter is replicated in Appendix B to this chapter utilizing the narrowest measures of benefits. This replication is necessary due to uncertainty of comparison in the definitions of benefit coverage with the data from the QES and the data utilized in the simulations. By providing results from the narrowest and the broadest definitions the entire range of outcomes is covered.

By substituting the actual mean of the medical benefits and the desire for medical benefits for each year in the sample from 1950 through 1987, a simulation of the effect of the changing levels of medical benefits on the willingness to vote for union representation is obtained. This type of procedure was used by Parsons to simulate trends in the labor force participation of older men.[96]

The ability of a cross-sectional model to explain time series trends may be subject to criticism. The criticism stems from the fact one is assuming the coefficients for the variables will remain constant over time. The stability of the coefficients is unlikely, especially in the case of the compensation variables. Instability of the coefficients for the compensation variables is likely as the time period is from the introduction of fringe benefits to the time of their wide acceptance. It is probable the demand for medical benefit coverage was higher during the 1950s, soon after medical benefits became a mandatory subject of bargaining, than it was from 1970, during which time the percentage of workers covered by medical benefits remained relatively constant.

The results of the initial simulation are presented in column 2 of Table 3.2. During the time period of the sample, the predicted union victory rate declines from approximately 74.5 percent to 69 percent due to the increase in the percentage of workers receiving medical benefits. The expansion of medical benefits explains 5.5 percentage points of the 30 percentage point decline in the willingness to vote for union representation. Column 3 of Table 3.2 presents simulation results with the

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[96]Donald O. Parsons, "The Decline in Male Labor Force Participation," Journal of Political Economy, 88 (February 1980): 128-131.

TABLE 3.2
Actual and Predicted Union Victory Rates in N.L.R.B.
Represented Elections, 1950-1987

Year	(1) Actual Union Victory Rate	(2)	(3) Predicted Union Victory Rate	(4)
1950	74.5%	74.5%	74.5%	74.5%
1951	74.0%	74.0%	74.5%	71.4%
1952	72.9%	73.5%	74.4%	71.4%
1953	71.9%	72.9%	74.4%	71.3%
1954	65.6%	72.4%	74.3%	71.2%
1955	67.6%	71.9%	74.3%	71.2%
1956	65.3%	71.6%	74.3%	71.1%
1957	62.2%	71.3%	74.2%	71.1%
1958	60.8%	71.0%	74.2%	71.1%
1959	62.8%	70.8%	74.2%	71.0%
1960	58.6%	70.5%	74.2%	71.0%
1961	56.1%	70.2%	74.1%	71.0%
1962	59.5%	70.2%	74.1%	70.9%
1963	59.0%	69.7%	74.1%	70.9%
1964	57.1%	69.5%	74.1%	70.9%
1965	60.8%	69.2%	74.0%	70.8%
1966	60.8%	69.2%	74.0%	70.8%
1967	59.0%	69.0%	74.0%	70.8%
1968	57.2%	69.0%	74.0%	70.8%
1969	54.6%	68.8%	74.0%	70.8%
1970	55.2%	68.5%	74.0%	70.7%
1971	53.2%	68.5%	74.0%	70.7%
1972	53.6%	68.5%	74.0%	70.7%
1973	51.1%	68.2%	74.0%	70.7%
1974	50.0%	68.2%	74.0%	70.7%
1975	48.2%	68.4%	74.0%	70.7%
1976	48.1%	68.5%	74.0%	70.7%
1977	46.0%	68.5%	74.0%	70.7%
1978	46.0%	68.5%	74.0%	70.7%
1979	45.0%	68.8%	74.0%	70.8%
1980	45.7%	68.8%	74.0%	70.8%
1981	43.1%	68.7%	74.0%	70.8%
1982	40.3%	68.8%	74.0%	70.8%
1983	43.0%	68.9%	74.0%	70.8%
1984	42.0%	69.0%	74.0%	70.8%
1985	42.4%	69.0%	74.0%	70.8%
1986	43.2%	69.0%	74.0%	70.8%
1987	43.9%	69.5%	74.1%	70.8%
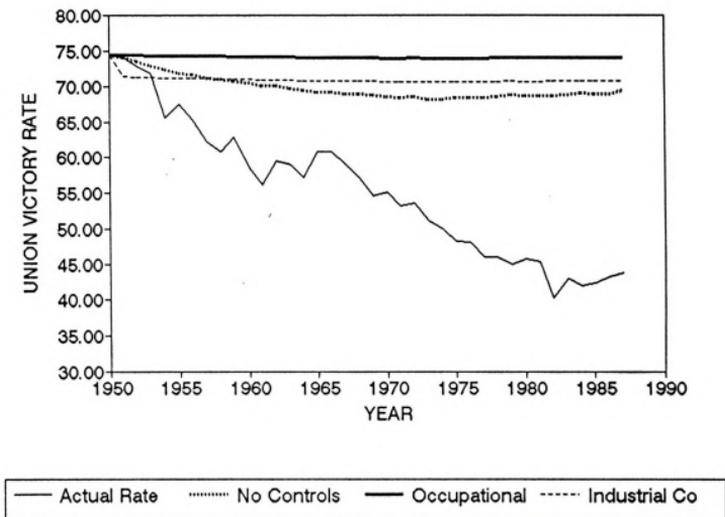
FIGURE 3-1

Actual and Predicted Union Victory Rates in N.L.R.B.
Representation Elections, 1950-1987

inclusion of occupational controls. With the inclusion of the occupational controls, the predicted union victory rate fell from 74.5 percent in 1950 to approximately 74 percent in the 1980s. The simulation implies that the growth of medical benefits accounts for little if any of the decline in the willingness to vote for union representation. Column 4 of Table 3.2 presents the simulation results with the inclusion of the industrial controls. The predicted willingness to vote for union representation declined from 74.5 percent in 1950 to 70.8 percent in 1987. Figure 3-1 shows a graph of the actual union victory rate in representation elections as well as the three predictions of the union victory rate for the 1950 through 1987 time period.

The initial simulation suggests that up to 16 percentage points of the decline in the willingness to vote for union representation may be attributable to the growth of medical benefits. This offers support for the management substitution hypothesis.

Next retirement benefits and earnings are examined to determine how total compensation influences the willingness of workers to vote for union representation. Retirement benefits are included as the cross-section results indicate they are related positively to the willingness of workers to vote for union representation. Earnings are included as the cross-section results indicate they are related negatively to willingness to vote for union representation. Algebraically, the simulation of the effect of changes in the level of total compensation is shown in Equation 3-3, where $\hat{PROB}$ VFU_t is the estimated probability of voting for union representation in time period t, $\bar{M}\bar{E}\bar{D}_t$, $\bar{R}\bar{E}\bar{T}_t$, and $\bar{E}\bar{R}\bar{N}_t$ are the mean levels of medical benefits, retirement benefits, and earnings in time period t.

$$\text{PR}\hat{\text{O}}\text{B VFU}_t = F(\hat{\beta}_{SMED}\overline{MED}_t + \hat{\beta}_{WSMED}(1-\overline{MED}) + \hat{\beta}_{SRET}\overline{RET}_t +$$

$$\hat{\beta}_{SRET}(1-\overline{RET}) + \beta_{ERN}\overline{ERN}_t + \sum_{}^{n} (\hat{\beta}_i \overline{X}_t) + CONS \qquad \text{Eq. 3-3}$$

$$i \neq SMED$$
$$i \neq SRED$$
$$i \neq WSMED$$
$$i \neq WSRET$$
$$i \neq ERN$$

The results of the second simulation are in Table 3.3. Column 2 of Table 3-3 has the results without either occupational or industrial controls. The results indicate the willingness of workers to vote for union representation falls 7 percentage points from 74.5 percent to 67.5 percent during the time period under consideration. When occupational controls are included, column 3, the willingness to vote for union representation falls from approximately 2 percentage points. With industrial controls, column 4, the willingness to vote for union representation declines 2.5 percentage points.

The simulated declines in the willingness to vote for union representation are shown in Figure 3-2 along with the actual union victory rate in representation elections. The actual union victory rate decreases almost continuously from 75 percent in 1950 to 45 percent in 1980 and then remains fairly constant at 43 percent. The simulated union victory rates all decline from 1950 to 1974 reaching a low of about 64.7 percent. Since 1974, the predicted union victory rate increased

TABLE 3.3
The Effect of Changes in Total Compensation on the Predicted Outcomes of N.L.R.B. Representation Elections

| Year	(1) Actual Union Victory Rate	(2)	(3) Predicted Union Victory Rates	(4)
1950	74.5%	74.5%	74.5%	74.5%
1951	74.0%	73.9%	74.4%	74.3%
1952	72.9%	73.2%	74.2%	74.2%
1953	71.9%	72.2%	74.0%	73.8%
1954	65.6%	71.7%	73.8%	73.6%
1955	67.6%	70.8%	73.6%	73.3%
1956	65.3%	70.4%	73.4%	73.1%
1957	62.2%	69.9%	73.2%	72.9%
1958	60.8%	69.6%	73.1%	72.7%
1959	62.8%	69.2%	73.0%	72.5%
1960	58.6%	68.8%	72.9%	72.4%
1961	56.1%	68.3%	72.8%	72.3%
1962	59.5%	68.1%	72.7%	72.2%
1963	59.0%	67.5%	72.5%	72.0%
1964	57.1%	67.1%	72.5%	72.0%
1965	60.8%	66.7%	72.3%	71.7%
1966	60.8%	66.6%	72.2%	71.7%
1967	59.0%	66.4%	72.2%	71.6%
1968	57.2%	66.3%	72.2%	71.6%
1969	54.6%	66.0%	72.1%	71.5%
1970	55.2%	65.8%	72.1%	71.5%
1971	53.2%	65.6%	72.0%	71.4%
1972	53.6%	65.4%	71.9%	71.2%
1973	51.1%	65.0%	71.8%	71.1%
1974	50.0%	64.7%	71.9%	71.3%
1975	48.2%	65.8%	72.0%	71.4%
1976	48.1%	65.7%	72.0%	71.4%
1977	46.0%	65.6%	72.0%	71.3%
1978	46.0%	65.7%	72.0%	71.3%
1979	45.0%	66.2%	72.1%	71.4%
1980	45.7%	66.5%	72.2%	71.6%
1981	43.1%	66.6%	72.3%	71.7%
1982	40.3%	66.8%	72.4%	71.7%
1983	43.0%	66.8%	72.4%	71.7%
1984	42.0%	66.9%	72.4%	71.8%
1985	42.4%	67.0%	72.4%	71.8%
1986	43.2%	67.0%	72.4%	71.8%
1987	43.9%	67.5%	72.6%	72.0%
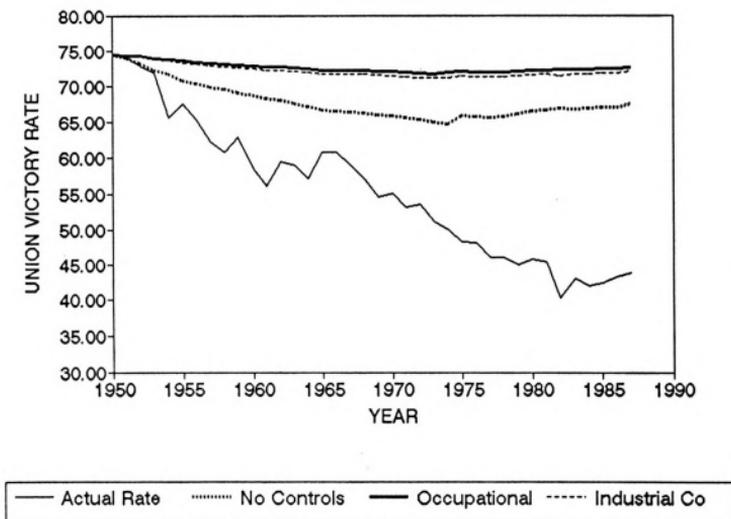
Figure 3-2

**Total Compensation Changes and
Actual and Predicted Union Victory Rates in
N.L.R.B. Representation Elections, 1950-1987**

approximately 3 percentage points during the rest of the 1970s and then remains relatively constant during the 1980s.

In each of the simulations allowing for changes in total compensation, the willingness to vote for union representation declinesduring the period for which the data are available. The largest decline is with neither the occupational nor industrial controls, where the decline is 7 percentage points. This decline of 7 percentage points represents approximately 22 percent of the total decline in the willingness to vote for union representation. The 2.2 percentage point decline with the occupational controls represents 7 percent of the total decline and the 2.5 percentage point decline with industrial controls accounts for 8 percent of the total decline in the willingness to vote for union representation. These results support the idea that the changes in employee compensation play a major role in reducing the likelihood of a union success in representation elections. Table 3.4 provides a summary of the six simulations. In Table 3.4 the predicted decline in the probability of voting for union representation is shown along with the 30.4 actual percentage decline in the union victory rate in the N.L.R.B. supervised representation elections. With the changes in medical benefits alone, the simulated willingness to vote for union representation falls between 0.4 and 5 percentage points. This decline represents approximately 16 percent of the actual 30 percentage point decline. When total compensation is considered the simulation results indicate that between a 2.2 and 7 percentage point decline the willingness to vote for union representation may be explained by changes in total compensation as measured by earnings, medical coverage, and coverage by retirement benefits. Thus, about 22 percent of the decline

TABLE 3.4

**Simulated Declines in the Willingness to Vote For
Union Representation, 1950-1987**

	Predicted Percentage Point Decline	Percentage of Actual Decline Predicted By Simulation Results
Variation in Medical Coverage, No Controls	5.0%	16.3%
Variation in Medical Coverage, Medical Controls	0.4%	1.3%
Variation in Medical Coverage, Industrial Controls	3.7%	12.1%
Variation in Total Compensation, No Controls	7.0%	22.9%
Variation in Total Compensation, Occupational Controls	2.2%	7.2%
Variation in Total Compensation, Industrial Controls	2.5%	8.2%

in the willingness to vote for union representation may be explained by changes in compensation.

To provide a further test of the substitution hypotheses a regression analysis of the effect of the coverage of medical benefits, retirement benefits, and earnings on the union victory rate in representation elections is the dependent variable as itserves as a proxy for the willingness of workers to vote for union representation. That is, the greater the willingness of workers to vote for union representation, the greater the percentage of representation elections won by unions should be. The results of this analysis are in Table 3.5. Table 3.5 contains two sets of results. The first are estimates made using ordinary least squares, whereas the second estimation uses the Cochrane-Orcutt iterative technique to correct for the serial correlation found in the ordinary least squares estimation. The results of the regression analysis do not provide much support for the substitution hypothesis as either the cross-section or simulation results. Support for the substitution effects is unlikely given that many of the crucial control variables, such as occupational and tenure controls, are not included in this analysis. The ordinary least squares results did contain a negative and significant result for retirement benefits, which supports the substitution hypotheses. The coefficients for medical benefit coverage and earnings are positive, which runs counter to the substitution hypotheses. Because of the problem of serial correlation the Cochrane-Orcutt estimation results are more meaningful. In these results retirement benefit coverage is related negatively to the union victory rate. The coefficients for medical benefits and earnings should also be negative to support the substitution hypotheses.

TABLE 3.5

**Regression Results of the Effect of Detrended Total Compensation
on the Outcome of N.L.R.B. Representation Elections**

Dependent Variable - Percentage of N.L.R.B. Representation Elections Won

Independent Variables	OLS Coefficient[*]	Cochrane-Orcutt Coefficient*
Constant	86.00 (9.10)	87.38 (9.10)
Time	-.51 (.06)	-.52 (.06)
Percentage of Workers Covered by Medical Benefits	.28 (.19)	.33 (.23)
Percentage of Workers Covered by Retirement Benefits	-1.50 (.29)	-1.54 (.34)
Annual Earnings	.002 (.0007)	.001 (.0008)
R^2	.98	.98
Durbin Watson	1.47	1.97
Rho		.27

[*] Standard Errors shown in parentheses.

Because the data in this regression analysis are likely to be related by a time trend, the analysis was repeated after the time trend was removed from the variables. The time trend was removed by first regressing the logarithms of the variables on time and time squared. The residuals from these regressions were then used to estimate the effects of the change in the level of benefit coverage on the union victory rate. The results of these estimations are shown in Table 3.6 and provide much stronger support for the substitution hypotheses. The coefficients for both medical and retirement benefit coverage are negative and significant, thereby supporting the substitution hypotheses. The results for earnings were positive, which runs counter to the substitution hypotheses. The results imply that changes in the provision of medical and retirement benefits may account for some of the decline in the union victory rate since 1950.

CONCLUSION

The results of the analysis in this chapter provide a new insight into the possibility of a substitution effect explaining a significant proportion of the decline in the success rate of unions in representation elections. If one is willing to accept the rather heroic assumption upon which the simulation analysis is based, that the coefficients from the results from the cross-section work remain constant over time, then new insight into the decline of the success of unions in representation elections is obtained. Rather than dismissing the substitution hypotheses as has been done in the past, new concern must be raised by organized labor, as a significant proportion

TABLE 3.6

**Regression Results of the Effect of Total Compensation
on the Outcome of N.L.R.B. Representation Elections**

Dependent Variable - Percentage of N.L.R.B. Representation Elections Won

Independent Variables	OLS Coefficient*	Cochrane-Orcutt Coefficient*
Constant	-.16 (9.10)	-.25 (9.10)
Percentage of Workers Covered By Medical Benefits	-9.17 (3.21)	-14.36 (4.63)
Percentage of Workers Covered By Retirement Benefits	-17.99 (4.76)	-24.21 (5.99)
Annual Earnings	.00004 (.000005)	.00002 (.00008)
R²	.35	.35
Durbin Watson	1.04	2.33
Rho		.57

*
Standard Errors shown in parentheses.

of the decline in the willingness of unorganized workers to vote for union representation is explained by increases in benefits made available to workers. Further increases in compensation by those firms which are currently non-union are seen as being an effective means to forestall a desire for union representation on the part of workers.

CHAPTER FOUR

SUMMARY AND CONCLUSIONS

The American labor movement has been in a state of continued decline for more than forty years. As evidence of the decline, the number of workers who are represented by labor unions continues to decline. Furthermore, labor unions are winning fewer representation elections than at any time since the passage of the National Labor Relations Act. Various factors are offered as explanations for the decline, from the changing industrial makeup of the American economy to violations of labor law by management. The work of this dissertation offers a new insight into the decline of the labor movement.

This dissertation focuses on the effect of total compensation on the willingness of workers to vote for union representation. Previous work advanced the notion that if employers or the government provide benefits to workers, which previously had only been available through the collective bargaining process, the willingness of workers to vote for union representation is likely to decline. The effect of the provision of benefits by the government is the government substitution hypothesis and the effect of the provision of benefits by employer is the management substitution hypothesis. Prior research on these hypotheses has two shortcomings.

First, none of the research considers benefits traditionally bargained for by labor unions. Second, there is no direct test of the provision of benefits on the willingness of workers to vote for union representation. Both of these shortcomings are corrected in this dissertation.

The substitution hypotheses are tested with data from the 1977 Cross-Section of the Quality of Employment Survey. This data set provides two major improvements over the earlier research on the substitution hypotheses. The data set has a direct measure of the willingness of an individual to vote for union representation. In addition, the data set contains measures not only of earnings but also coverage by a wide variety of benefits. For benefit coverage, the QES provides two pieces of information for each of the benefits. The first is whether or not the respondent has the benefit in question and the second is if the respondent does not have the benefit does the respondent want the benefit. With this information the data from the QES allows for testing of the effect total compensation may have on the willingness of workers to vote for union representation.

Of the benefits included in the QES, medical benefits, retirement plans, and vacation benefits occurred in large enough numbers to allow for further statistical analysis. A simple comparison of the mean level of earnings shows union workers received higher earnings than their non-union counterparts. Furthermore, union workers are more likely to have medical and retirement benefit coverage than workers not covered by a collective bargaining agreement. No difference is found in vacation benefit coverage. The comparisons of the level of earnings and fringe benefit coverage allows the formulation of the following hypothesis: If workers

have low levels of earnings and do not have medical or retirement benefits they should be more willing to vote for union representation.

To test the hypothesis a probit analysis is utilized. The results of the probit analysis confirm earnings are related negatively to the willingness of workers to vote for union representation. The novel result of the analysis is the effect medical benefits have on the willingness of workers to vote for union representation. Workers who have medical benefit coverage are less likely to vote for union representation than are those who did not have coverage. The workers who did not have medical benefits and who wanted them are found to be more willing to vote for union representation than the workers who did not want medical benefits. The effect of medical benefits held regardless of the variable specification used or the control variables included in the analysis. In terms of the management substitution hypothesis, if employers are willing to provide medical benefits to their non-union workers the probability of the workers voting for union representation will be reduced. For the government substitution hypothesis the results imply if the government were to enact a national health insurance plan workers would be less willing to vote for union representation.

The findings for the coverage by retirement benefits runs counter to the substitution hypotheses with all of the measures for the retirement benefits having positive coefficients. A possible explanation for this result is the presence of social security retirement benefits, which workers may regard as a sufficient retirement benefit. Vacation benefits never produce any statistically significant results.

In the cross-section analysis of the QES data a major weakness is acknowledged. The data on fringe benefits is not the dollar value of the benefits but only zero-one indicators of whether or not the worker receive the benefit. Future work should replicate the cross-section study using dollar-value data on fringe benefits if they become available.

With the results of the cross-section study showing benefit coverage affecting the willingness of workers to vote for union representation a simulation was undertaken to determine if variations in benefits coverage may explain the decline in the success rate of unions in representation elections. The results of the simulation provide the second important result of this dissertation. When medical benefit coverage is allowed to vary, as it has over the period from 1950 to 1987, up to 16 percent of the actual decline in the willingness to vote for union representation is explained. An expansion of the simulation allowing for changes in medical benefits, retirement benefits, and earnings explains up to 23 percent of the decline in the willingness to vote for union representation. The results provide an alternative explanation for the decline in the success rate of unions in representation elections.

The findings of this dissertation do not bode well for organized labor in the United States. The management of firms currently not organized may be able to reduce substantially the probability of their firms becoming unionized by providing workers with medical benefits and by paying higher wages. Such actions will result in a further decline in the number of workers represented by unions.

The potential impact the government may have on the outcomes of future representation elections is large. The institution of a national medical insurance program may mute the provision of medical benefits through the collective bargaining process. A national medical insurance program would remove one of the key determinants of the demand for unionization. This would lead to a further decline in the success rate of unions in representation elections. The A.F.L.-C.I.O. may well be advised to eliminate its lobbying of the Congress for national health insurance as such efforts may jeopardize the existence of organized labor.

APPENDICES

CHAPTER TWO

APPENDIX A

The _1977 Cross Section of the Quality of Employment Survey, QES_, provides several measures of employee compensation. Beginning with earnings, the variable chosen was "How much do your total earnings from your job figure out to be a year, before taxes and other deductions?" This was chosen as the broadest measure of monetary compensation in the survey.

To expand beyond simple monetary compensation to total compensation "Fringe benefits" are included in the analysis. In the QES the information on fringe benefits is of two types. First, respondents to the survey are asked to answer the following questions "I'll read a list of fringe benefits that workers sometimes get in addition to their wages. Please tell me whether each fringe benefit is available to you." Respondents were then given a list of fringe benefits to respond to. This list of fringe benefits includes the following" "medical, surgical, or hospital insurance that covers any illness or injury that might occur to you while off the job," "sickleave with full pay," "dental benefits," "eyeglass or eyecare benefits," "life insurance that would cover a death occurring for reasons not connected with your job," "a retirement program.," "profit sharing," "stock options," "thrift or savings plan," and

"paid vacation." This series of questions gives zero-one data on the availability of fringe benefits for workers.

After answering the initial question on fringe benefits, the respondents to the QES are asked the following question: "Are there any fringe benefits that you're not getting that you'd like to be getting?" The respondents are then given another list of fringe benefits to respond to. This list included: "medical, surgical, or hospital insurance that covers any illness or injury that might occur to you while off the job." "sickleave with full pay," "dental benefits," "eyeglass or eyecare benefits," "life insurance that would cover a death occurring for reasons not connected with your job," "a retirement program," "profit sharing," "stock options," "thrift or savings plan," "paid vacation," "time off for personal business; death in family; jury duty; voting; doctor's appointments," "paid holidays," "medical, surgical or hospital insurance that covers illness or injury occurring while on the job," "prescription plan, discount on prescriptions," "more pay; pay differentials; full pay throughout the year," "health/medical insurance--NA whether on or off job." This series of questions gives zero-one data on the desire for fringe benefits for those workers who do not currently receive these fringe benefits.

As noted above, the QES also gives information for those individuals who did not have fringe benefits but either wanted the fringe benefit or who did not want the fringe benefit. The number of individuals who did not have a fringe benefit and who did not want the benefit was so small as to prevent any further analysis. Those individuals who did not have fringe benefits but who wanted them provided additional insight into the substitution hypothesis. Due to the small number of
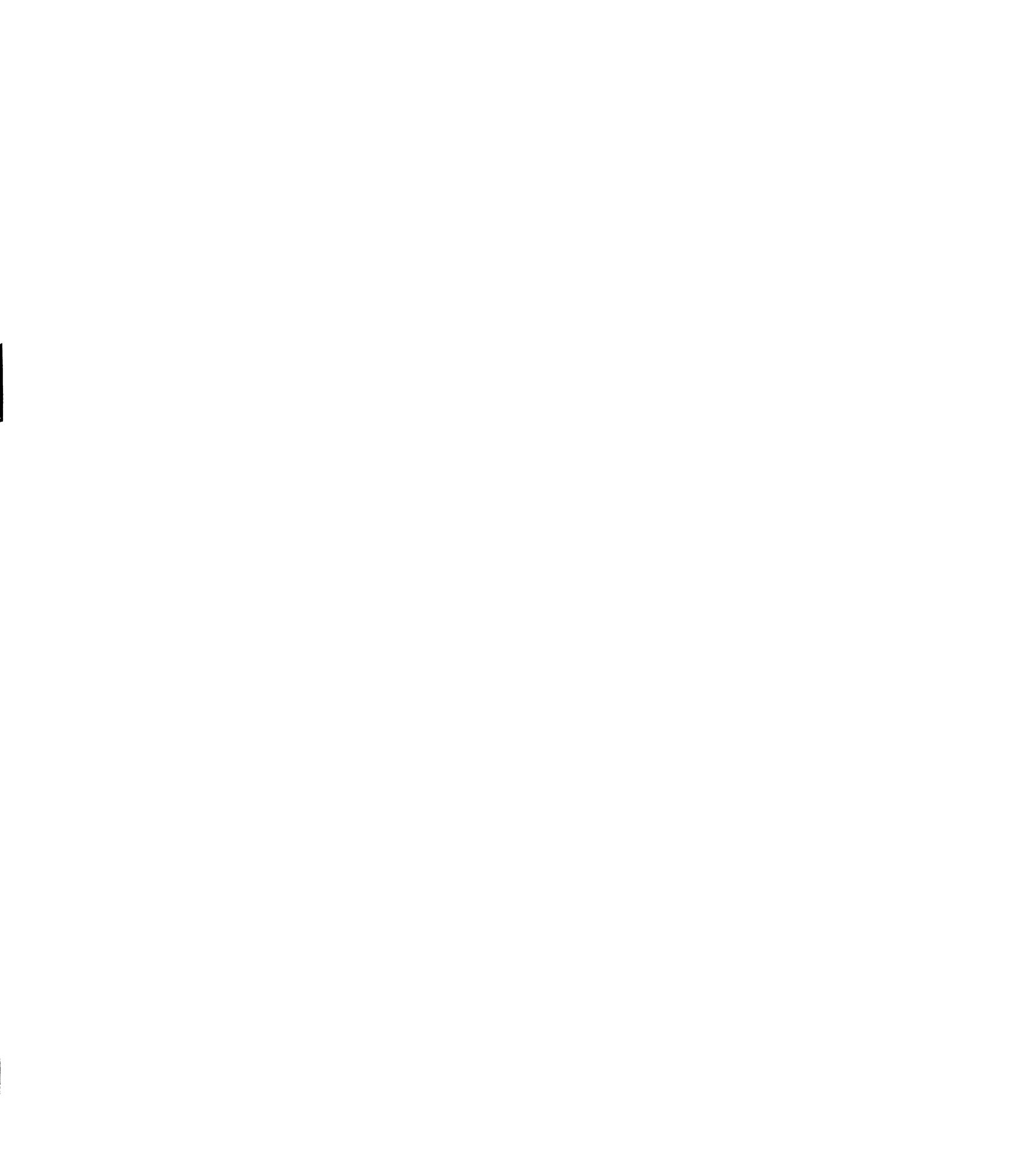
respondents who stated that they did not have one of the specific medical, retirement, or vacation benefits, broader measures of medical insurance, retirement, and vacation benefits are used. The measure of medical benefits, WSMED, was constructed in the following manner: If the respondent did not have but wanted either "medical, surgical, or hospital insurance that covers any illness or injury that might occur to you while off the job," or "sickleave" with full pay," or "dental benefits," or "eyeglass or eyecare benefits," or "medical, surgical or hospital insurance that covers illness or injury occurring while on the job," or "prescription plan; discount on prescriptions," then WSMED was coded one. If not, then WSMED was coded zero.

The broader measure of retirement benefits, WSRET, the variable is constructed in the following manner. If the respondent did not have but wanted either "life insurance that would cover a death occurring for reasons not connected with your job," or "a retirement program" or "profit sharing," or "stock options" or "thrift or saving plan," then WSRET is coded one; if not, then WSRET is coded zero. The broad measure of vacation benefits, WSVAC, is constructed as follows: If the respondent does not have either "paid vacation" or "time off for personal business; death in family; jury duty; voting; doctor's appointments" but wants these benefits then WSVAC is coded one; if not WSVAC is coded zero.

With these two series of questions, the QES provides two pieces of information concerning fringe benefits. First, if a worker has a fringe benefit. Second, if a worker does not have a fringe benefit did the worker want the fringe benefit? The piece of information that the QES does not give is whether a worker has a fringe benefit but does not want the benefit.

CHAPTER TWO

APPENDIX B

The $\underline{OES}$ provides several measures of dangers to which workers may be exposed to on their jobs. None of these measures occurs in enough of the cases to allow for further statistical analysis. Therefore, it is necessary to create broader measures of dangerous work conditions to test their effects on the demand for medical benefits.

The broadest measure of the measures of danger on the job, DWC, is a measure of exposure to any of the dangerous conditions covered in the $\underline{OES}$. Respondents to the $\underline{OES}$ were asked the following question, "Does your job ever expose you to..." "dangerous chemicals; radiation," "dangers from fire; burns or shock," "air pollution from dust, smoke, gas, fumes, fibers, or other things," "working outside in bad weather," "extremes of temperature or humidity," "dirty or badly maintained areas at your workplace," "things that are placed or stored dangerously," "too much noise," "dangerous tools, machinery, or equipment," "risk of catching diseases," "risk of traffic accidents while working," "risks of personal attack by people or animals," or "dangerous work methods." If the respondents said yes to any one of these on-the-job dangers then the variable DWC is given the value of one; if not, then DWC is given the value of zero.

CHAPTER THREE

APPENDIX A

The data for medical benefits were available from two sources. For 1950 to 1974 data were obtained from the Health Insurance Institute as reported by Skolnik in the Social Security Bulletin.[1] The data for 1979 through 1987 are unpublished data from the Census Bureau and were made available by the Employee Benefits Research Association. For the four-year gap between 1975 and 1978 a cubic time trend equation was utilized to provide estimates of the extent of medical benefits coverage. Data for retirement benefits were obtained from the same sources. The same procedure was utilized to overcome the four-year gap from 1975 through 1978.

The data for real annual earnings were constructed in the following manner; average weekly hours for production or nonsupervisory workers on private nonagricultural payrolls were multiplied by the average weekly wage which was then multiplied by fifty-two. This product was then deflated by the "all items" measure of the consumer price index to obtain real annual earnings. Prior to its adjustment by the CPI the 1977 earnings of workers were $9828.00, which compares favorably with the cross-section sample mean of $9974.07.

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[1]Alfred M. Skolnik. "Twenty-Five Years of Employee Benefit Plans." Social Security Bulletin, 39 (September 1976): 6.

The data for medical benefits, retirement benefits, and annual earnings used in the simulation are shown in Table 3-7. The means of medical benefit coverage and retirement benefit coverage in the cross-section results were much higher, 81 and 72 percent respectively, than the level of medical and retirement benefit coverage for the economy as a whole, 64.1 and 42.1 percent. The difference between the cross-section means and the observed coverage may be explained by the manner in which the medical and retirement benefit variables were constructed in the QES survey.

Table 3-7
Medical Benefits, Retirement Benefits, and Annual Earnings: 1950-1987

Year	Percent Coverage Medical Benefits	Percent Coverage Retirement Benefits	Real Annual Earnings
1950	16.4	22.5	$41386.18
1951	20.2	23.5	$38361.81
1952	23.8	24.2	$37638.00
1953	28.9	26.4	$37356.08
1954	32.7	29.0	$37078.33
1955	36.6	29.6	$37216.68
1956	38.6	31.4	$36669.38
1957	41.6	33.7	$35494.91
1958	43.6	35.8	$34512.35
1959	45.1	36.7	$34275.15
1960	47.7	37.2	$33696.18
1961	50.4	38.3	$33358.09
1962	51.5	38.3	$33026.72
1963	53.9	38.9	$32595.00
1964	55.8	39.2	$32174.42
1965	58.0	39.2	$31663.71
1966	58.1	39.3	$30784.17
1967	60.0	41.2	$29862.48
1968	59.9	41.0	$28661.12
1969	61.5	41.7	$27177.30
1970	63.9	42.1	$25706.37
1971	64.1	42.6	$24627.33
1972	63.6	43.1	$23861.41
1973	66.3	43.7	$22464.12
1974	66.5	44.0	$20231.38
1975	64.5	44.0	$18539.16
1976	64.3	44.0	$17529.12
1977	64.1	44.0	$16458.86
1978	63.7	43.9	$15297.65
1979	61.2	44.9	$13738.39
1980	61.9	44.9	$12104.45
1981	62.0	44.9	$10972.57
1982	61.7	44.3	$10335.82
1983	61.0	43.4	$10014.13
1984	59.8	42.0	$9599.68
1985	60.2	42.8	$9269.58
1986	60.1	42.6	$9100.43
1987	56.6	40.8	$8779.99

CHAPTER THREE

APPENDIX B

Due to the fact the definitions of broad measures of medical and retirment benefits in the cross-section results may overstate the presence of the coverage of these benefits the simulation procedures are repeated using the narrowest measures of medical and retirement benefits. Table 3-8 contains the cross-setion results used in the simulations. Table 3-9 shows the simulation results when only medical benefits are allowed to vary. Column 2 of Table 3-9 contains the results with neither occupation or industry controls. Column 3 presents the results with industrial controls and column 4 the results with occupational controls. Allowing only medical benefits to vary accounts for a 4 to 5 percentage point decline in the willingness to vote for union representation. Table 3-10 shows the effect on the willingness to vote for union representation when medical benefit coverage, retirement benefits coverage, and annual earnings are allowed to vary. These simulations show variations in total compensation may account for between 4 and 7 percent of the decline in the willingness to vote for union representation. Thus, even with the narrower definitions of the medical and retirement benefits the simulation results continue to support the previous findings that the growth in the total compensation received by workers contributes to the decline in the willingness of workers to vote for union representation.

Table 3-8
Maximum Likelihood Estimates Current Fringe Benefits,
Desire for Fringe Benefits and the Willingness to
Vote for Union Representation

Variable	1	2	3
CONSTANT	-1.019****	-1.860****	-1.695***
	(.302)	(.496)	(.473)
ERN	-.222E-04****	-.102-04***	-.111E-04***
	(.839E-05)	(.911E-05)	(.909E-05)
MED	.154	-.260*	.262*
	(.213)	(.228)	(.230)
RET	.918E-01	.205*	.148
	(.167)	(.185)	(.190)
VAC	.173	.162	.142
	(.213)	(.222)	(.226)
WMED	.431**	.492**	.489***
	(.273)	(.291)	(.288)
WRET	.939E-01	.341E-01	-.125
	(.230)	(.245)	(.241)
WVAC	.539*	.653**	.594*
	(.463)	(.503)	(.504)
BONW	.897****	.997****	1.013****
	(.211)	(.224)	(.224)
FEML	.280***	-.282	.238**
	(.141)	(.161)	(.154)
SOUTH	.259***	.346****	.288**
	(.135)	(.143)	(.143)
AGE	.741E-03	.152E-02	.835E-03
	(.182E-02)	(.450E-02)	(.329E-02)
LAYOFF	.221	'.290E-02	.272E-01
	(.441)	(.449)	(.450)
FOJ	-.203E-01	.299	.217E-01
	(.131)	(.140)	(.140)
XLO	.576****	.587****	.632****
	(.202)	(.211)	(.211)
<12YED		.778E-01	.386**
		(.269)	(.257)
12YED		-.207	.470***
		(.222)	(.218)
12-16YED		-.233*	-.495E-01
		(.229)	(.229)
CDGR		-.120	-.198E-01
		(.246)	(.257)
<1YT		.390***	.453****
		(.193)	(.187)

TABLE 3-8 (continued)

1-5YT		.329***	.377****
		(.163)	(.158)
<50		-.543E-01	.828E-01
		(.177)	(.185)
50-499		-.423E-01	.335E-01
		(.179)	(.180)
CLR		.965E-01	
		(.204)	
CFT		-.424E-01	
		(.230)	
OPR		.583****	
		(.242)	
TOP		.776***	
		(.423)	
SER		.506****	
		(.236)	
MIN			-.881**
			(.598)
CON			-.203
			(.367)
MFG			.229E-01
			(.209)
TRN			-.161
			(.309)
WHL			-.530**
			(.398)
RTL			-.274**
			(.227)
FIN			-.201
			(.258)
BRS			-.105
			(.360)
PSR			-.499E-01
			(.451)
PUB			-.213
			(.280)
Log-L	-281.38	-266.92	-269.91
Chi.Sq.	62.36	91.27	85.29
Sample Size	494	494	494
Mean of VFU	.328	.418	.328

Standard errors in parentheses.
* Significant at the 0.15 level,
** Significant at the 0.10 level,
*** Significant at the 0.05 level,
**** Significant at the 0.01 level.

Table 3-9
Actual and Predicted Union Victory Rates in N.L.R.B.
Representation Elections, 1950-1987

	(1) Actual Union Victory Rate	(2) Predicted Union Victory Rates	(3)	(4)
1950	74.5%	74.5%	74.5%	74.5%
1951	74.0%	74.1%	74.2%	74.1%
1952	72.9%	73.7%	73.8%	73.8%
1953	71.9%	74.1%	73.3%	73.3%
1954	65.6%	72.8%	73.1%	73.0%
1955	67.6%	72.3%	72.7%	72.7%
1956	65.3%	72.1%	72.5%	72.5%
1957	62.2%	71.8%	72.3%	72.5%
1958	60.8%	71.6%	72.1%	72.1%
1959	62.8%	71.4%	72.0%	72.0%
1960	58.6%	71.2%	71.8%	71.8%
1961	56.1%	70.9%	71.5%	71.6%
1962	59.5%	70.8%	71.4%	71.5%
1963	59.0%	70.5%	71.2%	71.3%
1964	57.1%	70.3%	71.1%	71.1%
1965	60.8%	70.1%	70.9%	71.0%
1966	60.8%	70.1%	70.9%	70.9%
1967	59.0%	69.8%	70.7%	70.8%
1968	57.2%	69.1%	70.1%	70.8%
1969	54.6%	69.7%	70.6%	70.7%
1970	55.2%	69.5%	70.4%	70.5%
1971	53.2%	69.5%	70.3%	70.4%
1972	53.6%	69.5%	70.4%	70.5%
1973	51.1%	69.2%	70.2%	70.3%
1974	50.0%	69.2%	70.1%	70.3%
1975	48.2%	69.4%	70.3%	70.4%
1976	48.1%	69.4%	70.3%	70.4%
1977	46.0%	69.5%	70.3%	70.4%
1978	46.0%	69.5%	70.4%	70.5%
1979	45.0%	69.8%	70.6%	70.7%
1980	45.7%	69.7%	70.5%	70.6%
1981	43.1%	69.7%	70.5%	70.6%
1982	40.3%	69.7%	70.5%	70.6%
1983	43.0%	69.8%	70.6%	70.7%
1984	42.0%	69.9%	70.6%	70.8%
1985	42.4%	69.9%	70.7%	70.8%
1986	43.2%	69.8%	70.7%	70.8%
1987	43.9%	70.2%	71.0%	71.0%

Table 3-10
The Effect and Changes in Total Compensation on the Predicted
Outcomes of N.L.R.B. Representation Elections

	(1) Actual Union Victory Rate	(2)	(3)	(4)
		Predicted Union Victory Rates		
1950	74.5%	74.5%	74.5%	74.5%
1951	74.0%	72.0%	74.2%	74.2%
1952	72.9%	72.1%	73.8%	73.8%
1953	71.9%	71.1%	73.2%	73.2%
1954	65.6%	71.9%	73.1%	73.1%
1955	67.6%	70.9%	72.6%	72.6%
1956	65.3%	70.3%	72.4%	72.4%
1957	62.2%	70.0%	72.2%	72.5%
1958	60.8%	69.8%	72.2%	72.2%
1959	62.8%	69.2%	71.9%	71.9%
1960	58.6%	68.8%	71.7%	71.7%
1961	56.1%	68.4%	71.5%	71.5%
1962	59.5%	67.9%	71.2%	74.2%
1963	59.0%	67.5%	71.0%	71.0%
1964	57.1%	67.1%	70.7%	70.7%
1965	60.8%	66.5%	70.5%	70.5%
1966	60.8%	66.4%	70.4%	70.4%
1967	59.0%	66.2%	70.3%	70.3%
1968	57.2%	66.0%	70.2%	70.2%
1969	54.6%	65.8%	70.1%	70.0%
1970	55.2%	65.7%	69.9%	69.9%
1971	53.2%	65.4%	69.9%	69.8%
1972	53.6%	64.9%	69.7%	69.7%
1973	51.1%	64.6%	60.5%	69.5%
1974	50.0%	65.2%	69.8%	69.8%
1975	48.2%	65.8%	70.1%	70.1%
1976	48.1%	65.6%	70.0%	70.0%
1977	46.0%	65.5%	70.0%	70.0%
1978	46.0%	65.5%	70.0%	70.0%
1979	45.0%	66.2%	70.4%	70.4%
1980	45.7%	66.8%	70.7%	70.7%
1981	43.1%	67.0%	70.7%	70.8%
1982	40.3%	67.2%	70.8%	70.9%
1983	43.0%	67.1%	70.9%	70.8%
1984	42.0%	67.1%	70.8%	70.8%
1985	42.4%	67.3%	70.9%	70.9%
1986	43.2%	67.2%	70.9%	70.9%
1987	43.9%	67.5%	71.1%	71.1%

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