

NBER WORKING PAPER SERIES

PUBLIC SECTOR RECOGNITION STRIKES:
ILLEGAL AND ILL-FATED

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Working Paper No. 1808

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
January 1986

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ABSTRACT

This study investigates the relationship between strike activity by nonunion public employees and unionization. Examining the strike activity and unionization rates of some 600 nonunion municipal police departments from 1972 to 1978, this study finds that recognition strikes are concentrated where bargaining laws provide little or no protection of bargaining rights for municipal police. However, these strikes do not increase the unionization propensities of these police departments.

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I. INTRODUCTION

Recent studies on union growth in the public sector find that the nature of the state bargaining statute regulating public sector bargaining is the single most important determinant of unionization. Saltzman documents this relationship for the occupation of teachers,¹ while Ichniowski reaches the same conclusion for police.² Research on public sector strike activity during the 1970's finds that most public sector work stoppages in this period of rapid growth in public unionization were strikes by nonunion departments in states with little or no statutory protection of public employee bargaining rights.³ Often these strikes by nonunion departments were for union recognition. While the first set of studies indicates that little unionization exists in states without bargaining laws, the second set of studies suggests that the low levels of unionization in these states may not correspond to similarly low levels of demand for unionization by employees in these states. Specifically, employees in states without laws are more likely to strike even though public employee work stoppages, particularly among public safety employees, are almost always illegal.⁴ When the two sets of studies are considered together, a natural question arises. Are public employees who strike for recognition successful in their attempts to unionize? Or, do adverse public sentiment and the attendant penalties and fines for illegal work stoppages cause these efforts to fail?

The theoretical answer to this question is ambiguous. It has been argued that public employees, especially police and firefighters, can wield considerable economic power by striking since the essential nature of their services may mean the labor demand curve is highly inelastic, particularly in the short run.⁵ However, employers may be able to oppose

the unionization efforts by imposing penalties (or threatening to impose penalties) against employees who are involved in illegal work stoppages.

By examining the rate of unionization among those nonunion police departments that went on strike for recognition between 1972 and 1978 and comparing it to the rate of unionization among other municipal police departments, this study addresses this unanswered question. The analysis reveals that nonunion police who specifically strike for recognition do not increase the probability of unionization in their departments. In fact, the rate of unionization among all nonunion departments that engage in a work stoppage (that is, not just those work stoppages where the principal reason was for recognition) is significantly lower than the unionization rate of police departments that do not strike.

II. SAMPLE DESIGN, DATA, AND MODEL

To assess the impact of police recognition strikes on unionization propensities appropriately, the research design should incorporate several features. First, the study would be able to identify dates of the strikes and dates of unionization to determine precisely whether strikes preceded or post-dated unionization. Second, subsequent unionization of striking nonunion departments would be compared to the unionization rate among other police departments as the relevant control group. Additionally, other municipal and state characteristics that could affect unionization rates of police departments should be controlled in multivariate probability equations. The sample, variables, and model in this study incorporate these features.

Unionization Measures

Since actual dates of unionization among public sector employees is required in this study, I use responses from a 1979 survey⁶ that specifically asks the following two questions: "Does your city have a written labor contract covering wages, hours, and conditions of employment for police personnel?" and "What year was the first written labor contract signed?" According to these questions, formal recognition exists (i.e., UNION = 1) once a written collective bargaining agreement is negotiated. Other kinds of police associations that do not negotiate written contracts will not be considered as unionized departments in this study. It is assumed that cities that report having a contract have continually been party to the agreement since the date given in response to the second survey question. This survey covers nearly 1,000 municipalities with populations above 10,000 that reported municipal police employment in the Municipal Yearbook in 1978.⁷

Work Stoppages

Data on work stoppages by municipal police departments were collected from two sources. When available, information was taken directly from the reporting form filed with the Industrial Relations Unit of the U.S. Bureau of Labor Statistics (BLS).⁸ Since the data on dates of police unionization extend only through 1978, the forms reporting data on police work stoppage were collected for years prior to 1978. They were available for 1972, 1973, 1976, 1977, and 1978. Similar work stoppage data are reported in volumes of Labor-Management Relations in State and Local Governments.⁹ Data tapes for these volumes were used to identify police departments that went on strike between October 1974 and December 1975. Records to identify those police departments that went on strike from

January 1974 to September 1974 were not available; however, the aggregate number of police strikes in this period is available from the 1974 published volume. According to these different sources, there were a total of 115 police strikes between 1972 and 1978. Excluding the fourteen police strikes during 1974 for which the exact municipalities involved could not be identified, 52 of the remaining 101 police strikes were identified as involving nonunion police departments. Of these 52 strikes, 22 reported that the principal issue involved was recognition or the attempt to obtain a first contract. When recognition or a first contract is reported to be the central issue, a dummy variable for the presence of a recognition strike (RECOGA) equals one. Since the reporting forms are retrospective, and since managers or clerks completing this form may underreport the existence of recognition strikes when such strikes do not lead to unionization, a broader definition of a recognition strike (RECOGB) is also used. RECOGB equals one any time a nonunion police department goes on strike. Here, the argument is that even though the principal issue may not be recognition, recognition may be a minor issue or become an issue as the strike progresses. The rate of unionization among departments for which RECOGA = 1 is expected to be greater than the rate of unionization among the larger set of nonunion departments for which RECOGB = 1.

Since the strike data are collected back to 1972, the sample for this study consists of municipal police departments that were nonunion at the beginning of 1972. Specifically, if responses to the unionization survey indicate that the first collective bargaining agreement was signed before 1972, the municipality can not be included in the sample. The number of municipalities which meet these criteria and which report all

additional control variables described below is 579. Between 1972 and 1978 then, there were 52 strikes among these 579 nonunion police departments.

Bargaining Laws

Among other variables that influence the propensity of public employees to unionize, the most significant according to previously cited studies are the state bargaining laws. In developing these categories, I focus on two related dimensions: the degree to which bargaining rights are protected and the degree to which impasse procedures ensure closure of the bargaining process.

The first category is "bargaining permitted" (BP). These legal frameworks establish the legality of collective bargaining for covered employees. However, under such frameworks employers are not obligated to bargain with employees. These policies are often stated as giving employees some weak form of rights "to meet and confer with" or "to present proposals to" their employers.

The second law category is comprised of states which have a "duty-to-bargain" provision (DTB). In moving from BP to DTB environments, the choice to bargain or not shifts from the employer to the employees. Employees may be more likely to try to organize where employers have an affirmative obligation to bargain with representatives of the police than where employers may still choose not to bargain.

Still, a DTB provision does not necessarily ensure closure to the bargaining process. In the private sector, the strike threat forces negotiators to evaluate impasses and ultimately moves the parties to some resolution of differences in their positions. However, since police strikes are illegal, one can imagine an employer in a DTB environment

"bargaining" but not conceding to any union demands since the threat of a strike may be significantly dampened. By 1978, fourteen states had enacted some form of compulsory interest arbitration statutes for police negotiations. These environments form the fourth law category (ARB). Under such a statute, police labor organizations need not rely on the final consent of the public employer to determine the terms and conditions of their employment, but rather a neutral third party has power to arbitrate contract terms. If employees perceive that this shift in final decision making authority enhances the opportunity for securing greater wage gains, employees would have an additional stimulus for forming an employee organization. What limited empirical evidence there is on the impact of arbitration on salaries provides some support for this claim.¹⁰ In any case, as long as employees perceive the potential for such an impact of arbitration, this could be enough to stimulate union growth.

These categories are not separated by well-defined boundaries. Certain states, for example Maine, provide a degree of binding arbitration, but the arbitrator's decision is only advisory with respect to salaries and wages.¹¹ Since the hypothesized relationship between the ARB variable and unionization is based on expectations about increased salary growth under arbitration, statutes like Maine's are kept in the DTB without arbitration category.

Furthermore, these categories do not capture differences in state laws regarding strike penalties. The New York statute penalizes striking public employees two-for-one in pay (the loss of a day's pay for not working and an additional penalty of a day's pay for striking illegally).¹² Wisconsin, in contrast, fines an employee ten dollars per day.¹³ Variables describing these statutory penalties would be important

controls in unionization equations if the penalties not only reduce the likelihood of a strike, but also the impact of a strike on recognition once it has begun. However, these strike penalties are not consistently enforced and therefore inaccurate measures of the actual penalties. In retrospective telephone interviews with representatives from the 52 police departments that had recognition strikes (RECOGB = 1), none reported any monetary or jail-term penalties being levied against striking police. Still, if the threat of these penalties helps to end recognition strikes before recognition is obtained, these controls would be important.¹⁴ Still, the four categories of laws that will be included in the unionization equations have been shown to be critical determinants of police unionization, and are therefore important control variables in the union probability equation.

Other Controls

Besides the categorical law variables, several additional control variables are included in the unionization equation that might influence police unionization. Here, state-level variables include four geographic region dummy variables (Northeast, North Central, South, and West), the percentage of a state's non-agricultural work force who are public employees, and the percentage of a state's private sector nonagricultural work force that is unionized. The region controls and the percent union variable will indicate how favorable the climate is toward unionization. If patterns in the locus of public sector unionization parallel those in the private sector, one would expect lower rates of unionization among southern municipalities. The percent union variable is expected to increase unionization rates. High levels of private sector unionism should correspond to higher area wages and may increase the expectations

about a reasonable wage increase. If police in environments with higher levels of private sector unionism do have such expectations, they may be more likely to unionize in an effort to obtain higher wages. The relationship of the percentage of the state workforce in public employment to police unionization is less clear. Where a greater proportion of a state's workforce is in public employment, a greater degree of acceptance of unionism may have been fostered. Conversely, the taxpaying public may find it more important to be represented by public managers who will oppose unionism (and keep labor costs down) where there are relatively more public employees.

Several municipal-level control variables are available for a large proportion of the municipalities in the sample: population, per capita income, per capita municipal revenue, central city dummy variable, and three government-type dummy variables (Council-Manager, Mayor-Council, and Commission).¹⁵

The population variable acknowledges the importance of unit size in the unionization process, as larger municipalities will have larger departments. In studies using data on representation elections in the private sector, the most common finding is that unit size is negatively related to union support in certification elections.¹⁶ The sign of the correlation in this public sector sample may be different. The private sector samples are generally certification elections from the 1970s or early 1980s more than thirty years after the enactment of the National Labor Relations Act (NLRA). In the early years of the NLRA, the first private sector bargaining units to organize may have been relatively large. Here, with a sample of police departments during the period from

1972 to 1978, the study focuses on the process of unionization fairly soon after any applicable state bargaining laws were enacted.

Ability-to-pay variables (revenue and income) might indicate an increase in the public employer's ability to satisfy the employees in different municipal departments, including the police department, vying for a share of the municipal budget. In this way, managers in wealthier cities and towns might be better able to avoid unionization. Conversely, the incentive to unionize may be greater where municipal revenues are larger. A priori, the direction of the correlation between these ability-to-pay measures is ambiguous.

Central cities may be associated with relatively high area wages, a greater degree of private sector unionization, and perhaps more hazardous duties for its police. If these forces make police more likely to consider unionization, this variable will cause an upward shift in the union hazard function. Finally, the degree of bureaucratization of different government structures might affect the responsiveness of an employer to employee desires, so that certain government structures might be more highly correlated with the probability of municipal unionism.

Estimating Equation

To isolate the impact of the RECOGA or RECOGB variables on unionization, a binary logistic equation is estimated:

$$\Pr(\text{UNION}_{it}) = \frac{1}{1 + e^{-\sum \beta \vec{X}_{it}}}$$

where $\Pr(\text{UNION}_{it})$ is the probability that municipal department i unionizes in period t and \vec{X}_{it} represents a vector of control variables that includes either RECOGA or RECOGB in addition to the other

state-level and municipal-level characteristics described above. This specification is used to overcome the difficulty that ordinary least squares regression has in modeling the binary unionization outcome, as OLS produces inefficient estimates and predictions, possibly outside the 0-1 range by forcing a normal structure on the error term.

The success of recognition strikes in stimulating police unionization is judged in two different ways that lead to analysis of samples with different constructions. First, if unionization occurs after the strike but in the same calendar year as the strike, the recognition strike almost certainly played a critical role in the process of unionization. To test for the relationship between recognition strikes and unionization within the same year, a panel consisting of nonunion municipal police departments is created for each year from 1972 to 1978. The 1972 panel consists of 579 nonunion police departments. The number of nonunion police departments decreases each year. For 1978, the panel consists of 369 nonunion departments. Across the seven years, the sample for this pooled cross-section sample consists of 3,246 department-years.

It may be misleading to judge the success of the recognition strikes in stimulating unionization by whether a nonunion police department unionizes in the same calendar as its strike. A recognition strike may not lead immediately to unionization, but contribute indirectly to unionization in some later time period. Therefore, a single cross-section sample is also analyzed. In this complementary analysis, there is only one observation for each of the 579 municipalities that enter 1972 with a nonunion police department. RECOGA and RECOGB equal one if those variables equal one in any of the years in the pooled analysis.

The dependent UNION variable equals one if by 1978 the police had unionized. In this analysis, then, a strike will be considered to have played a role in the unionization process, if the police organize in any year after they went on strike.

III. EMPIRICAL RESULTS

Before presenting the parameters estimated in the logit equation, several statistics are presented to indicate the frequency of recognition strikes (according to the RECOGA and RECOGB definitions). The RECOGA frequencies are given in Table 1A by year and by type of law. Since the number of nonunion municipalities may vary across the different legal environments, strikes as a percentage of all nonunion municipalities in the given law category are also given in parentheses. The frequencies for all strikes by nonunion police departments (i.e., RECOGB = 1) are presented in Table 1B. Of the 52 strikes by nonunion police departments in the six years for which complete data are available, 22 were reported as primarily being for recognition. Only 1 of these occurred in an environment with a duty-to-bargain provision. According to the percentages given in the last column, nonunion municipalities in BP or No Law environments were somewhat more likely to experience a RECOGA or RECOGB strike. (The denominator for these percentages in the last column is the total number of nonunion municipalities in that law category in 1972). In the analysis to follow, the unionization rate among these municipalities with police strikes is compared to the rate of unionization among other municipal police departments in the sample.

When the logistic unionization equation is estimated for the pooled 1972-1978 sample,¹⁷ the parameters presented in columns (1) and (2) of

Table 1A: Recognition Strikes By Nonunion Police Departments (RECOGA), 1972-1978
 (Strikes as Percentage of Nonunion Municipalities in Parentheses)

Type of Bargaining Law	YEAR						
	1972	1973	1975	1976	1977	1978	All years
1. No Law	2 (.010)	1 (.005)	1 (.005)	0 (.000)	1 (.005)	3 (.015)	8 (.039)
2. BP	2 (.011)	1 (.006)	2 (.014)	5 (.037)	2 (.016)	1 (.009)	13 (.071)
3. DTB	0 (.000)	1 (.012)	0 (.000)	0 (.000)	0 (.000)	0 (.000)	1 (.010)
4. ARB	0 (.000)	0 (.000)	0 (.000)	0 (.000)	0 (.000)	0 (.000)	0 (.000)
5. TOTAL	4 (.007)	3 (.006)	3 (.007)	5 (.012)	3 (.008)	4 (.011)	22 (.038)

Table 1B: All Strikes By Nonunion Police Departments (RECOGB), 1972-1978
 (Strikes as Percentage of Nonunion Municipalities in Parentheses)

Type of Bargaining Law	YEAR						
	1972	1973	1975	1976	1977	1978	All years
1. No Law	8 (.039)	2 (.010)	3 (.015)	2 (.010)	3 (.015)	6 (.031)	24 (.116)
2. BP	2 (.011)	1 (.006)	5 (.035)	7 (.051)	2 (.016)	4 (.035)	21 (.115)
3. DTB	0 (.000)	1 (.012)	0 (.000)	1 (.020)	1 (.024)	1 (.024)	4 (.041)
4. ARB	2 (.022)	0 (.000)	0 (.000)	1 (.024)	0 (.000)	0 (.000)	3 (.032)
5. TOTAL	12 (.021)	4 (.007)	8 (.018)	11 (.026)	6 (.015)	11 (.030)	52 (.090)

Table 2 are obtained. When the "cross-section" sample with only one observation per municipality is considered, the column (3) and (4) parameters are estimated.

When RECOGA is used to define the presence of a recognition strike, one observes that these strikes have no discernible impact on the process of obtaining recognition. Interestingly, when any strike by a nonunion police department is considered to be a recognition strike (i.e., RECOGB = 1), one observes in columns (2) and (4) that these nonunion police departments are less likely to obtain union recognition. Clearly, the difference between the RECOGA and RECOGB coefficients may well be attributable to a selectivity bias. Specifically, the additional municipalities included as RECOGB strikes that are not a part of the RECOGA group are police departments that struck but that did not report recognition to be the principal issue. One would clearly expect that RECOGB strikes to be less likely to have a positive correlation with subsequent unionization than do RECOGA strikes. In light of the insignificant coefficients on the RECOGA variable in columns (1) and (3), the negative coefficients on RECOGB in columns (2) and (4) are not surprising.

While a more thorough investigation of the other correlates of police union growth over a longer time period are reported elsewhere in a related study,¹⁸ the results obtained from these logistic equations for the 1972 to 1978 period corroborate results in the previous studies. Specifically, the bargaining law variables have the largest impact on police unionization. The logistic coefficients from the column (1) specification on the ARB, DTB, and BP variables are respectively: 6.136; 4.052; and 2.678. All are different from zero at the .01 level of

Table 2: The Impact of Recognition Strikes^a on Police Unionization, 1972-1978
 Estimates from Logistic Equations

	(1)	(2)	(3)	(4)
observations	3246	3246	579	579
<u>Independent Variables</u>				
1. Recognition Strike				
a. RECOGA	.469 (.605)	--	.074 (.629)	--
b. RECOGB	--	-1.308* (.600)	--	-1.960* (.632)
2. Other State and Municipal Characteristics				
	b	b	b	b
-2 * log-likelihood	2235.5	2230.2	469.2	457.0

a. asymptotically normal standard errors in parentheses

b. other control variables are: three region dummy variables; the percentage of private sector workers in a state that are unionized; the percentage of workers in a state in public employment; population; per capita income and revenue; central city status; and two government-type dummy variables.

*significant at .01 level

significance. The difference between the ARB and DTB parameters is judged to be significant. This finding is different from that obtained in the study that investigates the impact of the laws on police union growth over a longer time period. The difference in the results may be attributable to the larger sample and longer time period considered in the previous study.¹⁹ Among other variables, one observes that Southern municipalities are significantly less likely to unionize than those in other regions, while Northeastern municipalities exhibit a significantly higher rate of unionization than other municipalities. Additionally, large, urban cities are much more likely to unionize during the 1972 to 1978 period as judged by the logit coefficients on the population and central city control variables.

Recognition Strikes Within Different Law Categories

It may be possible that interactive effects between recognition strikes and other variables exist. A likely candidate for such interactive effects with recognition strikes are the law variables. Specifically, when there are legal provisions guaranteeing police bargaining rights, recognition strikes may be more likely to lead to unionization. However, many cells in the expanded set of dummy variables have so few observations that there is no variation along the dimension of the dependent variable. For example, the only RECOGA strike in a DTB environment resulted in unionization. Therefore, maximum likelihood logistic equations do not converge. Still, simple unionization rates for municipalities with and without police recognition strikes within each law category can be compared to gain some insight into this hypothesis.

Table 3 presents the unionization rates among municipalities with RECOGA strikes and the rates among those without such strikes within each

law category. For municipalities in states without laws, only one of the eight recognition strikes eventually led to recognition by 1978. However, the overall rate of unionization among all other NO LAW municipalities is even lower ($11/198 = .056$). RECOGA strikes, as described in Table 1B, are virtually nonexistent in either DTB or in ARB environments, underscoring the results of previous research which suggest that laws that contain a duty-to-bargain provision reduce strike propensities dramatically. In the BP law category, the rate of unionization between 1972 and 1978 is slightly lower among municipalities with RECOGA strikes (i.e., $4/13 = .308$) than among those without recognition strikes ($64/169 = .379$). None of the differences in the percentages in any category of law is significant according to a t-test. The similarity in the unionization rates for municipalities with and without strikes across all law categories presented in line 5 of Table 3 again reflects the insignificant coefficient on the RECOGA variable in Table 2.

IV. CONCLUSION

This paper documents a greater propensity for municipalities without bargaining laws (NO LAW = 1) and with weak bargaining laws (BP = 1) to engage in recognition strikes than do cities in states with some duty-to-bargain provision (DTB = 1 or ARB = 1). Recognition strikes, resorted to more often where bargaining laws are weak or nonexistent, do not increase the probability that municipal police will obtain recognition from their employers.

Table 3: Rates of Unionization for Municipalities With and Without Recognition Strikes By Type of Law 1972-1978

<u>Type of Law</u>	<u>Unionization Rates Among Municipalities With Strikes</u>		<u>Unionization Rate Among Municipalities Without Strikes</u>	
1. ARB	--	(--)	.822	(74/90)
2. DTB	1.000	(1/1)	.567	(55/97)
3. BP	.308	(4/13)	.379	(64/169)
4. NO LAW	.125	(1/8)	.056	(11/198)
5. TOTAL	.273	(6/22)	.368	(204/554)

Discussions with representatives from the fifty-two departments that went on strike provide additional insights and suggestions for future research. As mentioned in Section II, these discussions revealed that in no case were fines or penalties levied against striking police. Furthermore, in only one case was there a report of police being replaced by municipal managers. The legal sanctions against strikes and the ability of managers to replace public employees who strike illegally represent two key forces that influence the ability of public employees to achieve their goals (here, to obtain recognition) by striking. Additional research on the existence of different statutory penalties against strikes, even if they are not used, would provide insights on whether the threats of the penalties influence strike activity. In the context of this study, if the threat of certain penalties reduces the duration of strikes,²⁰ the existence of penalties may make strikes less effective weapons for employees. The replacement of public employees who go on strike again raises the issue of how elastic the demand for labor is in public sector occupations. While some estimates of the elasticity of demand for public sector workers do exist,²¹ further research on the ability of public sector managers to find alternative ways to provide services in the short run would also yield greater understanding on the potential consequence of public sector strikes.

FOOTNOTES

1. Saltzman, Gregory, "Bargaining Laws as a Cause and Consequence of Teacher Unionism," Industrial and Labor Relations Review, vol. 38, no. 3 (April, 1985), pp. 335-351.
2. Ichniowski, Casey, "Public Sector Union Growth and Bargaining Laws: A Proportional Hazards Approach with Time-Varying Covariates," NBER Working Paper, (January, 1986).
3. Ichniowski, Casey, "Arbitration and Police Bargaining: Prescriptions for the Blue Flue," Industrial Relations, vol. 21, No. 2, (Spring, 1982), pp. 158-159.
4. Only in rare circumstances are police strikes, which are the focus of this study, not illegal. In Wisconsin, where an interest arbitration mechanism exists, police strikes would be legal if both municipal management and police agreed not to submit their dispute to arbitration. In occupations other than the protective services, strikes are somewhat less likely to be illegal. For the legal sanctions against teachers strikes, see Hirsch, Werner Z., "Anti-Strike Laws and Their Effects on Work Stoppages by Public School Teachers" (unpublished manuscript), (October, 1985).
5. Wellington, Harry and Ralph Winter, Unions and the Cities (Washington, D.C.: The Brookings Institution, 1971), p. 30.
6. Freeman, Richard B., Casey Ichniowski and Harrison Lauer, "Collective Bargaining Laws and Threat Effects of Unionism in the Determination of Police Compensation," National Bureau of Economic Research no. 1878 (March 1985), p. 6.
7. International City Management Association, Municipal Yearbook, 1978 (Washington, D.C.: ICMA, 1978).
8. This information is reported on BLS Form No. 6003.
9. Aggregate statistics on public sector strikes from this survey appear in volumes from: U.S. Department of Commerce and U.S. Department of Labor, Labor-Management Relations in State and Local Governments (U.S. Government Printing Office: Washington, D.C.).
10. For cross-section estimates of the impact of arbitration statutes, see Olson, Craig, "The Impact of Arbitration on the Wages of Firefighters," Industrial Relations (Fall, 1980), vol. 19, no. 13, pp. 325-339. For more qualified support of the positive effect of arbitration on salaries, see Feuille, Peter and John Delaney, "Collective Bargaining, Interest Arbitration, and Police Salaries," Industrial and Labor Relations Review (forthcoming).

11. U.S. Department of Labor. Summary of Public Sector Labor Relations, 1979. Washington, D.C.: U.S. Government Printing Office, 1979.
12. Ibid.
13. Wisconsin Statutes. Ch. 111, Sec. 11.70, sub 4, ch. 3 (1959: last amendment effective June 7, 1978).
14. The recent results reported in Hirsch (see footnote #4, supra) indicate that the existence of certain statutory penalties reduce the duration of teacher strikes. The analysis here is currently being extended to incorporate an additional set of variables on penalties against police strikes to see if the existence of these penalties influences the probability that a strike by nonunion police will lead to recognition.
15. Municipal Control variables are available from International City Managers Association, "Master Code" Data Tape (Washington, D.C.: I.C.M.A., 1978). Government type, municipal revenue, per capita income, population and department size also appear in the published volume I.C.M.A. Municipal Yearbook, 1978.
16. See for example Rose, Joseph, "What Factors Influence Union Representation Elections?" Monthly Labor Review, vol. 95 (October 1972), pp. 49-51; Chaison, Gary, "Unit Size and Union Success in Representation Elections," Monthly Labor Review, vol. 96 (February, 1973), pp. 51-52; or Cooke, William, "Determinants of the Outcomes of Union Certification Elections," Industrial and Labor Relations Review, vol. 36 (April 1983), pp. 402-414.
17. Even though only the October 1974 through December 1974 can be identified with the exact municipality where the strike occurred, an entire panel for 1974 is included in the pooled cross-section sample, since aggregate data indicate that only three recognition strikes occurred during 1974. It is therefore assumed that, even if these three municipalities were in the data set, failure to identify these few cases would not alter the results appreciably. In fact, when the 1974 panel is deleted from the pooled cross-section analysis, estimated parameters are nearly identical to the ones obtained in Table 2, columns (1) and (2). For aggregate data on police strikes for 1974, see U.S. Department of Commerce and U.S. Department of Labor, Labor-Management Relations in State and Local Governments, 1974, (U.S.G.P.O.: Washington, D.C., 1976).
18. Ichniowski, Casey, "Public Sector Union Growth and Bargaining Laws: A Proportional Hazard Approach with Time-Varying Treatments," NBER Working Paper (January, 1986).
19. Ibid., pp. 21-22.
20. For research on this topic for the occupation of teachers, see Hirsch (footnote #4, supra).

21. See Ashenfelter, Orley, and Ronald G. Ehrenberg, "The Demand for Labor in the Public Sector," in Labor in the Public and Nonprofit Sectors, edited by Daniel S. Hamermesh (Princeton, N.J.: Princeton University Press, 1975); and Ehrenberg, Ronald G., "The Demand for State and Local Government Employees," American Economic Review 63 (June, 1973), pp. 366-379.