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## An anatomy of public sector unions

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IZA DP No. 7313

## **An Anatomy of Public Sector Unions**

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March 2013

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Discussion Paper No. 7313  
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## **ABSTRACT**

### **An Anatomy of Public Sector Unions<sup>\*</sup>**

Public sector unionism grew rapidly during the late 1960s and early 1970s following the passage of state collective bargaining laws. During the last thirty years, public sector membership has grown at roughly the same rate as the overall workforce. This paper provides a descriptive overview of union membership growth and economy-wide employment shares in the U.S. federal (non-postal), Postal Service, state, and local government sectors. More limited evidence is provided on changes in relative public/private and union/nonunion wages. Observations are provided on the current debates regarding public/private pay and the role of public sector unions.

JEL Classification: J45, J5

Keywords: union membership, public sector unions, public sector pay, employment

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## **1. Introduction**

During the late 1930s and 1940s the U.S. experienced a sudden, steep rise in private sector unionism. It plateaued during the 1950s and then began a long, steady decline. Public sector unionism, however, grew rapidly during the late 1960s and early 1970s following the passage of state collective bargaining laws. Union membership among public sector employees during the last thirty years has grown at about the same rate as has the overall workforce, maintaining a relatively constant share of public sector employment. As seen below, in 2011 public sector union density (i.e. the share of public sector workers who are union members) was 37.0%, substantially higher than the 6.9% union density found in the private sector (overall density was 11.8%). Beginning in 2009, the share of U.S. union members who worked in the public sector rose above 50% for the first time. In 2011, there were 7.55 million public sector union members and 7.20 million private sector members.

The principal aim of this paper is to provide a descriptive overview of union membership in the U.S. public sector over time. Evidence is provided for federal (non-postal), U.S. Postal Service, state, and local government employees. Also presented is evidence on how employment in these four government sectors, as a share of total wage and salary employment, has changed over time. More limited evidence is provided on changes in relative public/private and union/nonunion wages. Finally, I provide observations on the current debates regarding public/private compensation and the role of public sector unions.

## **2. Measuring Union Membership, Coverage, and Density in the Current Population Survey (CPS)**

Before describing changes over time in public sector membership, coverage, and density, it is necessary to describe the data and methods on which such data are based. This is particularly important for the public sector, where union coverage is measured with considerably more error than in the private sector. First some background. Conceptually, unionization can be measured based on membership reports from labor unions, by employers (i.e., reports on coverage at the establishment level), or by individual workers in household surveys. The earliest data on membership in the U.S. was based on reports from labor unions, and which in turn was reported by the U.S. Department of Labor in published *Directories*. These ended in the early 1980s. Since that time, the principal source of union data has been from Current Population Survey (CPS) household surveys, which will be discussed below in some detail. There exists little public U.S. data based on employer reports on establishment coverage. Moreover, it is difficult (although possible) to match NLRB election data to individual businesses.

The figures presented in this paper on public employment and unionization are based on calculations by the author from the Current Population Survey (CPS) monthly files, the principal source for U.S. union membership data for at least thirty years. The CPS is a monthly survey of households conducted by the Census Bureau and provides the source for official U.S. government statistics on employment, unemployment, unionization, household income, and employee earnings. Much of the union

data provided here is publicly available through the “Union Membership and Coverage Database from the CPS,” available at [Unionstats.com](http://Unionstats.com), which I produce jointly with David Macpherson (for a descriptions, see Hirsch and Macpherson (2003)). The union membership and density estimates presented here and at [Unionstats.com](http://Unionstats.com) are compiled using exactly the same methodology and underlying data as does the Bureau of Labor Statistics (BLS) in their annual news release on union membership and earnings.

Beginning in 1983, BLS has provided union estimates from the CPS at highly aggregated levels (e.g., nationally for broad demographic groups, industries, and occupations). Our estimates for comparable groups (e.g., all private sector or all public sector employees) match those published by BLS. At [Unionstats.com](http://Unionstats.com), however, we provide estimates at far more disaggregated levels than are provided by BLS, for example, detailed industries, detailed occupations, and metropolitan areas. In recent years, BLS has published union data by state, but does not distinguish between private and public sector workers. [Unionstats.com](http://Unionstats.com) does do so, and it has been the principal source for information on public sector unionization by state during the recent “public union wars.” BLS is rightly reluctant to publish estimates at disaggregated levels for which the sample sizes are small (e.g., public sector unionization in a small or medium-size state). Such data are provided at [Unionstats.com](http://Unionstats.com), but with warning to users regarding small samples (we show sample sizes for all estimates). Users can readily pool data across multiple years to obtain reliable estimates for small groups.

Questions on union status, weekly earnings, and hours worked per week are asked each month to a quarter sample of all wage and salary workers ages 16+ in the CPS. Self-employed workers are not included. Annual figures on union membership, coverage, and density are compiled over the January through December CPS surveys; thus they approximate mid-year estimates. Annual sample sizes on which our estimates are based have varied from about 150 to 180 thousand. The Census assigns to each surveyed respondent in the CPS a sample weight  $w$ , which provides an estimate of the number of persons in the population that the sample individual represents. Stated alternatively, the weight is the inverse of the probability of the person in the population being in the CPS sample. There is variability in weights across individuals, location, and years. In 2011, each individual in the annual 2011 CPS Earnings File *sample* was “blown up” (i.e., multiplied) on average by 753 to obtain estimates of the larger *population* of union members, employed wage and salary workers, etc.

Union membership and contract coverage information are based on responses to two survey questions about each worker’s primary job. There have been no changes in these questions since 1977. Individuals are counted as union *members* if they respond yes to the question, “*On this job, is ... a member of a labor union or of an employee association similar to a union?*” Those who answer no to the union membership question above are then asked, “*On this job, is ... covered by a union or employee association contract?*” Workers are counted as *covered* (i.e., represented) if they are union members or if

they are not members but say they are covered by a union contract. Union status is recorded for all workers.<sup>1</sup>

For the years 1973-76, there was a May CPS membership question, but no question to non-members about coverage. The union membership question during this period read “*Does ... belong to a labor union on this job?*” The addition in 1977 of the phrase “or of an employee association similar to a union” had a minor effect on union membership estimates in the private sector, but significantly increased estimated membership density among public sector workers (by roughly 7 percentage points). Likewise, differences between union membership and coverage tend to be small in much of the private sector, but are typically larger in the public sector. Since our focus here is on public sector membership, we do not provide estimates prior to the 1977 change in the union questions.

Measures of employment, union membership, union coverage, and density (i.e., the percent members or covered), are compiled as follows. Employment (*Emp*) is calculated as the sum of the CPS sample weights among individuals in the group under consideration. Letting  $w_{ij}$  represent the sample weight for individual  $i$  in group  $j$ , employment for group  $j$  is:

$$Emp_j = \sum w_{ij}$$

For example, employment of wage and salary workers in New York State is calculated by summing the CPS sample weights among all respondents who are employed wage and salary workers in New York. In 2011, there were 7,056 observations for this group, who “blow up” to an employment estimate of 7.916 million (see Hirsch and Macpherson, annual, Table 5a, or [Unionstats.com](http://Unionstats.com)).

Union membership (*Mem*) and the number of workers covered by a collective bargaining agreement (*Cov*) are calculated similarly. Let  $M_i = 1$  if individual  $i$  is a union member and 0 otherwise. Likewise,  $C_i = 1$  if individual  $i$  is covered and 0 otherwise. Then,

$$Mem_j = \sum w_{ij} M_{ij} \text{ and } Cov_j = \sum w_{ij} C_{ij}.$$

Union membership and coverage for group  $j$ , as seen above, are calculated by summing the sample weights for all individuals who are union members or covered, respectively. For example, among the 7,056 CPS observations for New York in 2011, the sum of the sample weights among those who are union members yields an estimated membership of 1.904 million union members in New York.

Union membership and coverage *density* figures measure the percentage of employees who are members or covered, respectively. These are defined as membership (or coverage) divided by employment, times 100. That is:

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<sup>1</sup> The Census Bureau imputes responses based on worker characteristics for individuals unable to answer the union questions, currently about 7 percent for membership and higher for coverage.

$$\%Mem_j = 100(w_{ij}M_{ij}/w_{ij}) = 100(Mem_{ij}/Emp_{ij}), \text{ and}$$

$$\%Cov_j = 100(w_{ij}C_{ij}/w_{ij}) = 100(Cov_{ij}/Emp_{ij}).$$

For example, in New York in 2011, there were an estimated 1.904 million union members among the total 7.916 million employed, leading to an estimated membership density,  $\%Mem$ , of 24.1 percent.

The CPS union questions on membership and coverage do a reasonably good job measuring membership and coverage in the private sector, but far less well in the public sector. Because those who are union members are not asked whether they are covered by a collective bargaining agreement, the BLS and (typically) researchers assume that covered workers include all members, plus non-members who state they are covered. There is some unknown but potentially large degree of misclassification in this coverage measure. Teachers not covered by a collective bargaining agreement but who are members of a union or association similar to a union (e.g., the National Educational Association) will be incorrectly classified as covered even if there is no misreporting in the CPS variables. Even in states that provide no legal mechanism for collective bargaining of teachers (or forbid collective bargaining), a substantial number of teachers in the CPS report (correctly) that they are union members.<sup>2</sup>

### ***3. Union Membership, Coverage, and Density in the U.S. Public Sector: Descriptive Evidence***

Public sector unionization began to increase sharply during the 1960s and 1970s as states enacted laws that provided for collective bargaining rights among public sector unions. Wisconsin was the first to pass such laws, in 1959, with subsequent passage in other states occurring mostly during the late 1960s and early 1970s. Some states mandated collective bargaining whereas others made it permissible. A number of states, particularly in the South were either silent with respect to collective bargaining or did not permit collective bargaining (union membership was of course permitted). Some states do not permit bargaining but have meet and confer provisions that provide union voice without formal bargaining (see, for example, Valletta and Freeman 1988; Lund and Maranto 1996).

Troy and Sheflin (1985, Appendix A) provide estimates of public sector union membership density beginning in 1962, based on union dues reports to the U.S. Department of Labor. They estimate that public membership density was 24% in 1962, with a peak in 1975 and 1976 of about 40% and in 1977 a value of 38%. Figure 1 provides membership density estimates beginning in 1929 for private workers (based primarily on Troy and Sheflin) and beginning in 1977 for private, public, and all wage

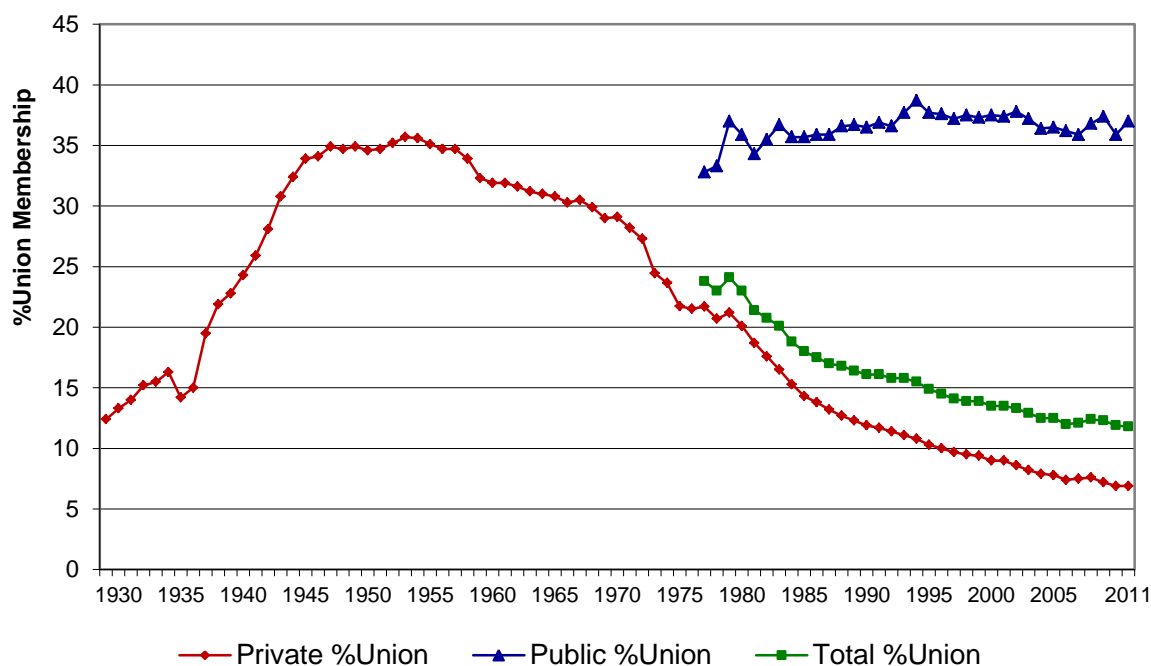
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<sup>2</sup> Additional misclassification results if respondents who are not members or who state they are not members incorrectly answer the coverage question. Such misreporting is understandable since some employees will not be knowledgeable about the process through which their salaries are determined. An additional source of measurement error exists because in the CPS a single primary household member provides responses for all household members. Thus, roughly half of all individual records in the CPS have answers provided by (or at least through) a “proxy” respondent, most typically a spouse. It would not be surprising if proxy responses on CB coverage are measured with greater error than self-responses, even if correct on average.



and salary workers based on compilations from the Current Population Survey (CPS). I do not begin the CPS public series until 1977, the first year in which the union measure included in a labor union *and* employee association like a union. This was an important change in definition for the public sector. The CPS public sector series shows an initial estimate of membership density of 32.8% in 1977 (estimates prior to 1983 are based on relatively small samples), rising to 36.7% in 1983 and remaining remarkably stable since that time, with an estimated 37.0% in 2011. In subsequent figures, membership and coverage is shown separately for federal (non-postal), postal, state, and local public employees.

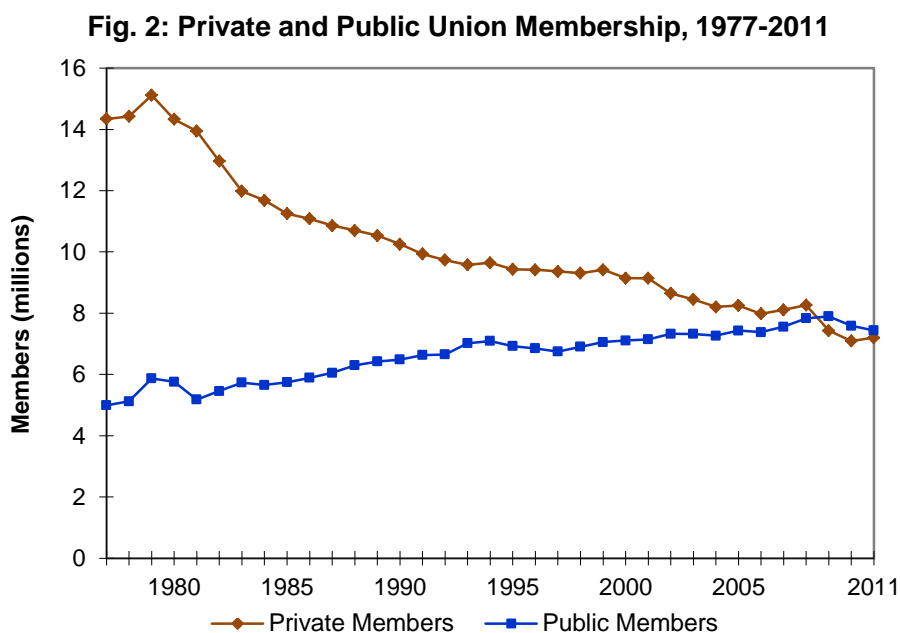
**Figure 1: U.S. Private Sector Union Density, 1929-2011  
Total and Public Sector Union Density, 1977-2011**



Although private sector unionization is not a focus of this paper, Figure 1 provides CPS estimates of private sector and total (private plus public) membership density. As widely recognized, private sector density peaked and then plateaued during the 1950s at about 35%, with continuous decline since that time. Private density fell from 21.7% in 1977 to 16.5% in 1983, to 8.2% by 2003, and to 6.9% in 2011. Overall union density, which is simply the weighted average of private and public employment (roughly 5/6 private and 1/6 public) fell from 23.8% in 1977 to 20.1% in 1983, 12.9% in 2003, and 11.8% in 2011. As this paper goes to press, CPS data for 2012 show significant declines in private and public density, with private sector density 6.6%, public 35.9%, and overall membership density 11.25% ([Unionstats.com](http://Unionstats.com)).

Whereas Figure 1 presented union member density (the share of wage and salary workers who are members), in Figure 2 we show absolute numbers of union members from 1977 through 2011. In 1977, there were 14.3 million private sector members and only 5.0 million public members. In 1983, the

corresponding numbers were 12.0 and 5.7 million and by 2003 8.5 and 7.3 million. In 2009, for the first time, a majority of union members were public sector members. In 2011, 51.2% of all members were public, 7.55 million public versus 7.20 million private.

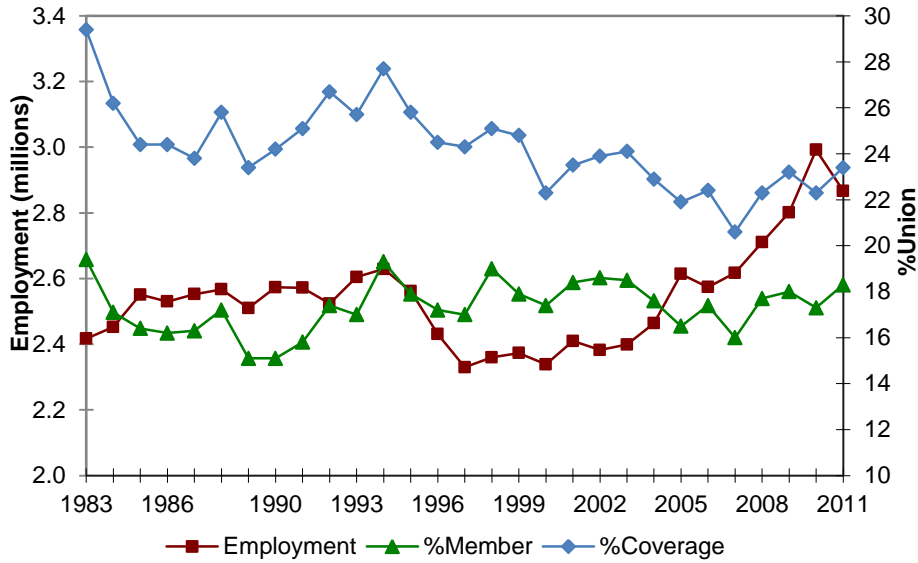


|      |                 |               |                |              |
|------|-----------------|---------------|----------------|--------------|
| 1983 | Private Members | 11.98 million | Public Members | 5.74 million |
| 1993 | Private Members | 9.58 million  | Public Members | 7.02 million |
| 2003 | Private Members | 8.45 million  | Public Members | 7.32 million |
| 2011 | Private Members | 7.20 million  | Public Members | 7.55 million |

Beginning in 1983, the CPS permitted one to distinguish between workers employed by federal, state, and local governments. A separate industry code for the U.S. Postal Service allows one to separate postal from other federal workers. Figures 3a through 3d, show employment, membership density, and coverage density for the federal (non-postal), postal, state, and local sectors. Recall that union “coverage” includes all union members, plus non-members who are covered by a collective bargaining agreement. One can think of “covered” as meaning that a worker is represented by a union either through membership and/or collective bargaining.

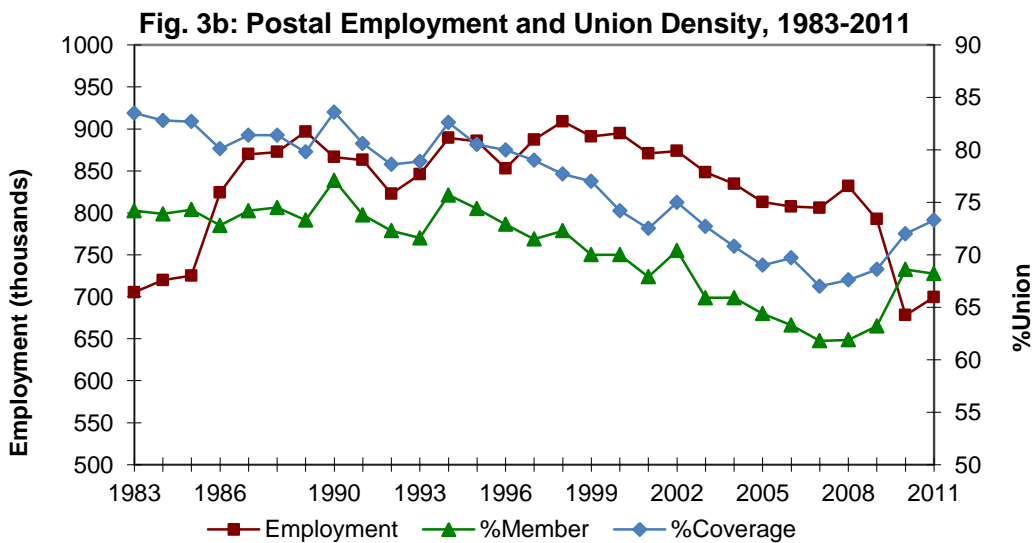
Figure 3a provides employment and membership for the federal (non-postal) workforce. Employment rose from 2.4 to 2.9 million between 1983 and 2011. Membership density stayed roughly constant, falling from 19.4% to 18.3% between 1983 and 2011. The CPS coverage measure for federal workers, which fell from 29% to 23% during these years, is not informative. Responses from federal employees on their union membership and coverage are reported with substantial error. For example, many non-members report that there is collective bargaining in their workplace even though few federal employees have traditional collective bargaining.

**Fig. 3a: Federal (non-postal) Employment and Union Density, 1983-2011**



|      |            |            |            |
|------|------------|------------|------------|
| 1983 | Emp 2.4 m. | %Mem 19.4% | %Cov 29.4% |
| 1993 | Emp 2.6 m. | %Mem 17.0% | %Cov 25.7% |
| 2003 | Emp 2.4 m. | %Mem 18.5% | %Cov 24.1% |
| 2011 | Emp 2.9 m. | %Mem 18.3% | %Cov 23.4% |

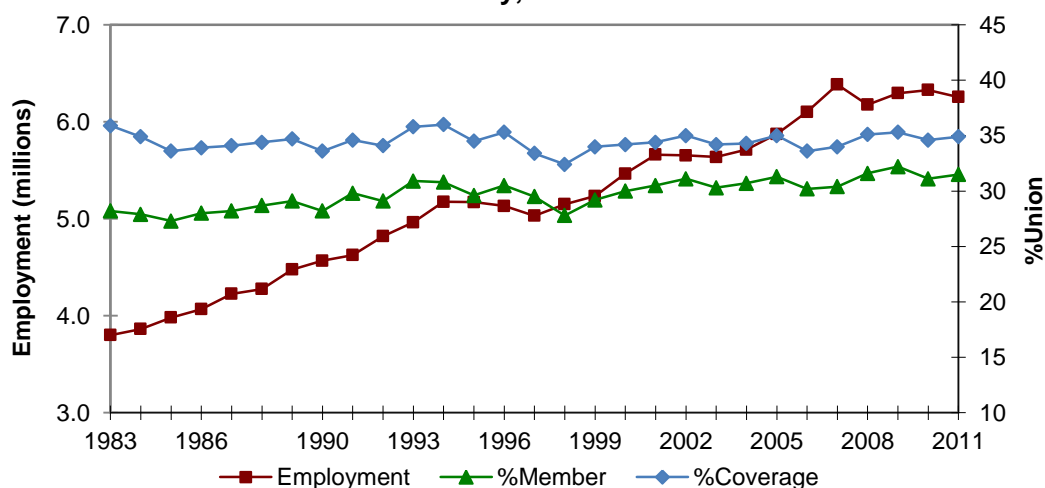
Figures 3b provides measures of employment and unionization at the U.S. Postal Service. Employment rose along with mail volume from 705 thousand in 1983 to a peak of 909 thousand in 1998. As mail volume growth slowed and later fell sharply, employment has fallen, to about 700 thousand in 2011, below its level nearly 30 years earlier. USPS is highly unionized, although membership and coverage density have declined over time. The 2011 estimates indicate a membership density of 68% and coverage density of 73% (covered postal workers are not required to be members). Because the CPS sample sizes are not large for the Postal Service, estimates can bounce around a bit from year to year.



|      |              |            |            |
|------|--------------|------------|------------|
| 1983 | Emp 705.2 t. | %Mem 74.2% | %Cov 83.5% |
| 1993 | Emp 845.7 t. | %Mem 71.6% | %Cov 78.9% |
| 2003 | Emp 848.2 t. | %Mem 65.9% | %Cov 72.7% |
| 2011 | Emp 699.5 t. | %Mem 68.2% | %Cov 73.3% |

Figure 3c provides similar estimates for employees of state governments, the one broad sector of public employment in which employment has displayed a substantial increase, from 3.8 million in 1983 to 6.3 million in 2011. (But total population and employment grew similarly. As seen below, shares of public to total employment have changed little over time.) Membership and coverage density were relatively unchanged over the 1983-2011 period, in 2011 there being membership density of 31.5% and coverage density of 35%.

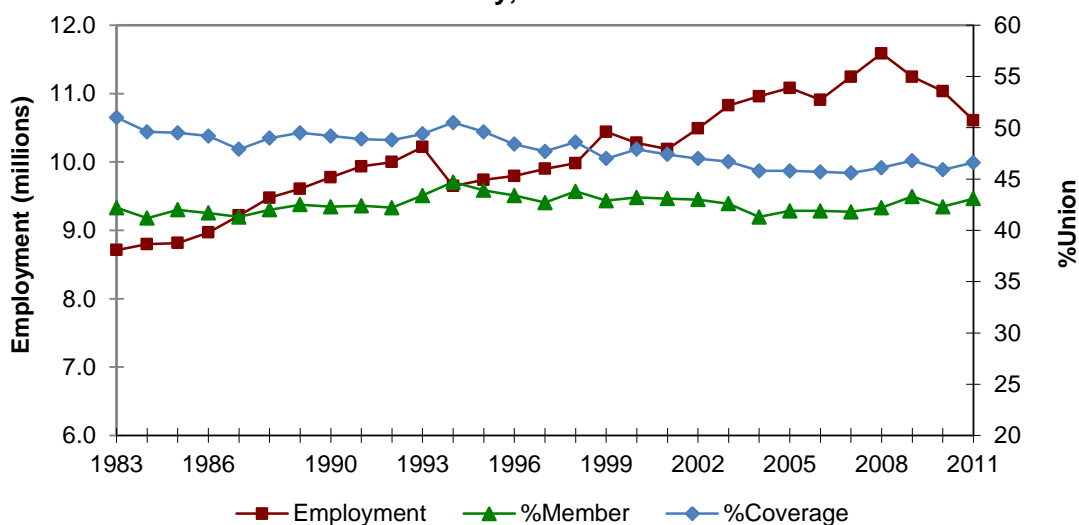
**Fig. 3c: State Government Employment and Union Density, 1983-2011**



|      |            |            |            |
|------|------------|------------|------------|
| 1983 | Emp 3.8 m. | %Mem 28.2% | %Cov 35.9% |
| 1993 | Emp 4.9 m. | %Mem 30.9% | %Cov 35.8% |
| 2003 | Emp 5.6 m. | %Mem 30.3% | %Cov 34.2% |
| 2011 | Emp 6.3 m. | %Mem 31.5% | %Cov 34.9% |

Just over half of all public employees work for local governments, often as teachers, police, or firefighters. As seen in Figure 3d, local government employment has grown over time, the exception being employment losses during or after the recessions in the early 1990s, 2001, and, in particular, after 2008. Total employment stood at 8.7 million in 1983 and had grown only to 10.6 million by 2011. Membership density changed little over the 28 year period, the estimate being 42.2% in 1983 and 43.1% in 2011. In both the figures on state and local employment, the gap between membership and coverage narrowed.

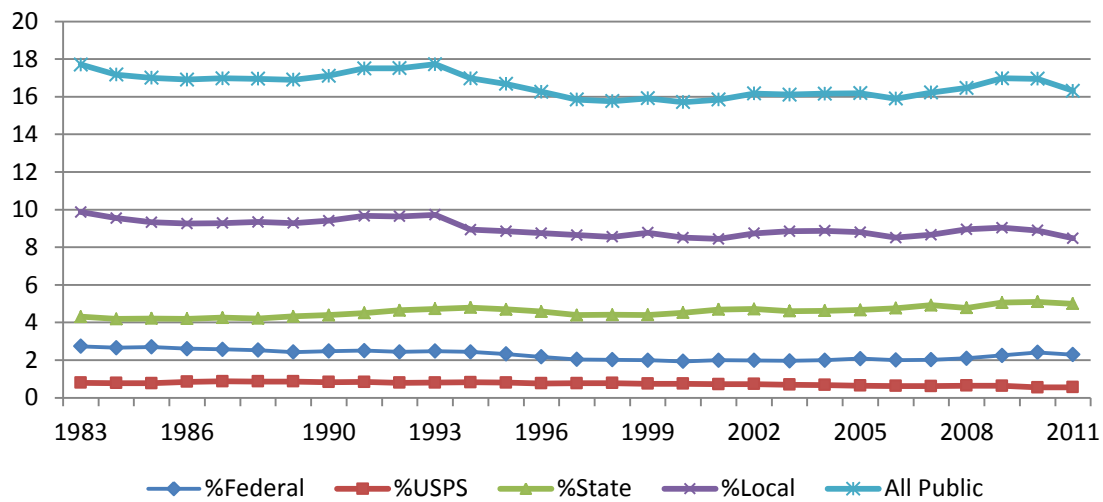
**Fig. 3d: Local Government Employment and Union Density, 1983-2011**



|      |     |         |      |       |      |       |
|------|-----|---------|------|-------|------|-------|
| 1983 | Emp | 8.7 m.  | %Mem | 42.2% | %Cov | 51.0% |
| 1993 | Emp | 10.2 m. | %Mem | 43.4% | %Cov | 49.4% |
| 2003 | Emp | 10.8 m. | %Mem | 42.6% | %Cov | 46.7% |
| 2011 | Emp | 10.6 m. | %Mem | 43.1% | %Cov | 46.6% |

Perhaps most interesting among the public employment tables is figure 4, which shows the share of total wage and salary employment accounted for by federal, postal, state, and local government employees. The total share has been remarkably stable over time. The exceptions are a decline in the mid-to-late 1990s and an increase in 2009-2010 due to the sharp private sector employment drop, followed in turn by a declining share as private employment grew and public employment declined. Over the entire 1983-2011 period, the share of public to total employment fell from 17.7% to 16.3%; that is, roughly 1-in-6 workers are currently employed in the public sector.

Among the 16.3% share of all public workers in total employment in 2011, local government accounts for 8.5%, state government 5.0%, federal (non-postal) 2.3%, and postal 0.6%. Between 1983 and 2011, these shares declined for all but state government workers, whose share edged up from 4.3% to 5.0%.

**Fig. 4e: FPSL Public Employment Shares (%), 1983-2011**

|      |           |              |            |            |             |
|------|-----------|--------------|------------|------------|-------------|
| 1983 | USPS 0.8% | Federal 2.7% | State 4.3% | Local 9.9% | Total 17.7% |
| 1993 | USPS 0.8% | Federal 2.5% | State 4.7% | Local 9.7% | Total 17.7% |
| 2003 | USPS 0.7% | Federal 2.0% | State 4.6% | Local 8.8% | Total 16.1% |
| 2011 | USPS 0.6% | Federal 2.3% | State 5.0% | Local 8.5% | Total 16.3% |

Note: Federal excludes USPS. Compiled from CPS ORG files, 1983-2011.

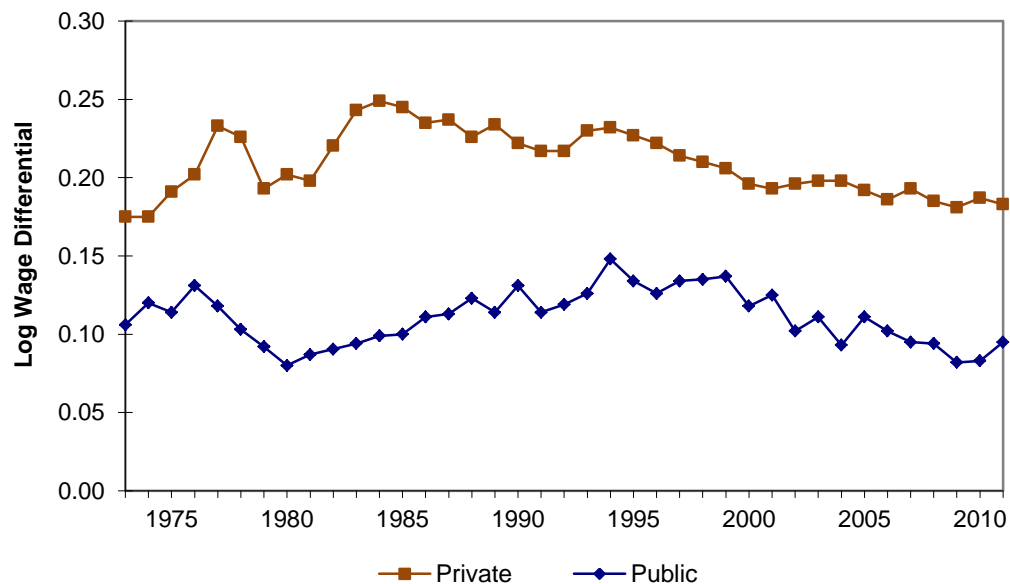
#### 4. *Relative Union-Nonunion Wages among Public Sector Workers*

The focus to this point has been on public sector employment and union membership. In this section, I focus first on changes over time in wages (and to a lesser extent benefits) among union versus nonunion workers in the public sector. I first provide evidence comparing union-nonunion wage differentials in the public and private sectors. Hirsch and Macpherson (annual, Table 2a) include in their annual union data book regression estimates of union-nonunion wage differentials using CPS data, controlling for other measurable worker, job, and location wage determinants standard in the literature. Despite numerous changes in the CPS over time, the authors attempt to make the method and specification time consistent for the years 1973-2011. We estimate log wage equations that includes a categorical union membership variable, with controls for years of schooling, potential years of experience and its square (both interacted with gender), and categorical variables for marital status, race and ethnicity, gender, part-time, large metropolitan area, region, broad industry, and broad occupation. The union-nonunion wage gap is measured by the coefficient on the union membership variable, which represents the estimated log wage differential between union and nonunion workers, after accounting for other measurable earnings determinants. The union log differential or gap represents a proportional (or percentage) average wage differential between union and nonunion workers using an intermediate union-nonunion wage base.

Looking at Figure 5, the most notable outcome is that the average union-nonunion wage gap is substantially higher (roughly double) in the private as compared to public sector. A ballpark summary is

that union wage premiums are roughly an average 20% in the private sector and 10% in the public sector. Both private and public union gaps have trended down slightly over time. Estimates of the private sector union differential decline from .23 to .18 log points between 1993 and 2011, while the public sector union gap declines from .13 to .095 over the same years, returning to the level seen in 1983. Some perspective on these magnitudes is warranted. Although private sector union density is much lower in the U.S. than in most OECD countries, union wage gaps in the U.S. are large by international standards (Blanchflower and Freeman 2003). Moreover, higher wages are not the only product of union bargaining. Freeman (1986) long ago made the point that public union bargaining power may be utilized more to achieve employment rather than wage gains. And as emphasized in the recent political wars over public sector unions, compensation gains may be more readily seen for benefits than for wages.

**Fig. 5: Private & Public Sector Union Wage Premiums, 1973-2011**



|                 |                         |                        |
|-----------------|-------------------------|------------------------|
| 1983 estimates: | private .243 log points | public .094 log points |
| 1993 estimates: | private .230 log points | public .126 log points |
| 2003 estimates: | private .198 log points | public .111 log points |
| 2011 estimates: | private .183 log points | public .095 log points |

Source: Hirsch and Macpherson (annual, Table 2a).

It is difficult to compare union and nonunion benefit levels in the public sector. The BLS Employer Costs for Employee Compensation (ECEC) database provides the most comprehensive and frequently used data for benefits. It includes non-federal public as well as private workers, but does not differentiate between public work groups covered and not covered by collective bargaining, as is done for the private sector. The ECEC shows a sizable union-nonunion benefit advantage in the private sector, but these comparisons do not account for worker, job, and location differences between union and nonunion work sites (for evidence on union versus nonunion benefits, see Budd 2007; Gittleman and Pierce 2012).

The Great Recession caused a sharp drop in state and local revenues. The decline in housing values reduced revenues from property taxes while the overall decline in business activity reduced revenues from state income, business, and sales taxes. Low interest rates and low returns on investment have increased the current costs of funding future pension and health commitments. Because a large share of state and local public expenditures are for personnel, it is not surprising that wages and benefits for public sector workers have become the subject of considerable discussion. In several states with unionized public sector workers and Republican governors, attention has focused on the compensation and bargaining rights of public sector unions. Although no small part of the attack on public unions has been political, particularly so given union support for Democratic candidates, there are legitimate issues to be addressed with respect to wages, benefits, pension liabilities, and political influence. Although these are not a principal focus of my presentation, I will comment on these issues in a concluding section.

What is worth emphasizing, however, is that it was the recession and not unions or collective bargaining per se that produced the fiscal crisis. And the fiscal crisis of states is not limited to states with strong collective bargaining. To get an initial handle on these issues, I examined two pieces of evidence that were readily at hand and could be quickly examined. Data on wages and unionization by state and year (2000 and 2010) were taken from Hirsch and Macpherson (annual, tables 5a, 5c). I first ran a simple regression on the 50 states, regressing the percentage change in public sector wages over the decade to the percent of a states' public sector workers unionized. There was no meaningful or statistically significant relationship between the two – on average, public sector wages have increased similarly across states, independent of unionization. I next regressed percentage changes in state employment on public sector union density. Public employee growth was significantly lower, not higher, in more unionized states. Although I would not interpret this relationship as causal, the implication is that public payrolls (wages times employment) have not increased more rapidly in states whose public sector workers are unionized.

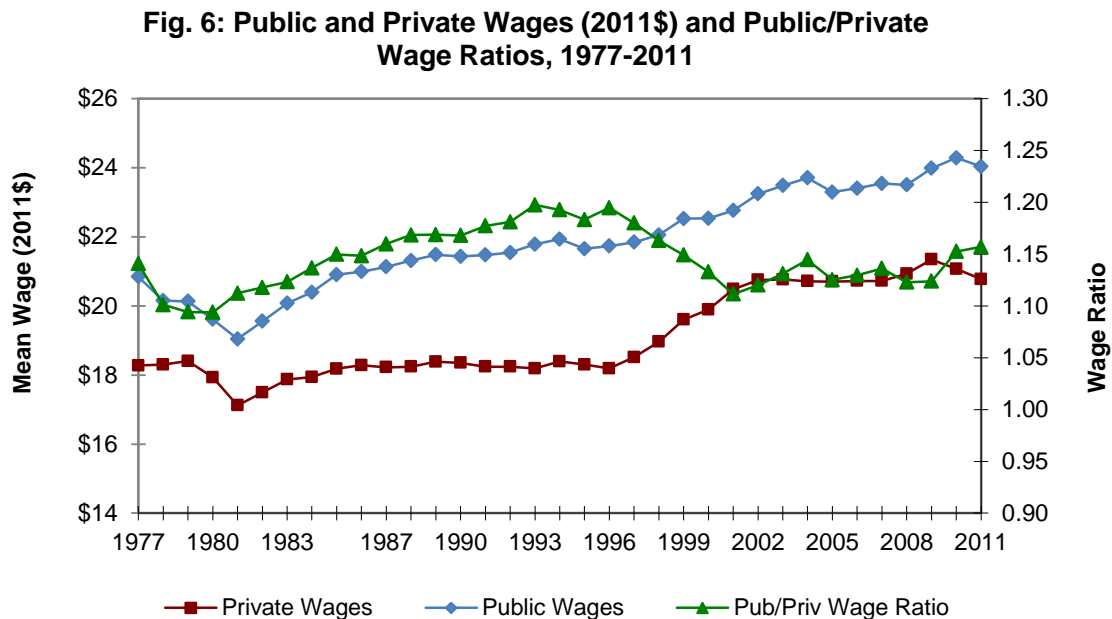
A final piece of evidence I examined does provide ammunition for critics of public sector unions. Regressing states' ranking on the degree of state public debt per capita at the end of FY 2009 (from the Tax Foundation), I found that states with more unionized public sector workers are ranked as having greater per capita debt. The coefficient on *%Union* indicated that on average, higher union density of 10 percentage points is associated with an almost five place lower debt ranking (i.e., more debt per capita). State fiscal problems following the Great Recession have hit union and nonunion states; indeed, much of the southeast and states that went through housing booms have been particularly hard hit. These are states that tend to have limited public sector collective bargaining. Public pension liabilities are large and seriously underfunded in many or most states, union and nonunion. That being said, there is little question that several highly unionized states face particularly large funding deficits for which there are no easy remedies.



## 5. Pay Comparability: The Relative Wages of Public and Private Sector Workers

This section surveys evidence on relative pay among public and private sector workers. I first turn to the tracking of public and private wages over time, as shown in Figure 6. I will offer some insights on public-private differences in wages and benefits, a topic that has received considerable attention of late.

Figure 6 presents mean hourly earnings for all public and all private wage and salary workers (in real 2011 dollars) for the years 1977-2011, plus the public/private wage ratio. Note that these figures do not control for worker, job, and location attributes; hence they do not provide a measure of whether public workers are paid more or less than are similar private workers for similar levels of work (more on this subsequently). Changes of the public/private ratio over time, however, does provide reasonable guidance as to how public sector wages have increased or decreased relative to private pay, assuming that changes in the relative attributes of the two sectors (e.g., age) have not biased changes in the wage ratio in a particular direction. In fact the “raw” public/private wage ratios shown in Figure 6 follow closely the pattern seen in a careful academic analysis of trends in private-public wages that uses the CPS and detailed control variables (see Bender and Heywood 2012, Figures 2-4).



|                        |               |               |               |
|------------------------|---------------|---------------|---------------|
| Pub/Priv Wage Ratio    | 1983: 1.12    | 1993: 1.20    | 2011: 1.16    |
| Public Wages (2011\$)  | 1983: \$20.07 | 1993: \$21.78 | 2011: \$24.03 |
| Private Wages (2011\$) | 1983: \$17.87 | 1993: \$18.19 | 2011: \$20.77 |

As seen in Figure 6, relative public-private wages tended to rise through the 1980s and early 1990s, dropped sharply in the mid-to-late 1990s as private sector real wages realized healthy growth, and then have held steady or risen slightly since that time. This pattern is evident in the three years included in the table note to Figure 6, the public/private ratio moving from 1.12 to 1.20 to 1.16 during 1983, 1993,

and 2011. Bender and Heywood (2012) also show that the ratio of fringes to total compensation has generally changed little over time in the public relative to private sector, the exception being a recent slower growth of the ratio in the public sector.

In short, there is no obvious evidence that relative public/private wages or benefits have changed in any major way in the years leading up to the Great Recession. What is clear is that current ratios of public-to-private pay are currently lower than they were in the late-1980s and early 1990s.

While the evidence above examines changes in public/private wage ratios over time, a more fundamental question is whether public sector workers are underpaid, overpaid, or paid comparably to “similar” private sector workers in “similar” jobs. The issue of public sector wage and benefit comparability is the focus of the presentation at this conference by Joseph Slater and not the intended focus of my paper. That said, this is an area where I have some knowledge and research experience, so I will offer some brief remarks.

Whether *overall* pay for public sector workers is above or below that for comparable work in the private sector is too broad a question to be informative. Relative public/private pay can differ across federal, state, and local public workers, as well as within each of these categories. For example, postal workers appear to receive a substantial compensation premium relative to the private sector, but these results need not and do not generalize to public workers generally. On average, overall public/private *wage* differentials appear to be small. These can be positive or negative, depending on what one regards as appropriate controls (e.g., union status, employer size). The most important result in the literature, however, is not the level of the *average* public/private wage differential, which is small. What that small average differential masks, however, are what are often substantial wage advantages for lower skill public relative to private sector workers and wage disadvantages for highly skilled public sector professional workers. The most notable feature of public pay is not that it is high or low, but that it is highly compressed.

While wage differences between public and private workers are small on average, there exists a reasonably clear-cut benefits advantage for public sector workers (Gittleman and Pierce 2012; Bender and Heywood 2012). That said, the valuation of benefits for comparable workers in similar levels of work is difficult because of data limitations. My reading of the (rather limited) evidence suggests that for the average worker, the public advantage on benefits is likely to outweigh any disadvantage there might be for wages, leading to a modest total compensation advantage for the average public worker (for a different view, see Lewin et al. (2012), who conclude state and local workers receive lower compensation on average). As previously noted, what is most notable is not the average public-private difference, but the lower dispersion in wages and benefits than in the private sector.

Also of note is that the types of benefits, as well as their costs, can differ between the private and public sectors. This is most evident with respect to pensions. In the private sector, defined contribution

pensions (e.g., 401(k) plans) have become increasingly important, particularly for younger workers, while traditional defined benefit pension plans have faded in importance. There has been a recent but far more limited shift toward defined contribution pensions in the public sector. That said, the public sector remains the last large bastion for traditional defined benefit plans. Moreover, many of these public pension plans are underfunded based on current accounting guidelines. Using more appropriate guidelines that better account for risk and incorporate lower measures of expected returns, underfunding of public (and many private) pension funds is far more serious (e.g., Novy-Marx and Rauh 2009). It is not clear how a number of state and local governments can fully fund and make good on their promises.<sup>3</sup>

In evaluating relative pay, one cannot generally apply direct job matches that compare similar public and private workers in identical jobs. For example, there are few appropriate private sector comparisons for police, firefighters, or prison guards. There are private sector teachers, but the private school sector is tiny and working conditions for teachers across the two sectors are not generally comparable. Absent ideal job matches across the private and public sectors, economists instead compare earnings among public and private sector workers, controlling for measurable worker attributes that proxy skill, along with more limited measures of job type, and location. A typical study will estimate wage regressions, with the dependent variable being the natural log of hourly earnings. Such analysis produces measures of percentage differences between public and private wages, conditional on measured control variables. The Current Population Survey (CPS) is the most common data source for such studies.

In the literature on public/private pay differentials, differences across studies stem in no small part from decisions made regarding appropriate control variables. There is universal agreement that comparing average public versus private wages absent controls is inappropriate. There is far less agreement as to which controls are appropriate (see below). In principle, we want to compare similarly skilled workers performing similar levels of work in similar locations (i.e., labor markets). Absent direct job matches, such a comparison is effected by use of control variables that give workers “credit” for measurable attributes based on how these attributes are rewarded in the private (or combined private and public) labor market. That is, workers are credited by some estimated percentage for additional years of schooling, for age, for living in a large metropolitan area, etc.

A number of control variables are standard and not controversial. These include measures of completed schooling (typically with a large set of categorical variables), years of potential experience since schooling was completed, and a broad set of demographic variables (race, ethnicity, gender, marital status, foreign born, region and city size). Absent direct measures of job skill requirements and working conditions, it is typical to include categorical variables for broad industries and broad occupations,

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<sup>3</sup> Defined benefit (DB) pension plans are structured to reward long-tenured but not short-tenured workers, while at the same time discouraging delayed retirement. Such a benefit structure can make sense where there exists substantial “firm-specific” human capital, as is typical in much of the public sector.

although these have to be used carefully in making public/private comparisons (e.g., the broad public administration industry category contains no private sector workers). Some studies include control variables measuring occupational skill requirements and/or physical working conditions.

There are several control variables whose inclusion in public/private pay analyses is controversial. Most notable is union status, whose inclusion sharply lowers measures of relative public/private pay. Including a control for union status provides union members with a “credit” for being a union member (say 15 percent) that is not included as part of the public/private differential, much like the credit one receives for the skills associated with additional years of schooling. This greatly affects public/private pay differentials since over a third of public sector workers are union members, as compared to under 7 percent of private sector workers. This important issue was noted many years ago by Linneman and Wachter (1990). If union wage premiums are not primarily the result of greater skill or productivity, but instead reflect bargaining power, such a control for union status is inappropriate (Hirsch, Wachter, and Gillula 1999; Gittleman and Pierce 2012). Studies concluding that state and local workers receive lower wages typically obtain this conclusion because they include union status as a control. Bender and Heywood (2012), who are largely agnostic on this issue, provide estimates with and without control for union status.

Other controversial controls include employer size and tenure (years with one’s current employer). Each is associated with higher pay in the private sector, in part because of skill differences and in part for other reasons. It is not clear to what extent public sector workers should be given “skill credits” for working for a large employer (see Hirsch, Wachter, and Gillula 1999 for a discussion). Absent a control for employer size, the private sector comparison is still heavily weighted toward workers in large firms and establishments (most businesses are small, but most employees work at large businesses). As shown clearly by Brown and Medoff (1989), firm *and* establishment size have independent effects on wages, with establishment size being the more important. While recent studies using the CPS are able to control for firm size (using the March CPS), they cannot control for establishment size, which was last available in the CPS in a 1983 supplement. Although nearly all public employees are employed by large “firms,” they need not work in large establishments (i.e., schools, firehouses, and police precincts).

Control for tenure (in addition to age or general experience) is also problematic since causation runs not only from longer tenure (intended as a proxy for accumulated firm-specific skills) to higher wages, but also the other way around; employers who pay more have lower quit rates and thus longer tenure. And because teachers, police, firefighters, and other public employees cannot readily transfer occupation-specific human capital to the private sector, it is not surprising that turnover is low. Because public employees tend to have long tenure due to low quit and layoff rates, estimates of public/private pay are lower when there is control for tenure.

In short, it is easy to obtain the statistical result that public sector workers receive lower pay than do private sector workers if one controls for union status, employer size, and tenure (or some subset of these). I would argue that such controls are generally inappropriate (see Hirsch, Wachter and Gillula 1999). Absent such controls, one is more likely to conclude that public sector wages, on average, are similar or slightly above those for private sector workers, while providing more generous total compensation following an accounting for benefits. As emphasized previously, such estimates are an average and tend to obscure heterogeneity in public/private pay across different sectors.

Absent direct public-to-private job matches, I believe it is informative to include measures of occupational skill requirements and working conditions in wage regressions. In practice, job skill measures are highly correlated with pay, while adverse working conditions are not highly compensable. Given that years of schooling (or degree) and years of potential job experience are imprecise measures of worker and job skill requirements, inclusion of detailed job attributes is an attractive approach. Yet, such analyses have to be interpreted carefully, as seen in studies of U.S. Postal Service workers (Hirsch, Wachter, and Gillula 1999) and public school teachers (Allegretto et al. 2004). In the case of USPS, mail carrier, clerk, and mail handler jobs are evaluated by the U.S. Department of Labor as requiring quite low levels of skill as compared to average private sector jobs.<sup>4</sup> Thus, control for job skill requirements sharply increases estimates of what is already a substantial postal wage premium. Because postal jobs are unusually highly paid given the required skill level, however, they attract workers with more schooling and other skills than are needed to perform the job. Whereas estimates of postal wage premiums absent job skill measures clearly understate the postal wage premium, those controlling for job skill requirements overstate to some degree the premium that accrues to an “over-qualified” postal workforce.

Exactly the opposite result occurs for public school teachers. The skill requirements needed to be an effective teacher (as determined by job analysts and government agencies) are quite high as compared to most occupations throughout the economy. And these occupational skill attributes are highly correlated with pay throughout the economy. Thus, inclusion of job skill measures in a wage regression produces the potentially incorrect conclusion that public school teachers are substantially underpaid (for an example, see Allegretto et al. 2004). Whereas postal workers tend to be overqualified relative to the requirements of the jobs, the average public school teacher may be underqualified. Consistent with this argument is the well-known finding that education majors tend to be among the least able college graduates and that teachers who leave for other occupations typically earn less rather than more outside of teaching.

There are many methodological issues important for the estimation of public/private pay differentials. Two issues receiving recent attention include bias from earnings imputation and from using

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<sup>4</sup> Occupational attributes were measured using the Dictionary of Occupational Titles (DOT) in Hirsch, Wachter, and Gillula 1999). Beginning in 1998, more detailed and regularly updated occupation descriptors are provided by the Occupational Information Network (O\*NET).

a standard estimation procedure (ordinary least squares) for a logarithmic wage equation. Using the CPS, about 30 percent of workers do not report their earnings, instead having their earnings imputed. The Census Bureau imputes their earnings by assigning them the earnings of another worker (a so-called donor) with “similar” characteristics. However, the attributes used to match the earnings of a donor to a worker who does not report earnings does *not* include measures of union status, public/private employment, state of residence, industry, or detailed occupation. As shown by Hirsch and Schumacher (2004) and Bollinger and Hirsch (2006), inclusion of imputed earners cause estimates of wage differentials to be attenuated (biased toward zero) by about 25%. This applies with some force to studies of public/private pay, causing estimates (positive or negative) to be understated.

A second methodological issue concerns bias that can arise using OLS to estimate standard log wage regressions when comparing groups of workers for whom wage dispersion is substantially different (Blackburn 2007). This issue is pertinent for measuring public/private pay since wages among public workers are much less dispersed than among private sector workers. Standard measures cause wage differentials to be overstated (i.e., too positive or too negative). Blackburn suggests alternative estimation approaches that avoid this bias. Some recent studies on public/private pay have taken into account these methodological issues, avoiding the bias from inclusion of imputed earners and use of OLS to measure log (percentage) differentials (e.g., Bender and Heywood 2012; Gittleman and Pierce 2012).

Although the principal focus of this discussion, as well as in much of the literature, is on relative *wage* differences for comparable workers, comparability analysis need not be so restrictive. A broader assessment of comparability (e.g., Hirsch, Wachter, and Gillula 1999), data permitting, should look not only at wages, but also benefits, job tasks, working conditions, job security, quit rates, job queues (applicants per vacancy), and wage gains/losses for workers moving between public and private jobs.

### **Workplace Governance and Public Sector Unions: Gaining Benefits from Voice while Limiting Policy Influence**

The difference between union membership trends in the private and public sectors is striking. Reasons for decline in the private but not public sector are widely recognized. But the implication of these differences is not at all clear. Even if one takes the private sector evolution to historically low levels of union density as inevitable in an increasingly competitive and dynamic global economy, it need not follow that we will or should want to see the same transition in the public sector. The deliberate governance structure that characterizes the practice of collective bargaining and union workplaces has proven to be unsustainable in much of the private sector, but may well be unavoidable in the public sector. Even absent collective bargaining, governance in public sector workplaces is going to be far more formalized, deliberate (or downright sluggish), and politicized than in the private sector, regardless of whether they do or do not have collective bargaining. Public agencies and the delivery of public services

will rarely look like the dynamic, optimizing businesses that tend to arise (but are far from universal) in the private sector. This was true prior to collective bargaining rights in the public sector and will remain true with or without collective bargaining. Yes, collective bargaining matters, but the differences between union and nonunion public agencies/municipalities may be more limited than are governance differences between union and nonunion private sector businesses.

Although reasons for decline in private sector unionism are well known, one can disagree with the weights that should be placed on each factor, the extent to which this process was inevitable, and whether on balance this has been a good or bad thing. Increased globalization (i.e., the movement of goods, capital, and people across borders) and technological change have fundamentally changed the types and location of jobs. Over time, employment has shifted away from production and clerical (among other administrative support) occupations as information technology has eliminated numerous job tasks that are routinized and hence can be programmed (Autor et al. 2003). Employment in manufacturing has declined sharply as productivity has increased and transportation costs have fallen. Increased trade, greater use of outsourcing, and, more recently, the off-shoring of services as well as goods production have increased competition and placed pressure on wages and labor costs.

In short, occupations, industries, and the geographic location of jobs in the private sector have fundamentally changed over time in directions less favorable to union organizing. That said, changes in employment across detailed industries or occupations explain a surprisingly modest amount of the decline in unionism (perhaps a quarter). Most of the decline in unionization occurs within detailed and industries and occupations over time (e.g. Hirsch 2008). Although difficult to disentangle, technological change and the increased competitiveness and dynamism from globalization appear to be the chief culprits in accounting for union decline. Unions in the private sector increase wages and benefits in union relative to nonunion businesses. Relatively little of these increased compensation costs are offset by greater productivity in union than in nonunion establishments. Absent a full offset, union businesses are less profitable, invest less in physical and intangible capital, and tend to have lower growth than do their nonunion companies. This long-run process has gradually but steadily eroded private sector union relative to nonunion employment for at least 40 years, a process that may not be complete.

Of course, increased managerial opposition to union organizing has played no small role in union decline, particularly since the early 1980s at which time the number of union certification elections dropped sharply, well below the rate needed to maintain union density. Because each year there are many millions of jobs being destroyed and many millions being created (net employment growth is the small difference between these two large flows), unions must organize a substantial number of workplaces in order to replace lost union jobs. Absent the ability to do so, membership falls. And since the labor force grows, union must do more than simply replace lost members if they are to maintain union density. Private sector

organizing in the private sector has been insufficient to maintain membership or density, the latter having not yet reached a steady-state even at today's very low levels. Organizing is costly and a smaller membership base provides more limited funding for organizing and political expenditures. Neither managerial opposition nor worker support for union organizing is fully independent of how unions affect economic performance. Thus, it is not surprising that there is opposition to organizing campaigns if unionization is likely to lower profitability and reduce managerial discretion. But the strength (and hostility) of this opposition often goes well beyond what might be justified on economic grounds.

Stronger union support among workers could partially counter the downward trend in union density. But strengthening worker support faces several obstacles. Economists regard union membership as an experience good, with worker sentiment toward unions influenced by past and present unionization in one's community. Hence, declining union density begets future declines in density (Budd 2010). A similar process works with respect to union finances. Declining membership decreases funds available for organizing and political activity. Finally, worker sentiment for joining unions may also have declined due to governmental workplace protections offered workers absent unionization (e.g., antidiscrimination law).

The fundamental importance that competitive forces have played in private sector union decline might be best illustrated by the relative stability of union density in the public sector over the last thirty (or more) years. Unlike private sector employers, state and local governments are fixed in location and entry or exit of governmental entities are rare. This is not to say that state and local governments do not face cost pressures and financial constraints stemming from taxpayer resistance and economic pressures. Such constraints have been clearly visible following the mid-2000s bursting of the housing price bubble and the subsequent Great Recession. But even following these unusually severe economic shocks, what remains is largely the same set of government entities and much of the same public employee workforces seen prior to the shocks. The same types of competitive forces that have caused private sector unionism to wither do exist in the public sector, but they operate at lower orders of magnitude.

I have argued elsewhere that differences in union and nonunion governance have important implications for the private sector, but much less so in the public sector (Hirsch 2008, 2012). While workplace governance differs substantially between union and nonunion workplaces in the private sector, this is far less true in the public sector. Nonunion governance in the private sector provides a high degree of management discretion constrained by employer norms, government regulations/mandates, and incentives and constraints produced by market forces (financial viability and need to attract and retain qualified employees). Governance in the unionized private sector is subject to the above constraints, plus more: a formalized governance structure that relies on collective bargaining, explicit contracts, structured channels for worker voice, and managerial discretion that is constrained. Collective bargaining contracts permit considerable employer discretion in daily operation of a workplace. Flexibility is constrained,



however, with respect to substantive changes in wages, pay methods, benefits, job assignments, or working conditions, each requiring negotiations with the union. Union governance by design is deliberative and often slow to respond to change. Sluggish governance is due in no small part to union democracy. Rank and file members select their union officers and must approve negotiated contracts.

Deliberative governance may be advantageous in static or slow-moving economic environments, but is less well-suited the more dynamic and competitive the economic environment. Decline in private sector unionism has coincided with increasing competitiveness and dynamism. In contrast to the private sector, governance in the public sector is deliberative, political, and highly formalized whether there is or is not collective bargaining. In short, differences between union and nonunion workplaces are far less salient in the public sector than in the private sector. Municipalities and state governments without unions do not have collective bargaining contracts, but they do have civil service procedures that provide for highly formalized governance, codified positions and pay, and the like.

The nonunion governance advantage seen for the private sector – greater managerial discretion in a dynamic and competitive environment – has limited relevance for state and local governments. It is not at all clear that union governance in the public sector is typically or on average a disadvantage as compared to governance absent collective bargaining. Union and nonunion public sector workplaces often look a lot more alike than is the case in private sector workplaces. What public sector representation through unions can provide is a collective voice for workers that is often (but not always) effective and useful in improving the workplace and quality of governance. Formalized voice has the potential to place checks on arbitrary and inefficient public managerial and administrative behavior. Collective voice, be it through union representation or through other forms, can be particularly appropriate for workforces with long-tenured career jobs, common to the public sector. Such career jobs are generally appropriate given the specificity (i.e., non-transferability) of public sector human capital (due, say, to limited private sector criminal justice or teaching opportunities). Most public workers care deeply about their “mission” and the public good. This need not be the case for politicians who come and go. Given the difficulty in moving between public and private sector jobs, an effective vehicle for employee voice is essential.

The discussion above suggests a need for a formalized vehicle of employee voice among public sector workers. It does not necessarily imply that it is essential to have full-blown collective bargaining rights. Even absent full collective bargaining rights, public sector representation can provide voice for workers. We see this in states where there is no collective bargaining, but union workers’ voice is heard at the political table (e.g., historically this was true for teachers in North Carolina). Several states that do not have or allow public sector collective bargaining do have “meet and confer” provisions. Federal workers have unions that provide voice, but (for the most part) do not have traditional collective bargaining rights.

Our goal should be to promote effective but constrained employee voice. Effective voice is good for public workers. It may be good as well for taxpayers and public well-being, bringing to light and limiting political interference and unethical behavior among politicians and public sector managers. It is also important to constrain the influence of public unions on electoral outcomes, policy decisions, and public expenditures since employee interests need not coincide with those of the public. Finding just the right balance and achieving good governance are not easily accomplished. Although I have no expertise as to how these goals can be (and sometimes are) achieved, I am confident that political warfare between politicians and public sector unions does not provide an effective path toward achieving these goals.

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