WORKING PAPER #503
PRINCETON UNIVERSITY
INDUSTRIAL RELATIONS SECTION
September 2005

Union Membership in the United States: The Divergence between the Public and Private Sectors*

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September 19, 2005

Abstract

I document the dramatic divergence between the fortunes of unions in the public and private sectors in the United States since the 1970s. While the union membership rate in the private sector fell from 25 percent in 1975 to 8.2 percent in 2004, the rate in the public sector increased from the same level in 1975 to over 35 percent in 2004. I propose reasons for this divergence, focusing on differences in four factors: 1) employment dynamics, 2) the nature of products produced, 3) the role that unions can play, and 4) incentives faced by employers.

I examine the effect of legislation governing collective bargaining in the state and local government sectors on union density and wages of union and nonunion workers. Exploiting within-state variation in laws by type of worker, I find that union density is significantly higher where unions are allowed to negotiate union security provisions (e.g., agency shop) and where employers have a legal duty to bargain with labor unions. I find there is a small positive effect on earnings of legislation allowing union security union security provisions and a surprising negative effect on earnings of a legal duty to bargain.

On balance, unions in the public sector have grown relative to unions in the private sector for important structural reasons. Lack of market competition for the products of the public sector and lack of fiscal discipline through the political process makes the value of unions to public sector workers relatively high. Public policy governing labor relations in the public sector, working in conjunction with these structural factors, has provided an environment in which unions can thrive.

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1 Introduction

In 1974, one in four workers in both the private and public sectors were members of labor unions. Two quite different tales unfold since that time. By 2004, only 8.2 percent of workers in the private sector were members of unions. In stark contrast, the union membership rate among public-sector workers increased to 37.1 percent over the same period. Figure 1 contains plots of the time series of private- and public-sector union membership rates from 1973-2004 derived from tabulations of the Current Population Survey (CPS), and it illustrates these trends.[1] There has been steady decline in the union membership rate in the private sector since 1973, with a particularly sharp rate of decline in the 1980s. The union membership rate in the public sector increased sharply during the 1970s to about 38 percent in 1979 and has been largely steady since.

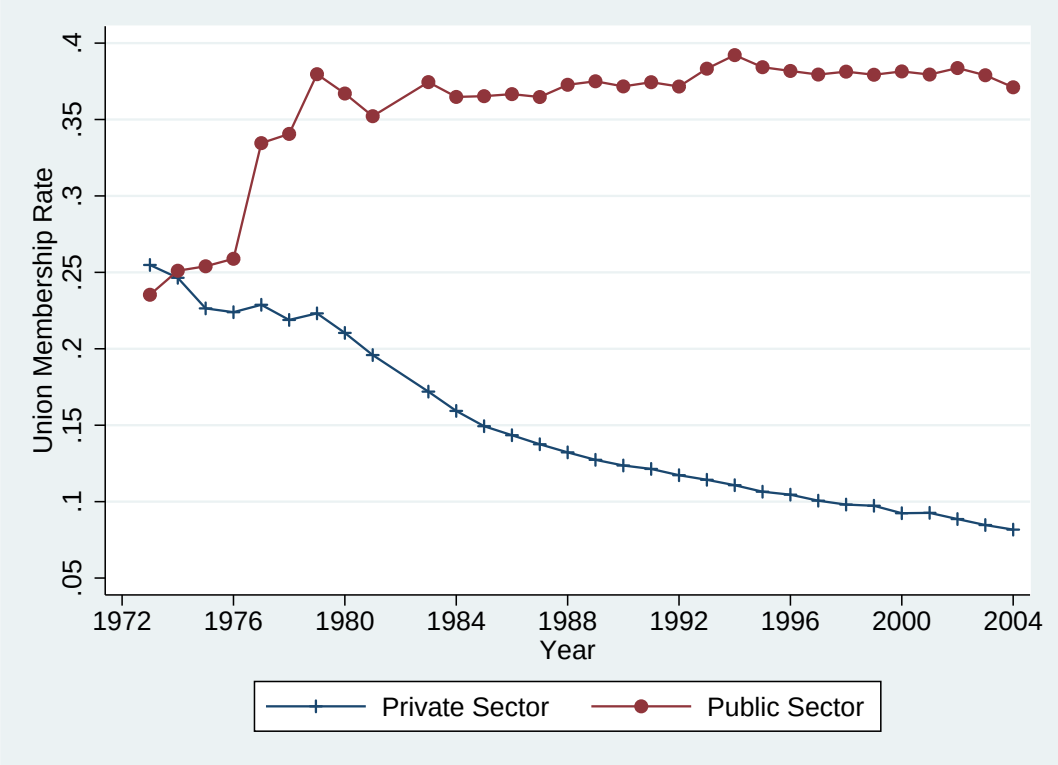

Figure 1: Private and Public Sector Union Membership Rates, 1973–2004

[1] These data are derived from the May CPS from 1973–1981 and from the merged outgoing rotation group files of the CPS from 1983–2001. There are no data on union membership in the CPS in 1982.

The public sector is not homogeneous. It is composed of three substantial distinct sub-sectors: 1) federal government employees, 2) state government employees, and 3) local government employees. Since 1983, the CPS identifies type of public employee, and figure 2 contains plots of total employment by sub-sector and the share of overall employment in each sub-sector for the 1983-2004 period. Federal government employment was virtually unchanged over this period at about 3 million workers, and, because the labor force grew substantially over this period, the federal government's share of total employment fell substantially. State government employment rose from 3.7 million in 1983 to 5.6 million in 2004, for a growth rate of 2 percent per year implying a slight increase in employment share. Local government is by far the largest sub-sector, and its employment rose from 8.3 million in 1983 to 10.6 million in 2004, for a growth rate of 1.2 percent per year. However, local government's share of total employment fell steadily from almost 10 percent in 1983 to under 9 percent by 2004.

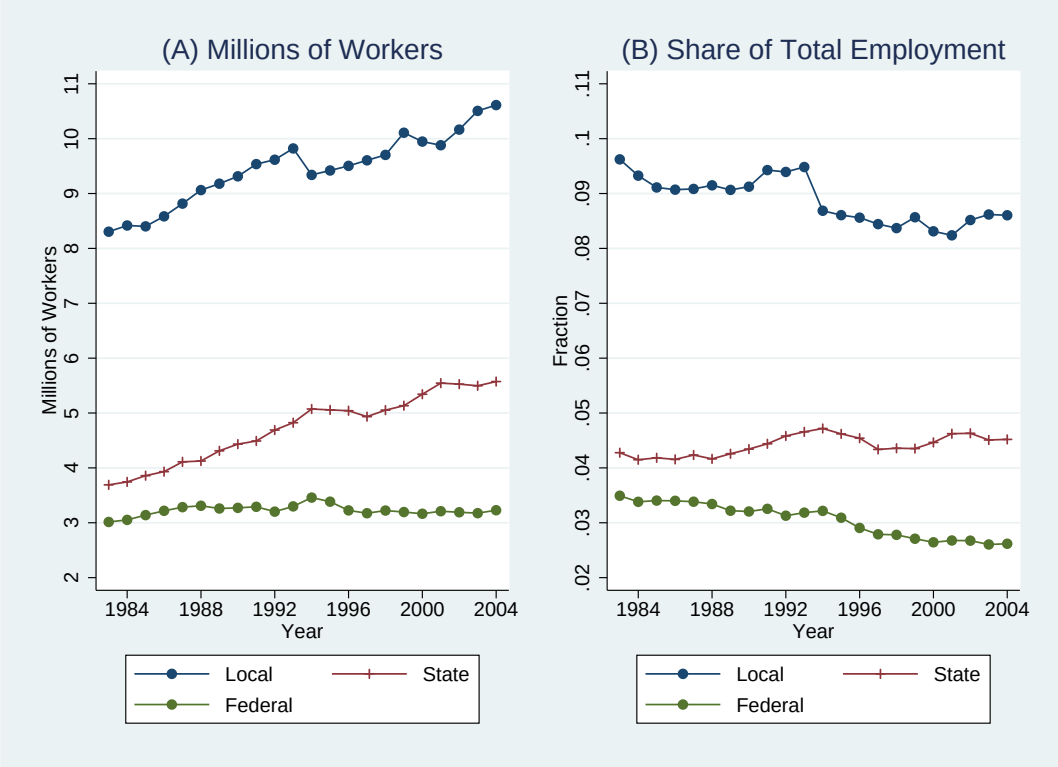

Figure 2: Public Sector Employment, 1983–2004

Figure 3 contains plots of the time series of public sector union membership rates by sub-sector. These show steady union membership rates in each of the three sectors at levels that far exceed the private sector. The highest union membership rate is in the local government sector, where over 40 percent of workers are union members. Union membership rates in the state and federal government sectors are approximately 30 percent.

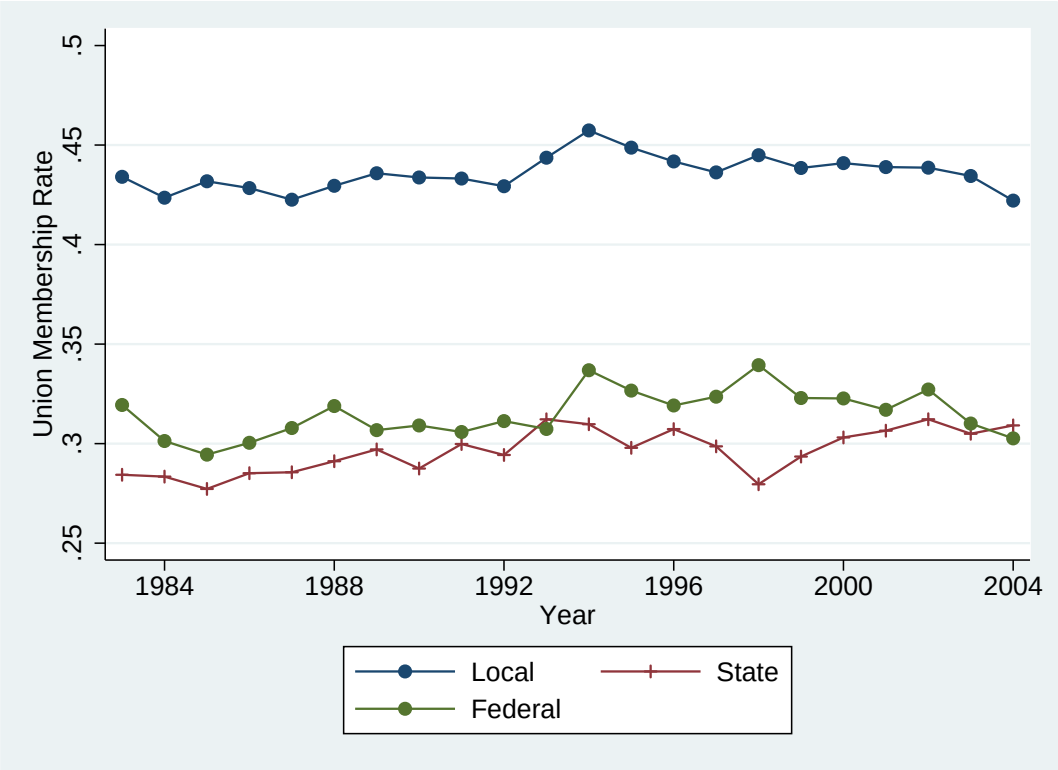

Figure 3: Public Sector Union Membership Rates, 1983–2004

Given the size and importance of the local government sector, it is worth examining more closely different categories of local government employees. Panel A of figure 4 contains plots of employment of local government workers in three important categories: teachers, police, and firefighters.[2] The largest category by far is teachers, whose numbers increased from 2.4 million in 1983 to 3.1 million in 2004. There are relatively small numbers of police and firefighters (800,000 and 270,000 respectively in 2004). Panel B of figure 4 contains plots of

[2] Due to the relatively small numbers of police and firefighters in the CPS, these employment levels are computed as 3-year moving averages to reduce sampling variation.

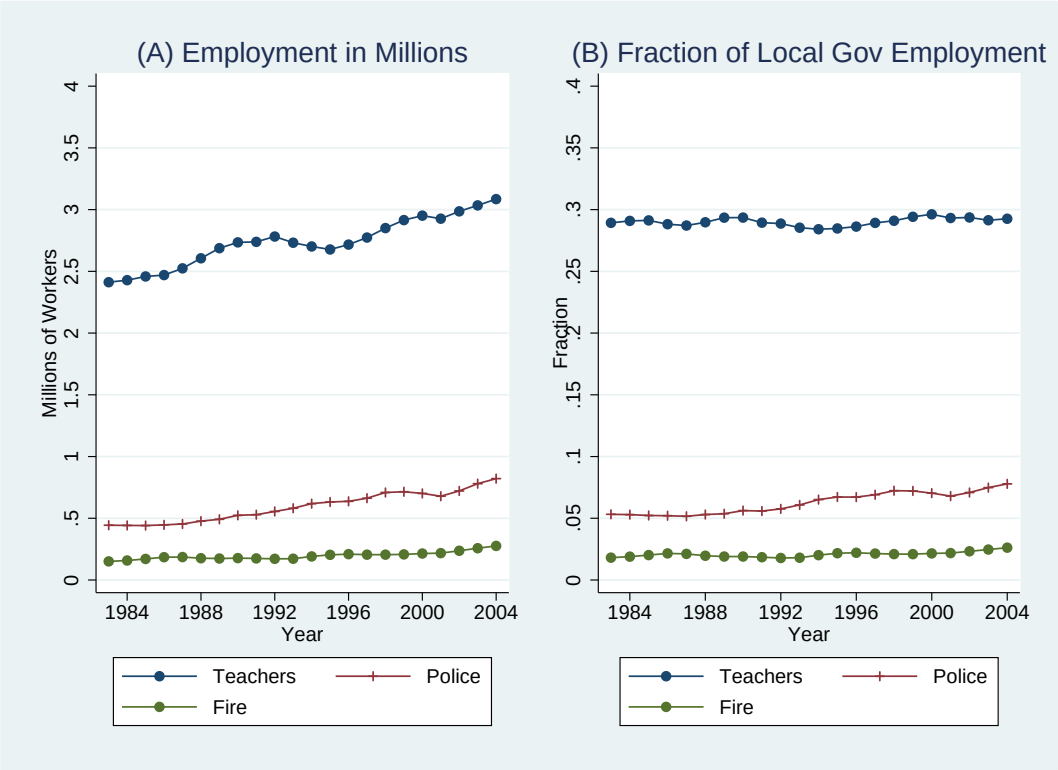

Figure 4: Local Government Employment, 1983–2004 (3-year Moving Average)

the share of local government employment for each of the three types of workers. Teachers make up fully 30 percent of local government employees, and their share has been roughly fixed since 1983. While there are many fewer police, their share increased from about 5.3 percent to 7.8 percent of local government employment since 1983.

All three of these groups of local government employees are highly unionized. Panel A of figure 5 contains plots of the union membership rate for three important groups of local government employees: teachers, police, and firefighters. Interestingly, the union membership rate of firefighters has fallen dramatically since 1983 from 82 percent in 1983 to 69 percent in 2004, while the union membership rates of police and teachers have been roughly constant over this period.

Perhaps a more realistic picture of the importance of unions in the local government considers not only union members but also non-members who are covered by collective bargaining agreements (free-riders). Toward this end, panel B of figure 5 contains plots of

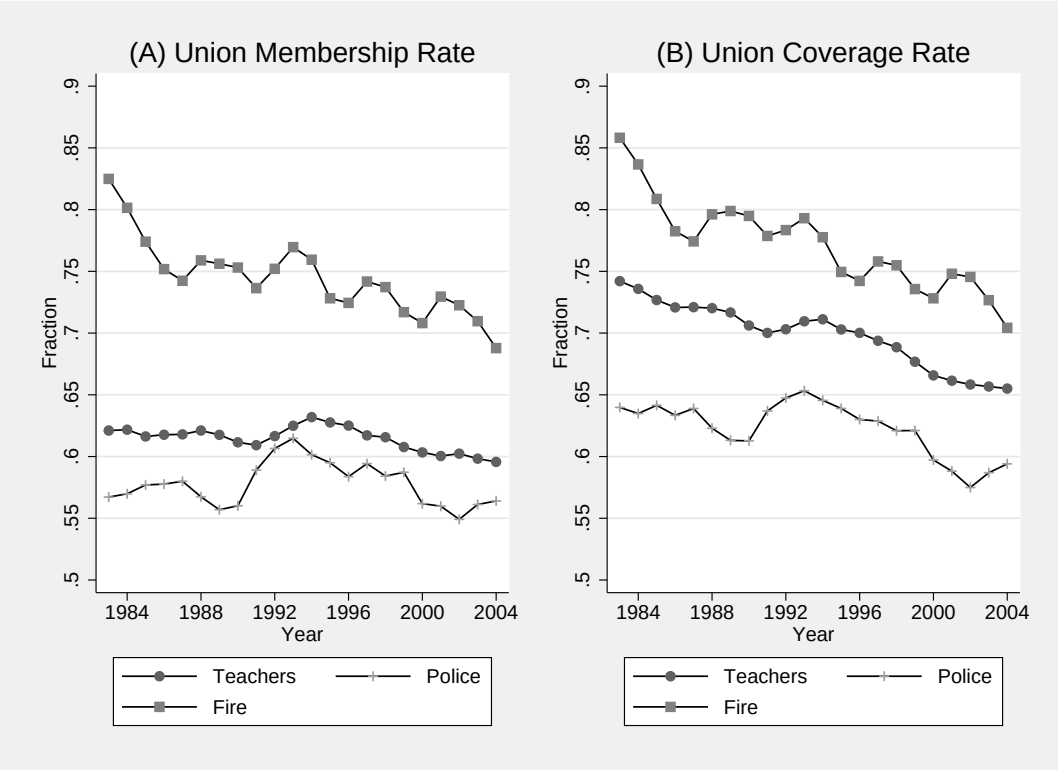

Figure 5: Local Government Unionization Rates, 1983–2004 (3-year Moving Average)

the union coverage rate for the three groups of local government employees.[3] The striking result is that union coverage rates have fallen substantially over time for all three groups of local government workers. The coverage rate for firefighters fell from 86 percent to 70 percent between 1983 and 2004. Over the same period, the coverage rate for teachers fell from 74 percent to 66 percent. There was a smaller decline for police, from 64 percent to 59 percent. On balance, while the incidence of collective bargaining among local government employees has declined, unions remain a very important factor in public sector labor markets.

These bare facts suggest important differences among labor markets within the public sector as well as between the those in the public and private sectors. These differences serve as the starting point for my analysis of unions in the two sectors. In the next section, I

[3] The CPS asks a worker if he or she is a member of a labor union on the current job. If the worker responds in the negative, the worker is asked if he/she is covered by a collective bargaining agreement on their current job. I classify a worker as covered if he or she reports being a member or being covered if not a member. I make no adjustement for workers who are members of a labor union but who are not union members.

present more detailed evidence on employment growth and union membership rates in the two sectors. I also present a decomposition of changes in union membership in each sector into components due to changes in union and nonunion employment. In section 3, I narrow my focus to the public sector and consider inter-state variation in the legislative environment governing public sector collective bargaining and how these laws affect the unionization rate. Section 4 extends this analysis to wages, and, in section 5, I conclude.

2 Employment Growth and Union Membership

Employment in the private sector of workers age 18-65 increased from 71 million in 1983 to 104 million in 2004.[4] This is an average annual employment growth rate of 1.8 percent. Employment in the public sector increased from 15 million in 1983 to 19.4 million in 2004, for an average annual employment growth rate of 1.2 percent. Thus, public sector employment has grown more slowly than private sector employment in the last two decades.

2.1 Employment Growth and Union Membership in the Private Sector

There is substantial disagreement about reasons for the sharp decline in the private-sector union membership rate. Many observers have argued that the legal and political support for organizing new union members in the private sector deteriorated through the 1970s and 1980s. Freeman (1988) and Weiler (1993) focus on the intensified opposition to unions by employers. Levy (1985) emphasizes changes in the administration of the National Labor Relations Act (NLRA) due to changes in composition of the National Labor Relations Board (NLRB). Still others claim that changes in the U.S. economic environment substantially reduced the attractiveness of unions to workers and the acceptability of unions to employers. In this view, the economic environment became increasingly open to foreign competition in product markets and capital became more mobile internationally. Consequently, unions

[4] These are based on my tabulations of the merged outgoing rotation group files of the CPS and do not include self-employed workers.

could no longer guarantee their workers higher wages while maintaining reasonable levels of job security.

In some earlier work, Farber and Western (2001) present evidence contrasting two explanations for the decline of union membership in the private sector. The first emphasizes legal and institutional factors affecting union organizing activity. The second is based on differential employment growth rates in the union and nonunion sectors. Farber and Western present a simple accounting framework to decompose the decline in the private sector union membership rate into components due to the level of union organizing and the differential in the rates of employment growth between the union and nonunion sectors.[5] They conclude that union organizing activity in the private sector was an inconsequential factor in the period studied (1973-1998). Since 1983 less than 0.2 percent of the nonunion workforce were organized each year through successful NLRB-supervised representation elections.

Panel A of figure 6 contains the time series of measured private employment growth rates in the union and nonunion sectors between 1973 and 2004.[6] There is a substantial differential in growth rates, with union employment shrinking by an average of 1.6 percent per year and nonunion employment growing at an average of 2.5 percent per year. The growth rate of private sector union employment was much more volatile than the growth rate of nonunion employment. The standard deviation of the union growth rate was 3.1 percentage points while the standard deviation of the nonunion growth rate was only 1.8 percentage points. The relatively high volatility of the union growth rate is due to large fluctuations prior to 1984. Since 1984, both sectors have had comparable variability in growth rates with standard deviations of about 1.5 percentage points.

Panel B of figure 6 contains the relative private sector employment growth rate, computed as the difference between the nonunion and union employment growth rates. This plot verifies the consistently higher employment growth rate in the nonunion sector than in the union sector. In fact, there are only three years in the sample where the union growth rate exceeded the nonunion growth rate (1975, 1977, and 2001). On average, the relative

[5] This framework is similar to those presented by Dickens and Leonard (1985) and by Freeman (1988).

[6] The union membership rate in 1982 is calculated as the average of the 1981 and 1983 values.

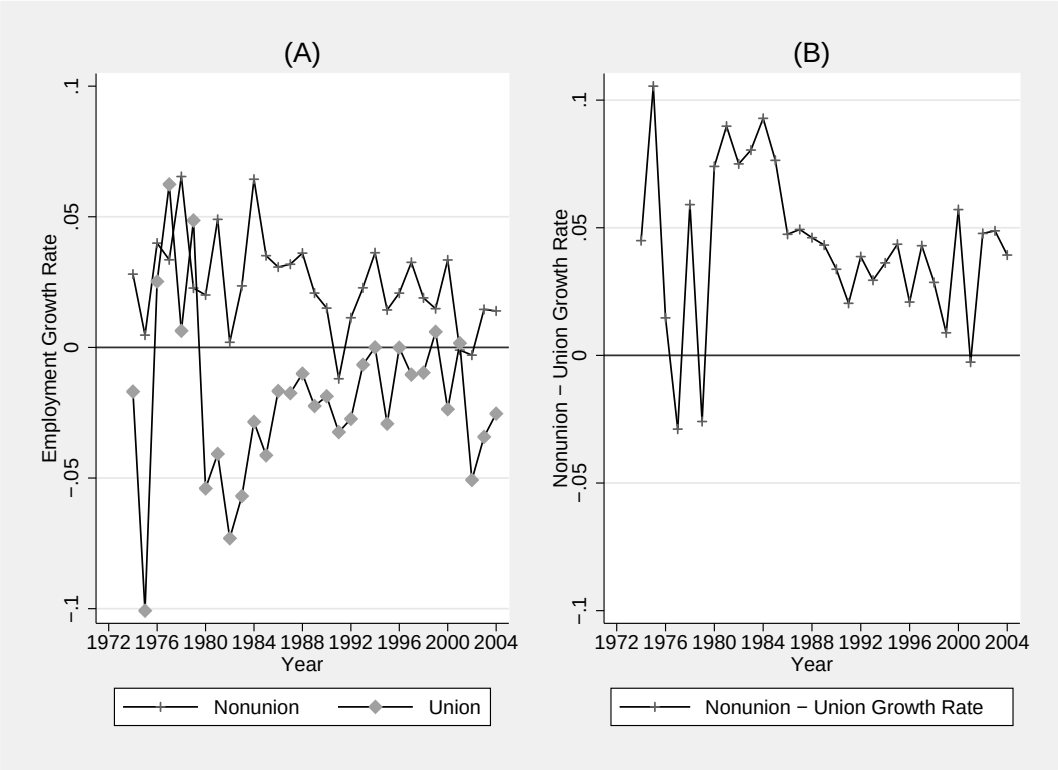

Figure 6: Private Sector Employment Growth Rates, 1973–2004

employment growth rate was 4.1 percent between 1974 and 2004, and it averaged 3.3 percent since 1990. Thus, there is a consistent, though declining, differential in employment growth rates over the entire period.

Growth (or decline) in employment comes from two sources. First, there is change in employment in existing establishments. The extreme case of decline in employment is when a firm dies or an establishment closes. Second, there is the creation of new establishments through either the birth of a new firm or the opening of a new establishment in an existing firm. The dynamic nature of the U.S. economy is such that there are substantial deaths of existing firms and establishments and substantial births of new firms and establishments. Even if union establishments and firms did not die at a disproportionate rate, all new firms are born nonunion. The result is that the union membership rate in the private sector has a tendency to decrease unless there is significant ongoing new organization activity. The observed union new organization rate through elections of about 0.2 percent of the nonunion

workforce each year is trivial relative to the differential in employment growth rates since 1990 of over 3 percentage points. It is no surprise that the private-sector union membership rate continues to fall, and, without a dramatic and unlikely turnaround in organizing activity, this decline will continue.

2.2 Employment Growth and Union Membership in the Public Sector

The situation in the public sector is quite different. The same analysis of employment growth that I used in section 2.1 can be carried out for the public sector. I start this analysis in 1983 for three reasons:

- There was a rapid change in legislation at the state level in the 1970s that caused there to be a tremendous spurt in organizing nonunion public sector workers.
- There was an important change in the wording of the key question on union membership in the CPS in 1977 that inflates the union membership rate, particularly in the public sector.[7]
- The CPS did not start to distinguish between local, state, and federal employees until 1983.

To this end, panel A of figure 7 contains plots of union and nonunion employment growth rates in the public sector between 1984 and 2004. The average growth rates are comparable at about 1 percent per year. In contrast to the private sector, the nonunion segment of the public sector has a slightly more volatile growth rate than does the union segment (a standard deviation of 2.2 percentage points in the nonunion segment versus a standard deviation of 1.7 percentage points in the union sector).

[7] The question changed from asking about membership in a labor union to asking about membership in a labor union or employee association like a labor union. This is of real consequence for many public sector workers such as teachers, police, and firefighters who belong often belong to professional associations, and it is consistent with the dramatic increase in the public sector union membership rate from 25.9 percent in May 1976 to 33.5 percent in May 1977.

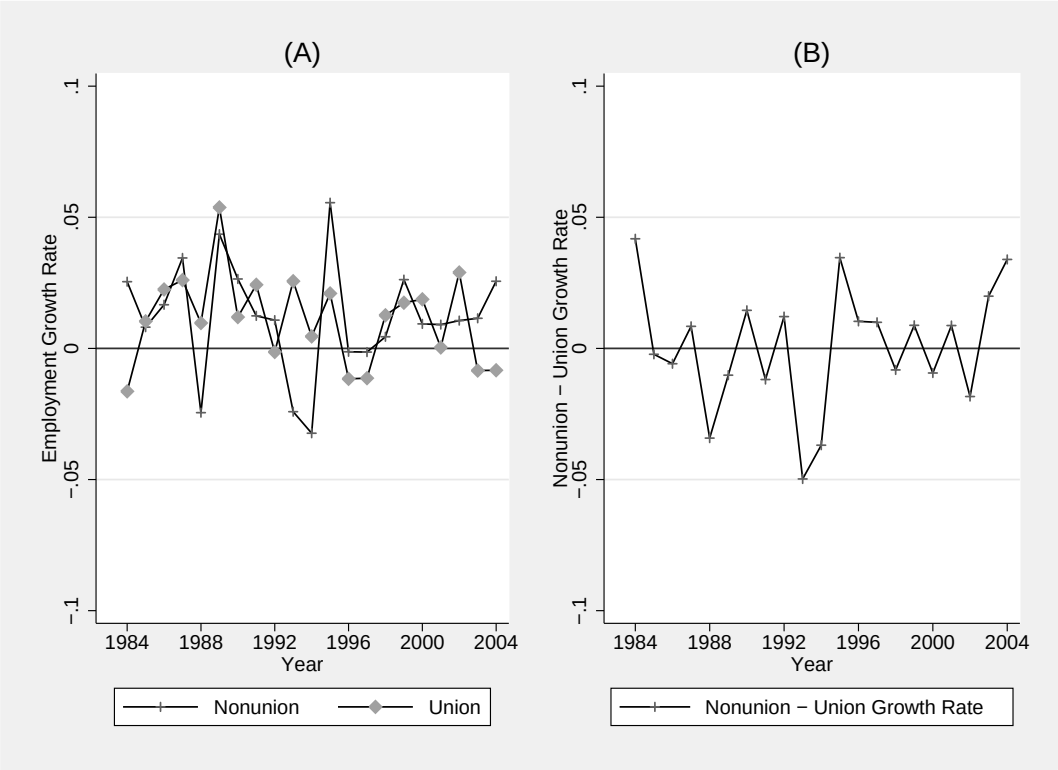

Figure 7: Public Sector Employment Growth Rates, 1973–2004

The striking difference is that employment growth in the private sector has been strongly positive among nonunion workers and strongly negative among union workers. In contrast, employment growth in the public sector has been balanced and positive among both nonunion and union workers.

2.3 Why the Contrast between the Private and Public Sectors?

The difference in experience between the public and private sectors since 1980 reflects many factors, but four stand out.

2.3.1 Differences in the the dynamics of employment

While employment has grown at roughly comparable rates in the two sectors, the character of that growth is very different. Employment growth in the private sector is the result of both the growth of existing firms and the creation of new firms while some older firms shrink

and die. Since new firms are born nonunion and require fresh organization if they are to become unionized and since some of the death and shrinkage is among unionized firms, there is a natural tendency for union membership in the private sector to shrink.

In contrast, the public sector grows in a very different way. Employment in the public sector tends to grow along with population as the demand for public services increases. There is very little death of jurisdictions, and most governmental units continue to exist. While some new jurisdictions are created, most growth is accommodated through expansion (sometimes dramatic) in existing jurisdictions. Since public employees in many of these jurisdictions are already unionized, new employment will be unionized even without new organization. Thus, unions in the public sector can maintain membership levels with less new organizing than is required in the private sector.

Another constrast related to employment dynamics is that job security is much higher in the public sector. Tablulations of supplments to the CPS with information on job tenure (time with the current employer) from 1983 through 2001 show that private sector workers averaged 6.5 years of tenure while public sector workers averaged 9.7 years. Tabulations of the Displaced Workers Surveys (DWS), biannual supplements to the CPS since 1984, show that the job loss rate in the private sector was 2.5 times higher than in public sector on average (10 percent vs. 4 percent in three years). Thus, workers in the public sector can expect to remain in their jobs longer than workers in the private sector. Since workplace public goods like labor unions require investment by workers, the longer time horizon of public sector workers relative to private sector workers makes unions more attractive to workers in the public sector.

2.3.2 Differences in the nature of the products produced

A part of the reason for the decline of unions in the private sector is that the set of goods and and some services produced in the private sector face substantial competition from goods and services produced in other countries. Unions in the private sector thrive when they can "take wages out of competition" by ensuring that all firms in an industry face the same wage structure. Within the United States, this can be done through a vigorous effort to organize all firms, a strategy that is not feasible in the global economy. The public sector tends

to produce goods that are not tradeable. For example, public education and public safety (police and fire protection) cannot be provided overseas. This makes it easier for unions in the public sector to take wages out of competition.

One caveat to this seemingly simple strategy is that there is an increasing tendency for public sector employers at all levels to outsource the provision of some services to private sector firms. This ranges from outsourcing of janitorial services in public buildings to the contracting of prison operation to private firms. Public sector employers can use the threat of outsourcing to private sector firms to win wage concessions in the same way that private sector firms can use the threat of outsourcing to foreign firms to win wage concessions.

On balance, however, the difference in the products produced implies that public sector unions can raise wages with less loss of employment than would occur in the private sector. As a result and other things equal, unions will be relatively more attractive to workers in the public sector.

2.3.3 Differences in the role that unions can play

Unions in the private sector focus on workplace issues. These include primarily 1) collective bargaining for wages, benefits, and other conditions of employment and 2) the administration of workplace with regard to seniority rules for bidding on jobs, promotions, and layoffs and with regard to settling of workplace disputes through the administration of a grievance mechanism. Aside from broad lobbying activities that can affect public policy, private sector unions do not play a political role that affects the wages and other benefits of members in any direct fashion.

Unions in the public sector have additional incentives and functions. In particular, the payoff to unions in the public sector of involving themselves in the political process can be substantial. Allocation of funds that can be used to pay public employees is in the hands of local and state government officials. Lobbying and working for the reelection of union-friendly officials can have a direct payoff in contract terms. A strong public sector union can increase the amount of funds available for union members. The resulting increase in membership benefits will, other things equal, make unions relatively more attractive to workers in the public sector.

2.3.4 Differences in the incentives employers face

Private sector employers generally face stiff market discipline. If they are producing at higher cost due to paying union workers a premium, then competition from nonunion firms, either domestic or foreign, can undercut their price and reduce demand for their product. To the extent that workers in the private sector understand this dynamic, they understand that unions may not be able to deliver significant improvements in compensation without risking a loss of employment.

Public sector employers are not in this situation. Their products are not sold in a market, so there is no standard market discipline. What discipline there is comes from the political process. When compensation increases in the public sector, the increase in costs can be met through an increase in taxes. While there might be some cut in employment, it is not likely to be as severe as in the private sector where other firms can provide the same output. The employers and unions in the public sector can work together through the political process to push through tax increases. Essentially, governmental taxing authority allows the financing of union compensation in a way that is not possible in a competitive market. Again, this will make unions relatively more attractive to workers in the public sector.

3 Does Public Policy Matter?

3.1 Prelude: The Situation in the Private Sector

Collective bargaining in the private sector is governed primarily by the National Labor Relations Act (NLRA), passed in 1935 as the Wagner Act. The NLRA protects and defines the rights of workers to organize into labor unions and to bargain collectively with their employers regarding the terms and conditions of employment. The law provides an election procedure for determining whether a majority of the workers in a potential bargaining unit desire to be represented by a particular union and for certifying the union as the exclusive representative of the workers. Once certified, employers and unions are required to "bargain in good faith." It is difficult to determine the effect of the NLRA on union membership rates and on labor market outcomes, such as wages, because there is little variation in the legal

environment geographically or over time.

One exception is due to amendments to the NLRA passed in 1948 as the Taft-Hartley Act. Among other things, the Taft-Hartley Act allowed states to pass laws, called right-to-work (RTW) laws that make it illegal for unions and firms to negotiate union security provisions in their contracts. Union security provisions include union shop clauses, which require employees to become dues-paying members of the union within a fixed period of time after hiring, and agency shop clauses, which require which require employees to either become dues-paying members of the union or to support the union financially through payment of fees in lieu of dues within a fixed period of time after hiring. As of 2004, 22 states have passed right-to-work laws.[8] These states are located primarily in the South and Mountain regions of the Unites States, which historically have been inhospitable to union organizing.

Based on tabulations of the 2004 CPS, the private-sector union membership rate was 14.4 percent in states without RTW laws and 3.8 percent in states with RTW laws. However, it is inappropriate to draw the conclusion from this contrast that RTW laws have a causal effect in reducing union membership. Right-to-work laws are more likely to exist in states where there is little interest by workers in unions or particularly strong employer opposition. To the extent that RTW laws reflect lower worker demand, the laws simply prevent coercive support of unions by workers who do not want them. However, to the extent that RTW laws reflect employer opposition, the laws provide a mechanism that makes successful organization more difficult.

There is a substantial older literature attempting to determine the causal mechanism through which union membership is lower in states with RTW laws, and the results are inconclusive. One example is Farber (1984), who presents an analysis that attempts to separate the lower level of union membership in RTW states into components due to differences in worker demand for union representation and differences in employer opposition. He finds that the differences are consistent with lower worker demand for union representation in RTW states. Another example is Ellwood and Fine (1987), who examine changes in union

[8] The states with RTW laws are (in census code order) Iowa, North Dakota, South Dakota, Nebraska, Kansas, Virginia, North Carolina, South Carolina, Georgia, Florida, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas, Idaho, Wyoming, Arizona, Utah, and Nevada.

organizing activity within states after the passage of RTW laws. They find a substantial short-run decline in union organizing that lessens over time.

3.2 Public Sector Variation in Regulation

Collective bargaining by state and local government employees is governed by legislation passed at the state level between the late 1950s and the 1970s (Freeman and Valletta, 1988a; Farber, 1988). This legislation covers many dimensions of union activity including the right to bargain collectively, the scope of issues that can be bargained, union security provisions, and dispute settlement mechanisms.[9] This legislation has been fairly stable since 1980. With this legislation in place, public sector workers were able to organize, largely because the political process gives employers neither the tools nor the incentives to resist organization effectively.[10]

My central source of information on these laws is *The NBER Public Sector Collective Bargaining Law Data Set* developed by Freeman and Valletta (1988a). This data set contains information on various dimensions of state-level public sector collective bargaining laws annually from 1955-1984 for five distinct categories of public employees: 1) state, 2) local police, 3) local fire, 4) local school teachers, and 5) other local employees. Some measures included in these data were updated through 1996.[11] For measures not updated, I carried forward the 1984 values. I carried forward the 1996 values through 2004 for the updated measures.

Panel A of figure 8 illustrates the development of these laws by counting the number of states in each year that had laws in place allowing collective bargaining by public sector workers in four categories (state workers, local police, local firefighters, and local teachers). The total increased from one state in 1955 to over 40 states for firefighters and teachers and

[9] There is a sharp contrast is between the federal sector and the state and local sectors. Unions in the federal sector generally cannot bargain over compensation issues, and this severely limits their role. Additionally, there are no interstate differences in the relevant legal environment. For these reasons, I omit federal government employees in the remainder of my analyses.

[10] Freeman (1986) presents an analysis of the growth of labor unions in the public sector and its relationship to the change in the legislative environment.

[11] Kim Reuben of the Urban Institute graciously made these data available to me.

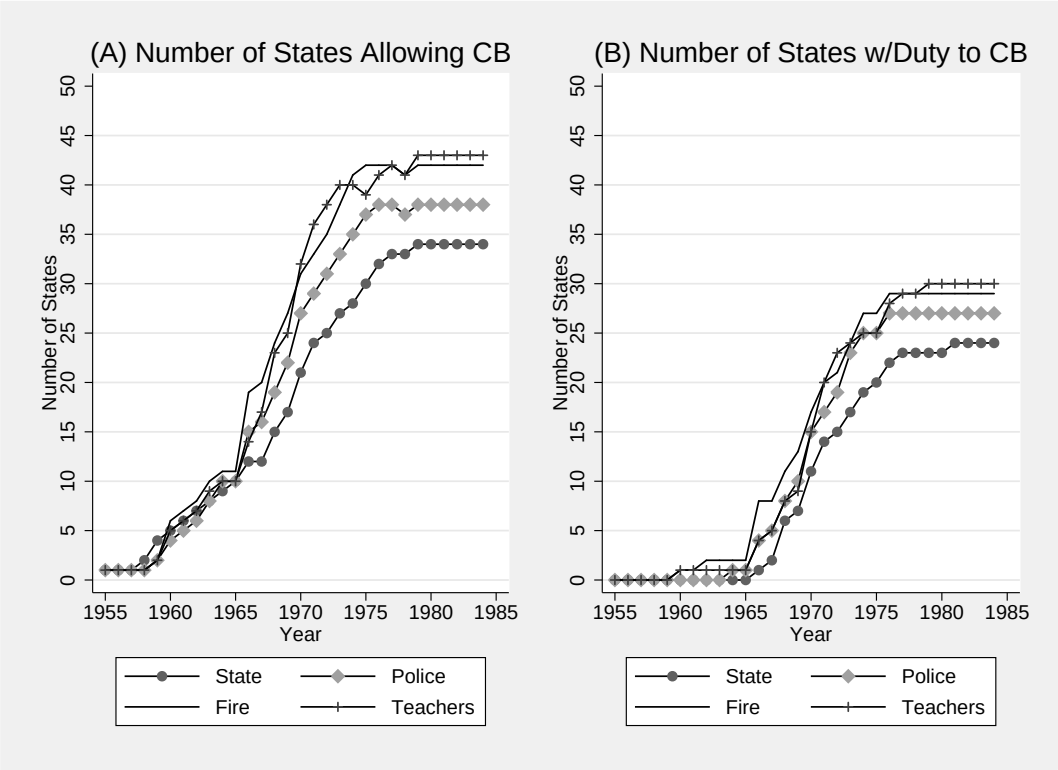

Figure 8: Public Sector Bargaining Laws, 1955–1984

to over 30 states for police and state workers by 1979. Panel B of figure 8 sets a higher bar by counting the number of states in each year that had laws in place implying or explicitly stating a duty to bargain on the part of public sector employers in each of the four categories. The total here increased from no states in 1955 to over half the states for police, firefighters, and teachers (local government employees) and 23 states for state workers by 1979. There has been relatively little change in the legislative environment since 1980.

In my analysis, I exploit variation in these laws across types of workers within a given state and variation in these laws over time within states to identify the effect of these laws on union membership and labor market outcomes.

I focus on two measures of these laws as they relate to their favorableness to union organization. The first is a single index of union security provisions in the laws. This index can take on five values:

1. Agency shop prohibited or right-to work law covering public employees

2. No legal provision

3. Agency shop negotiable

4. Union shop negotiable

5. Agency shop compulsory.

These are arranged in increasing order of favorableness to the union as indicated by Freeman and Valletta (1988b). There is very little variation over time in these laws. Defining an observation as a type of worker in a given year in a given state, between 1983 and 2004 there were a total of eight changes in union security law levels in three states, and five of these were the adoption of a right-to-work law in Idaho in 1985. However there is more variation within states across types of worker. In 1983, there was at least one difference in union security provisions among the five types of workers within a state in 14 states, and, in 2004, there were differences in 13 states. Table 1 contains a breakdown of type of law for each worker group between 1983 and 2004.

An analysis of variance of the union security index illustrates that most of the variation is accounted for by state. The analysis of variance is carried out by OLS regression of the index in each state/year/type cell on a complete set of state (50), year (22), and worker type (5) indicators (omitting one of each). Since this is a balanced design with one observation in each cell, the three dimensions are orthogonal and the variance decomposition is unique.

Table 1: Distribution of Union Security Law Index, 1983-2004

Group	Prohibited	No Provision	Agency Shop Negotiable	Union Shop Negotiable	Agency Shop Compulsory
State	0.498	0.203	0.179	0.040	0.080
Police	0.498	0.242	0.180	0.060	0.020
Fire	0.498	0.222	0.180	0.080	0.020
Teachers	0.508	0.202	0.250	0.000	0.040
Other Local	0.478	0.262	0.180	0.060	0.020
All	0.496	0.226	0.194	0.048	0.036

These are fractions of state/year observations in each worker group with the specified value of the union security law index. The data dare are from the NBER Public Sector Collective Bargaining Law Data Set as updated.

The regression accounts for 83.6 percent of the overall variation in the union security index. State alone accounts for 83.4 percent of the variation, year none, and type 0.2 percent. This is not surprising given that a central component of the union security index is the existence of a right-to-work law, and RTW laws cover all categories of workers and there was almost no variation in RTW laws over time.

The second measure of the laws that I use is an index of the strength of collective bargaining rights used by Freeman and Valletta's (1988b). This is an eight-category classification as follows:

1. Collective bargaining prohibited
2. No provision
3. Collective bargaining permitted
4. The right to meet and present offers
5. Employer duty to bargain, express or implied with no specific dispute settlement mechanism
6. Duty to bargain with fact-finding or mediation required
7. Duty to bargain with strikes allowed
8. Duty to bargain with arbitration required.

These are arranged in order of increasing favorableness to the union as indicated by Freeman and Valletta (1988b).

Table 2 contains a breakdown of type of law for each worker group over the period 1983-2004. Provision of collective bargaining rights is much more common than the allowance of union security provisions. Overall, collective bargaining rights are prohibited in 10 percent of the state/year/group cells and there is no provision in another 12 percent. Some form of duty to bargain is required in fully 57 percent of cells, with almost half of these a duty to bargain without specification of a dispute settlement mechanism. Police, firefighters, and teachers are more likely to have a duty to bargain than state workers or other local workers.

Table 2: Distribution of the Collective Bargaining Rights Index, 1983-2004

Group	Prohib	No Prov	CB Permit	Meet & Present	Duty	Duty FF/Med	Duty Strike	Duty Arb
State	0.160	0.134	0.120	0.068	0.221	0.101	0.156	0.040
Police	0.080	0.142	0.172	0.040	0.338	0.081	0.047	0.100
Fire	0.060	0.082	0.152	0.100	0.290	0.109	0.047	0.160
Teachers	0.080	0.060	0.187	0.020	0.315	0.121	0.196	0.020
Other Local	0.100	0.162	0.162	0.060	0.199	0.101	0.196	0.020
All	0.096	0.116	0.159	0.058	0.273	0.103	0.129	0.068

These are fractions of state/year observations in each worker group with the specified value of the unions collective bargaining rights index. "Duty" denotes "duty to bargain." The data dare are from the NBER Public Sector Collective Bargaining Law Data Set as updated.

For example, fully 65 percent of state/year cells for teachers require a duty to bargain. Not surprisingly, police and firefighters are rarely allowed the right to strike, but this is compensated for by a higher level of availability of arbitration.

Once again, there is not much time-series variation in this index. Between 1983 and 2004 there were a total of 20 changes in the value of the collective bargaining index in seven states, and all of these were the imposition of a duty to bargain of some kind. There is substantial variation in collective bargaining rights within states across types of worker. In 1983, there was at least one difference in collective bargaining rights among the five types of workers within a state in 31 states, and, in 2004, there were differences in 29 states. There is no straightforward way to summarize the patterns of differences across types of workers, and there is no obvious pattern (e.g., with more or less favorable laws for certain types of workers).

An analysis of variance of the collective bargaining index once again illustrates that most of the variation is accounted for by state. The regression accounts for 76.3 percent of the overall variation in the collective bargaining index. State alone accounts for 74.9 percent of the variation, year 0.05 percent, and type 1.4 percent.

It is clear from the analysis of variance that inter-temporal variation will not be useful in identifying the effect of the laws on outcomes. The bulk of the variation in laws is inter-state is common across worker type, but this will not be useful either since there are likely important state-specific unmeasured factors that are correlated with both the legislation and

with the outcomes of interest.

I rely on the variation within states across different types of workers (after accounting for common inter-state differences across worker types) to identify the effects of the law. While only a small fraction of the overall variation is from this source, it is an empirical question as to whether there is sufficient variation to identify the effects.

3.3 Public Sector Bargaining Laws and Union Coverage

I define union coverage as the fraction of workers who report either being a union member or being a nonmember covered by a collective bargaining agreement. It is clear that there is a strong relationship between union density and public sector bargaining laws. Table 3 contains average union coverage across all 50 states and the 22 years from 1983 to 2004 by the category of union security law and type of worker. Union coverage is strongly increasing in the favorableness of the law for all types of workers. Overall, 28.9 percent of state and local government employees are unionized when union security provisions are prohibited while 65 to 70 percent are unionized where agency shops are allowed or compulsory.

Table 3: Union Coverage by Union Security Law and Type

Law Type	State	Police	Fire	Teacher	Other	All
Prohibited	0.206	0.410	0.636	0.546	0.219	0.289
No Provision	0.259	0.602	0.808	0.688	0.302	0.375
Agency Shop Negotiable	0.532	0.887	0.909	0.849	0.582	0.654
Union Shop Negotiable	0.489	0.762	0.771	—	0.505	0.511
Agency Shop Compulsory	0.720	0.954	0.943	0.892	0.789	0.728
All	0.347	0.620	0.766	0.697	0.380	0.446

Data from CPS merged outgoing rotation group files from 1983-2004. Weighted by CPS final sample weights. N=512,982.

A similar pattern is found with regard to collective bargaining rights. Table 4 contains average union coverage across all 50 states and the 22 years from 1983 to 2004 by the category of collective bargaining rights law. Union coverage is strongly increasing in the favorableness of the law for all types of workers. For example, 17 percent of state and local government employees are unionized when collective bargaining is prohibited while half to three-quarters

Table 4: Union Coverage by Collective Bargaining Law and Type

Law Type	State	Police	Fire	Teacher	Other	All
Prohibited	0.143	0.220	0.434	0.412	0.127	0.170
No Provision	0.188	0.411	0.766	0.474	0.213	0.241
Permitted	0.142	0.405	0.634	0.463	0.163	0.269
Right to Meet and Present	0.299	0.408	0.511	0.677	0.178	0.280
Duty to Bargain	0.535	0.756	0.855	0.806	0.585	0.633
Duty to Bargain w/FF or Med	0.405	0.605	0.799	0.772	0.427	0.508
Duty to Bargain w/Strike	0.517	0.741	0.823	0.848	0.450	0.564
Duty to Bargain w/Arb	0.625	0.866	0.915	0.863	0.568	0.743
All	0.347	0.620	0.766	0.697	0.380	0.446

Data from CPS merged outgoing rotation group files from 1983-2004. Weighted by CPS final sample weights. N=512,982.

are unionized when there is a duty to bargain.

The substantial differences in union density by type of law likely reflect large differences across states in the political, social, and economic environments as they relate to labor unions. In order to account for unmeasured differences across states, I estimate a linear probability model of the probability of unionization using these same data. The model includes fixed-effects for state and year along with indicator variables for type of worker where appropriate. The model also includes measures of individual worker characteristics that could affect the likelihood of union membership or coverage, including age, education, race, sex, and marital status.

Column 1 of table 5 contains estimates of the coefficients of the union security law index from a linear probability model of union membership or coverage where the omitted category is "No Provision." This model includes the demographic measures and fixed effects for year and for type of worker. No controls for state are included. Thus, these estimates are contaminated by unmeasured state-specific characteristics that are correlated with union density. As in table 1, these estimates show a substantial positive relationship between the

Table 5: Effect of Union Security Laws on Union Coverage

Law Type	(1)	(2)
Prohibited	-0.087	0.032
	(0.002)	(0.007)
No Provision	—	—
Agency Shop Negotiable	0.253	0.095
	(0.002)	(0.006)
Union Shop Negotiable	0.191	0.019
	(0.004)	(0.011)
Agency Shop Compulsory	0.419	0.156
	(0.004)	(0.007)
State Fixed Effects	No	Yes

The reported coefficients of law type indicator are from OLS regressions of individual union status that include controls for education category (4), sex, marital status, the interaction of sex and marital status, race (nonwhite), age, and age squared along with fixed effects for calendar year and controls for worker type. The omitted category is "No Provision." Data are from the CPS merged outgoing rotation group files from 1983-2004. The estimates are weighted by CPS final sample weights. Standard errors are in parentheses. N=512,982.

likelihood of union membership and the union security law index. Compared to there being no legal provision, unionization is 20 to 40 percentage points points more likely where an agency or union shop is either negotiable or compulsory. Legislation requiring an agency shop is relatively rare but is associated with a particularly large increase in the probability of unionization.

Column 2 of table 5 contains estimates of a similar model that differs only by including state fixed effects. Thus, these estimates account for unmeasured fixed state-specific factors that are correlated with both public sector union density and the laws governing union security provisions for public sector workers. These estimates, which are based on variation within states across types of workers in the legislation, show much smaller differentials in the probability of unionization relative to the case where there is no legal provision. Where an agency shop is negotiable, the differential is about 10 percentage points. The differential is about 15 percentage points where an agency shop is compulsory. Interestingly, there is no significant differential where a union shop is negotiable. On balance, it appears that union security provisions in the state law play a significant role in the level of union density in the

Table 6: Effect of Laws Defining Collective Bargaining Rights on Union Coverage

	Within- and Between-State Variation	
Law Type	(1)	(2)
Prohibited	-0.071	0.009
	(0.003)	(0.005)
No Provision	—	—
Permitted	-0.040	-0.007
	(0.003)	(0.005)
Right to Meet and Present Offers	0.061	0.004
	(0.004)	(0.006)
Duty to Bargain	0.347	0.058
	(0.002)	(0.005)
Duty to Bargain with Med/FF	0.228	0.067
	(0.003)	(0.010)
Duty to Bargain with Strike	0.293	0.062
	(0.003)	(0.006)
Duty to Bargain with Arbitration	0.394	0.048
	(0.006)	(0.008)
State Fixed Effects	No	Yes

The reported coefficients of law type indicator are from OLS regressions of individual union status that include controls for education category (4), sex, marital status, the interaction of sex and marital status, race (nonwhite), age, and age squared along with fixed effects for calendar year and controls for worker type. The omitted category is "No Provision." Data are from the CPS merged outgoing rotation group files from 1983-2004. The estimates are weighted by CPS final sample weights. Standard errors are in parentheses. N=512,982.

public sector.

Table 6 contains the results of the same analysis for the index of collective bargaining rights rather than for the index of union security provisions. Column 1 of the table contains estimates of the coefficients of the collective bargaining rights index from a linear probability model of union membership or coverage where the omitted category is "No Provision." As before, these models include the demographic measures and fixed effects for year and type of worker. No controls for state are included, and these estimates are contaminated by unmeasured state-specific characteristics that are correlated with union density. As in table 4, these estimates show a substantial positive relationship between a legally required duty to bargain and the likelihood of union membership. Compared to there being no legal provision, unionization is 25 to 40 percentage points points more likely where there is the employer has

a duty to bargain.

Column 2 of table 6 contains estimates of a similar model that differs only by including state fixed effects. These estimates rely on within-state variation in the laws governing collective bargaining rights across types of workers. The magnitudes of the estimates are attenuated relative to those obtained relying on both within- and between-state variation in the top panel, but there remains a statistically significant positive relationship between the probability of unionization and an employer's duty to bargain. On average, an employer's duty to bargain results in a 5 to 7 percentage point increase in the overall probability of unionization.

4 Public Sector Bargaining Laws and Wages

Laws governing collective bargaining in the public sector can have important effects on the wages paid to employees. Union workers may earn more where legislation makes unions stronger and more secure. Nonunion workers may earn more as well as nonunion public sector employers attempt to forestall union organization (the threat effect of unions).[12] In order to investigate this, I estimate OLS regression models of log real hourly earnings separately for union and nonunion workers. The model includes fixed-effects for state and year along with indicator variables for type of worker where appropriate. The model also includes measures of individual worker characteristics that could affect earnings, including age, education, race, sex, and marital status.

Column 1 of table 7 contains estimates of the coefficients of the union security law index from this regression model estimated over the sample of union workers. This model includes the demographic measures and fixed effects for year and for type of worker. No controls for state are included. Thus, these estimates may be contaminated by unmeasured state-specific characteristics that are correlated both with the legislation and with earnings. These estimates show a substantial positive relationship between the union security law index and earnings. Compared to there being no legal provision, earnings of union workers are about

[12] Farber (2005) presents an analysis of threat effects of unions in the private sector, and he finds some evidence that wages of nonunion workers are positively affected by the threat of union organization.

Table 7: Effect of Union Security Laws on Log Real Wages

Law Type	(1) Union	(2) Nonunion	(3) Union	(4) Nonunion
Prohibited	-0.075	-0.017	0.070	0.015
	(0.003)	(0.003)	(0.009)	(0.012)
No Provision	—	—	—	—
Agency Shop Negotiable	0.111	0.101	0.037	0.001
	(0.003)	(0.003)	(0.008)	(0.013)
Union Shop Negotiable	0.075	0.158	0.133	0.093
	(0.006)	(0.007)	(0.012)	(0.027)
Agency Shop Compulsory	0.109	0.098	0.012	0.032
	(0.005)	(0.009)	(0.009)	(0.015)
State Fixed Effects	No	No	Yes	Yes

The reported coefficients of law type indicator are from OLS regressions of log real hourly earnings that include controls for education category (4), sex, marital status, the interaction of sex and marital status, race (nonwhite), age, and age squared along with fixed effects for calendar year and controls for worker type. The omitted category is "No Provision." Data are observations with unallocated wages from the CPS merged outgoing rotation group files from 1983-2004. The years 1994 and 1995 are not included due to problems identifying observations with allocated wages. The estimates are weighted by CPS final sample weights. Standard errors are in parentheses. N=376,646.

10 percent higher where an agency or union shop is either negotiable or compulsory. Where agency and union shops are prohibited, largely through the existence of RTW laws, earnings are about 7.5 percent lower. The second column of table 7 contains estimates from the same model, this time estimated over the sample of nonunion workers. These estimates also show a substantial positive relationship between earnings the likelihood of union membership that is similar in magnitude to the relationship for union workers. This suggests that low wage states are more likely to have RTW laws.

The estimates in columns 3 and 4 of table 7 include state fixed effects to account for omitted state-specific factors that are correlated with both the union security law index and earnings. These estimates are more plausibly interpreted as the causal effect of the law on earnings. Column 3 of table 7 contains these estimates for union workers, and they show a small statistically significant effect of the ability to negotiate agency shop provisions on earnings of 3.7 percent. The ability to negotiate a union shop implies a larger increase in earnings of about 13 percent. Column 4 of the table contains these estimates for nonunion

workers, and they show no statistically significant effect of the laws on nonunion earnings other than for the ability to negotiate a union shop provision. On balance, these estimates suggest that laws allowing the negotiation of agency and union shops have a small positive effect on earnings of union workers and very little effect on earnings of nonunion workers.

Table 8 contains the results of the same analysis for the index of collective bargaining rights rather than for the index of union security provisions. The first two columns of the table contain earnings function regression estimates of the coefficients of the collective bargaining rights index for union and nonunion workers respectively. As before, these models include the demographic measures and fixed effects for year and type of worker. No controls for state are included, and these estimates are contaminated by unmeasured state-specific characteristics that are correlated with earnings. The estimates in column 1, for union

Table 8: Effect of Laws Defining Collective Bargaining Rights on Log Real Wages

Law Type	(1) Union	(2) Nonunion	(3) Union	(4) Nonunion
Prohibited	-0.063	0.031	-0.014	0.019
	(0.006)	(0.004)	(0.009)	(0.007)
No Provision	—	—	—	—
Permitted	-0.070	-0.005	-0.077	0.019
	(0.006)	(0.004)	(0.008)	(0.008)
Right to Meet and Present Offers	0.088	0.017	0.030	0.006
	(0.007)	(0.005)	(0.009)	(0.010)
Duty to Bargain	0.140	0.126	-0.039	0.011
	(0.005)	(0.004)	(0.007)	(0.008)
Duty to Bargain with Med/FF	0.087	0.070	-0.074	-0.033
	(0.005)	(0.004)	(0.013)	(0.022)
Duty to Bargain with Strike	0.049	0.050	-0.045	0.005
	(0.005)	(0.004)	(0.008)	(0.010)
Duty to Bargain with Arbitration	0.173	0.093	-0.062	-0.042
	(0.007)	(0.013)	(0.011)	(0.019)
State Fixed Effects	No	No	Yes	Yes

The reported coefficients of law type indicator are from OLS regressions of log real hourly earnings that include controls for education category (4), sex, marital status, the interaction of sex and marital status, race (nonwhite), age, and age squared along with fixed effects for calendar year and controls for worker type. The omitted category is "No Provision." Data are observations with unallocated wages from the CPS merged outgoing rotation group files from 1983-2004. The years 1994 and 1995 are not included due to problems identifying observations with allocated wages. The estimates are weighted by CPS final sample weights. Standard errors are in parentheses. N=376,646.

workers, show a substantial positive relationship between the legislation requiring a duty to bargain and earnings. Compared to there being no legal provision, earnings are 5 to 15 percent higher where the employer has a duty to bargain. The estimates in column 2, for nonunion workers, show a very similar pattern.

Columns 3 and 4 of table 8 contain estimates of a similar model that differs only by including state fixed effects. These estimates rely on within-state variation in the laws governing collective bargaining rights across types of workers. The estimates in column 3, for union workers show, surprisingly, that earnings are substantially *lower* for union workers where the employer has a duty to bargain. Clearly, the duty to bargain is required in states where union workers are relatively well paid. But within states and within type of worker across states, union workers whose employers have a duty to bargain tend to earn 4 to 8 percent less than otherwise similar workers where there is no legal requirement. This is a puzzling finding. Finally, the estimates in column 4 of the table, for nonunion workers, show virtually no relationship between the the collective bargaining rights index and earnings.

5 Concluding Remarks

In this study, I documented the dramatic divergence between the fortunes of unions in the public and private sectors in the United States since the 1970s. While the union membership rate in the private sector fell from 25 percent in 1975 to 8.2 percent in 2004, the rate in the public sector increased from the same level in 1975 to over 35 percent in 2004. In the private sector, nonunion employment grew by an average of 2.5 percent per year between 1973 and 2004 while union employment fell by an average of 1.6 percent per year. Average employment growth rates in the public sector were about 1 percent per year for both the union and nonunion sectors between 1983 and 2004.

I proposed four reasons for the divergence in union membership rates between the private and public sectors. These focus on differences in 1) employment dynamics, 2) the nature of products produced, 3) the role that unions can play, and 4) incentives faced by employers. Each of these make public sector union jobs more stable or increases the value of unions to workers.

Next I turned to an analysis of the role of public policy regarding collective bargaining in the public sector on union coverage and earnings. Legislation at the state level governs collective bargaining by state and local government employees, and the regulations can differ by group of worker (state, police, fire, teacher, other local). There are large differences across states in the policies embodied in these laws, and this interstate variation in the legislation is contaminated with observed state-specific factors that are correlated with the outcomes of interest. My solution is to exploit within-state variation in laws by type of worker. I find that union coverage is significantly higher where unions are allowed to negotiate union security provisions (e.g., agency shop) and where employers have a legal duty to bargain with labor unions. With regard to earnings, I find there is a small positive effect on earnings of legislation allowing union security provisions and a surprising negative effect on earnings of a legal duty to bargain.

On balance, unions in the public sector have thrived relative to unions in the private sector for important structural reasons. Lack of market competition for the products of the public sector and lack of fiscal discipline through the political process makes the value of unions to public sector workers relatively high. Public policy governing labor relations in the public sector, working in conjunction with these structural factors, has provided an environment in which unions can thrive.

References

Dickens, William T. and Jonathan S. Leonard. 1985 . "Accounting for the Decline in Union Membership, 1950–1980." *Industrial and Labor Relations Review* 38(3): 323–334.

Ellwood, David T. and Glenn Fine 1987 "The Impact of Right-To-Work Laws on Union Organizing." *Journal of Political Economy* 95(2): 250-273.

Farber, Henry S. 1988. "The Evolution of Public Sector Bargaining Laws." in *When Public Sector Employees Unionize*, Richard B. Freeman and Casey Ichniowski, eds., Chicago. University of Chicago Press. 129-166.

Farber, Henry S. 2005. "Nonunion Wages and Threat of Unionization." *Industrial and Labor Relations Review* 58(3): 3335–352..

Farber, Henry S. and Bruce Western. 2001 " Accounting for the Decline of Unions in the Private Sector, 1973–1998." *Journal of Labor Research*

Freeman, Richard B. 1986. "Unionism Comes to the Public Sector." *Journal of Economic Literature* 24(1): 41-86.

Freeman, Richard B. 1988. "Contraction and Expansion: The Divergence of Private Sector and Public Sector Unionism in the United States." *Journal of Economic Perspectives* 2(2): 63–88.

Freeman, Richard B. and Robert G. Valletta. 1988(a). "The NBER Pubic Sector Collective Bargaining Law Data Set." App B in *When Public Sector Employees Unionize*, Richard B. Freeman and Casey Ichniowski, eds., Chicago. University of Chicago Press. 81-106.

Freeman, Richard B. and Robert G. Valletta. 1988(b). "The Effects of Public Sector Labor Laws on Labor Market Institutions and Outcomes." in *When Public Sector Employees Unionize*, Richard B. Freeman and
Casey Ichniowski, eds., Chicago. University of Chicago Press. 81-106.

Levy, Paul Alan. 1985. "The Unidimensional Perspective of the Reagan Labor Board." *Rutgers Law Journal* 16: 269–390.

Saltzman, Gregory M. 1988. "Public Sector Bargaining Laws Really Matter: Evidence from Ohio and Illinois." in *When Public Sector Employees Unionize*, Richard B. Freeman and Casey Ichniowski, eds., Chicago. University of Chicago Press. 41-80.

Weiler, Paul C. 1983. "Promises to Keep: Securing Workers' Rights Under the NLRA." *Harvard Law Review* 96:1769–1727.