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LAWS ENABLING PUBLIC-SECTOR COLLECTIVE BARGAINING HAVE NOT LED TO EXCESSIVE PUBLIC-SECTOR PAY

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Executive Summary

Unlike many other countries, when the United States enacted its private-sector labor law, the National Labor Relations Act, in 1935, it did not include public employees within the same or similar framework for collective bargaining. Not until the late 1950s and 1960s did state and local governments grapple with a labor law to govern their rapidly growing public-sector labor forces. No state or local government chose to transplant the private-sector model of collective bargaining; instead they adopted some parts of it, chose to create no bargaining framework at all, or prohibited collective bargaining. This paper describes the rapid growth of labor laws that have enabled public-sector collective bargaining, and examines the effects of various labor law frameworks on public employee wages.

- Only 2 percent of the state and local public-sector workforce in 1960 had the right to bargain collectively. By 2010, that share had grown to 63 percent.
- While early on, many policymakers were concerned about the right to strike, a number of states did eventually extend the right to strike to more than 20 percent of public employees; however, all of these employees are in non–public safety positions. Thus the right to strike has not had catastrophic results in terms of threats to public safety or welfare.
- The right to strike has also not led to massive wage increases: Employees covered by the right to strike

earn about 2 percent to 5 percent more than those without it.

- Public safety employees are effectively covered by binding interest arbitration, which has prevented strikes and has resulted in cost-effective and widely accepted settlements by the participants.
- This research finds no wage effect for public employees covered by collective bargaining attributable to binding interest arbitration when compared with mediation.
- Fact-finding, the most widely employed final dispute-resolution procedure, tends to favor the public employer, resulting in significantly lower wages for public employees, in the range of 2 percent to 5 percent less than other dispute resolution procedures.

Union security provisions, which require employees to contribute to the financial support of the union that has the exclusive right to represent them with respect to terms and conditions of employment, vary by state, locality, and various occupations.

- Dues checkoff, which is widespread in the public sector, has a small positive effect on wages, ranging from 0 percent to 3 percent; however, we suspect it has a major effect on union membership.
- Open-shop laws, which prohibit union security agreements, are associated with significantly lower public-employee wages, with estimates ranging from -4 percent to -11 percent, compared with no policy on union security.
- Agency-shop provisions, which require the payment only of a fee narrowly tailored to support a union's collective bargaining activities, its contract enforcement, and employee grievance processing, are associated with significantly higher wages, ranging from 2 percent to 7 percent for public employees.

In summary, it is difficult to conclude that the relatively small wage effects of collective bargaining have led to serious distortions in the democratic process. Collective bargaining has resulted in higher public-employee wages in the range of 5 percent to 8 percent. There is some indication that collective bargaining has offset employer monopsony power in the public sector (Keefe 2015; Lewin, Kochan, and Keefe 2012), thus not producing excessive or distorted public-employee compensation, and has promoted internal equity (Keefe 2015, forthcoming).

Part I. Introduction

Public-sector unions predate any legal framework for public-sector collective bargaining. In 1892, the Patrolmen's Benevolent Association (PBA) was formed in New York City, followed in 1915 by the Fraternal Order of Police in Pittsburgh (FOP). Each was formed to reduce the workday of police officers from twelve- to eight-hour shifts. In 1916, the American Federation of Teachers (AFT) was formed to improve the professional status of teachers and to seek adequate compensation for their work. In 1917, the International Association of Firefighters (IAFF) was founded to seek better wages, improved safety, and greater fire protection for communities served. In 1932, the American Federation of State, County and Municipal Employees (AFSCME) was formed by professional employees to promote, defend, and enhance the civil service system. Also predating public-sector collective bargaining were professional associations, which would later become unions, such as the National Education Association (NEA), founded in 1857, and the Civil Service Employees Association (CSEA), founded in 1910. These organizations were relatively small, except those that were supported by their public employers, such as the NEA.

Until Wisconsin in 1959 created a framework for municipal collective bargaining, labor legislation in the United States had largely excluded public employees from any legal framework for collective bargaining. The greatest concern about extending the private-sector model was whether public-sector collective bargaining would result

in distortions of democracy that would shift governmental resources disproportionately toward public-employee compensation and expand employment of politically advantaged and powerful groups of public employees (Wellington and Winter 1971). This concern rested on an incorrect economic assumption that the demand for public-sector workers was inelastic because public employers provided essential services without substitutes and were vulnerable to strikes and other types of job actions. Despite this conclusion, even public-sector collective bargaining critics recognized that there were alternatives to strikes: arbitration, fact-finding, mediation, or bargaining without some final resolution mechanism. Another concern was the scope of bargaining, that the relatively broad scope of bargaining in the private sector, if applied to public-sector employment, might distort and disrupt the democratic processes and procedures established in local governments, thwarting democratically decided policy through a labor dispute with an organized minority (Wellington and Winter 1971). These concerns were expressed prior to Proposition 13 in California in 1974, which capped property taxes, and the wave of privatizations of public services that began in the 1970s—both of which put significant constraints on public-employee unions and collective bargaining.

The research presented in this paper empirically investigates the concerns about alternative legislative frameworks, procedures, and policies that the states adopted to address public-employee collective bargaining. This research will show that the most important decision made by each state was whether the public employer has a duty to bargain with a public employee labor organization—thereby conferring a right to bargain to the public-sector workforce; any decisions about which dispute resolution procedure to use, if any, were of secondary importance to whether states accepted or rejected the duty to bargain. A third important type of decision was whether union security agreements would be enforceable in states with a duty-to-bargain law. (Union security clauses require that employees who are not union members but who receive the benefits of a collective bargaining agreement, such as wages, protections against unjust discipline or firings, etc., pay their share of the costs of negotiating and protecting those benefits.)

Each state government that was confronted by the stirrings of public employee unionism in the 1960s faced the same question: Should the legislature apply the private-sector law to public employers and employees? Each state answered, "No." However, some states imported most of the private-sector law, for example, Illinois in 1983. Other states completely rejected the framework and prohibited collective bargaining for all public employees, for example, North Carolina. The result was a pattern of political outcomes in which states with relatively high levels of private-sector union density, traditions of enacting progressive reforms in other areas of public policy, and high and rising per capita incomes were especially likely to enact public-sector collective bargaining legislation (Kochan 1973; Lewin, Kochan, and Keefe 2012). In the last five years, three states—Wisconsin, Indiana, and Michigan—have eliminated many of the rights conveyed to public employees through state laborlaw, but we lack the data to investigate the effects of those reversals, except to note that they have resulted in a substantial decline in public-employee union membership. Wisconsin, for example, reportedly experienced a 34 percent decline in public-employee union membership from 2011 to 2014 (Hirsch and MacPherson 2003 updated with data from their website), but by 2015 the decline was much greater. The *Washington Post* reports that the AFSCME's Wisconsin membership has fallen by 70 percent (Samuels 2015).

This paper in Part II will review the prior research that sought to evaluate the potential benefits and problems created by alternative legal frameworks for public-sector collective bargaining. Part III will introduce a unique data set that merges five decades of Census data cross sections from 1960 to 2010 with the National Bureau of Economic Research (NBER) Public Sector Collective Bargaining Law Data Set (Valleta and Freeman 1988),

which has been updated to evaluate public-sector collective bargaining policies and procedures. Parts IV and V will present an analysis of the data, and will reach some conclusions about the legal frameworks and policies for collective bargaining and their implications for the current American debate about the future of public-employee collective bargaining and public employee unions.

Part II. Public-sector collective bargaining law: review of the research literature

Research has demonstrated the importance of collective bargaining laws in supporting the growth of public employee unions, transforming public-employee associations into unions, and raising earnings of public employees whether they were union members or not. Duty-to-bargain laws significantly increased the probability of unionization. The rate of public-employee union formation more than doubled if a state enacted a duty-to-bargain law between 1977 and 1982 (Zax and Ichniowski 1990). State-level data for 1959–1978 indicate that the rapid growth of teacher unionism during those years was primarily the result of duty-to-bargain laws, whose enactment was the most important cause of the growth in the proportion of teachers covered by union contracts (Saltzman 1985). The 1983 enactment of public-employee labor statutes in Ohio and Illinois brought substantial increases in bargaining coverage, even though public-sector bargaining had been widespread in both states for years (Saltzman 1988). Union density (the share of workers who belong to a union) was one-third higher where employers had a legal duty to bargain with labor unions from 1983 to 2004 (Farber 2005).

Union security legal provisions and prohibitions

In contrast to duty-to-bargain laws, "open shop" laws give all workers, union and nonunion alike, the right to union representation but do not require that the nonunion employees pay the union fees for that representation. (States with open shop laws are called "right-to-work" states by their backers and "no-fair-share" states

Alternative legal and dispute resolution procedures examined in this report

Fact-finding: Nonbinding or advisory arbitration, where the neutral fact-finder makes a finding based on an extensive hearing and witness testimony about the matters in dispute. The finding should encourage the parties to reach a settlement, but neither party is required to accept the finding.

Right-to-strike legislation: Legislation that provides a union with the right to strike when a contract expires and the parties have been unable to reach an agreement.

Binding interest arbitration: Arbitration that occurs after a contract expires and negotiations have not produced an agreement, whereby the parties can submit the outstanding issues to an arbitrator, whose decision is binding.

Binding rights arbitration: Binding rights arbitration occurs, during the life of a contract, after the parties exhaust the grievance procedure in a dispute over rights in the collective bargaining agreement, they can chose to submit the dispute to an arbitrator, who will render a binding award that the parties must implement.

by others.) In one unique study of the public sector, Ichniowski and Zax (1991) estimated that if RTW laws were reversed in states where they exist, the frequency of bargaining units would increase by 111 percent among police departments, 78 percent among fire departments, and 287 percent among public welfare departments. If states without RTW labor laws, however, adopted RTW laws, the frequency of bargaining unions in these three departments would fall by 39 percent, 37 percent, and 66 percent, respectively. Using a different methodology, another study estimated the influence of RTW laws on whether public employees belong to a union. The study found that RTW laws significantly reduce the likelihood of union representation of public employees as a whole and of state, fire, and police employees in particular (Hundley 1988; Moore 1998). Farber, using CPS data from 1983 to 2004 (Farber 2005), reported that union density is almost double where unions are allowed to negotiate agency-shop union-security provisions (provisions that require that employees who are not union members but are represented by a union pay the union a service charge that is a percentage of union dues).

Strikes and alternative public-sector dispute resolution procedures

Strikes were at the center of concerns about public-employee collective bargaining. But Stern and Olson (1982) found that strikes were highest in jurisdictions without duty-to-bargain legislation. A switch from the absence of duty-to-bargain legislation to duty-to-bargain legislation reduced police strikes (Ichniowski 1982). Currie and McConnell (1994) reported that implementing legislation that provides for the duty to bargain reduced strikes by 11 percent, fact-finding legislation reduced strikes by 14 percent, binding-rights arbitration by 21 percent, and even the right-to-strike reduced strikes by 7 percent based on estimates using their sample of 1,005 contracts from 1971 to 1986. They concluded that "no legislation" was the worst form of public-sector collective bargaining legislation since it resulted in the highest rate of strikes, all of which were illegal. Access to interest arbitration provides the most effective deterrence of strikes (Olson 1986; Ichniowski 1982).

Wages and alternative legal and dispute resolution frameworks

Using data on 800 police departments from 1965 and 1978, Ichniowski, Freeman, and Lauer (1989) in a cross-section analysis reported that relative to "no law," the effect of "interest arbitration" raised compensation levels by 21 percent for those covered by a collective-bargaining contract and 20 percent for those not covered by an agreement, and the "duty to bargain" raised compensation levels by 16 percent for those covered by a contract and 12 percent for others without a contract. In their research, the differences between being covered by a contract or not were statistically insignificant, implying large spillover effects to all employees covered by the law, whether or not in a unionized workplace. In their smaller longitudinal data set (163 departments) the results indicated that a switch from "no law" to "arbitration" was associated with higher compensation levels of 16 percent, while they also found that a switch to "duty to bargain" raised compensation levels by 13 percent. These effect sizes are large compared with the effects measured in later periods, probably reflecting the inflation, social, and labor turbulence during the period of their sample.

A 43-state cross-section analysis of the impact of dispute resolution mechanisms on the wages and hours of public school teachers found evidence that the right to strike increased teacher wages by 11.5 percent; binding arbitration availability was associated with a wage effect of 3.6 percent; and fact-finding had no significant influence on earnings. A direct comparison of the right to strike and the right to arbitrate indicated that a legal right to strike affords teachers greater power to increase their earnings (Zigarelli 1996).Among units with a legal duty to bargain between 1978 and 1980, Freeman and Valetta (1988) found a 2.3 percent wage effect from binding arbitration and a 1.4 percent effect from strikes in their cross-section results, and no significant wage effect from arbitration

and a 3.2 percent wage effect from strikes in their longitudinal results (1972–1980).

Studies on binding interest arbitration and pay

No state provides police or firefighters with the full legal right to strike; however only four states, completely prohibit sworn public safety officers from collectively bargaining; four states allow collective bargaining but the agreements are not legally enforceable, 11 states permit collective bargaining for both police and firefighters with enforceable agreements, and five other states (Wyoming, Idaho, Utah, Texas, and Missouri) extend the right only to firefighters. Thirty other states require employers to bargain with police and firefighter employee organizations (U.S. House Committee on Education and Labor 2010). The impasse procedures for police and firefighter bargaining most often end with either binding interest arbitration or fact-finding. There is a strong bias against binding interest arbitration in the United States, largely influenced by the Hicksian neoclassical analysis of strikes, which not only prefers that the parties resolve their own the disputes (a widely shared goal), but also assumes the parties will make an efficient cost-benefit analysis to avoid negative-sum strikes and reach informed resolutions (Hicks 1932). In a Hicksian world, strikes arise from imperfect or asymmetric information (Kennan 1987), but for the most part, this information problem can be resolved through negotiation, information requests, and mediation. This analysis, however, has not been extended to the public sector, where only 20 percent of public employees have the right to strike, while one-third are covered by advisory arbitration. The right to strike has been vigorously debated (e.g., Burton and Krider 1970) in response to Wellington and Winter's (1971) analysis of unbalanced power in the public sector. Additionally, the public availability of information on the governmental employer's financial position should make imperfect or asymmetric information less of a problem in public-sector bargaining.

No one concerned about public safety, however, has recommended a right-to-strike policy be applied to police or firefighters. In fact, it is broadly agreed that as a matter of policy it is important to prevent strikes and job actions by public safety employees. As a result, binding interest arbitration is most commonly used as a procedure for final dispute resolution in police and firefighter negotiations (Farber 2005). Some states have extended binding interest arbitration to other employee groups, as well. Most research on binding interest arbitration, however, focuses on police and firefighters.

Compensation outcomes are often the most controversial issue in public-employee binding interest arbitration (Kochan et al. 2010). Elected officials and union leaders are often quick to denounce decisions arising from interest arbitration as either too generous or too miserly, while the research findings are much more encouraging. An early longitudinal study of interest arbitration found small positive wage effects in the range of 1 to 2 percent in maximum pay rates for urban police officers in the 1970s (Feuille and Delaney 1986).

These findings are consistent with other results. Ashenfelter and Hyslop (2001) used two complementary data sources: a panel data set for the years 1961–1992 on state-level wages of police officers, and individual-level data on police officers from the 1970, 1980, and 1990 decennial censuses. They excluded southern states from their comparisons, since southern states never enacted binding interest arbitration statutes. Approximately half of the states in their sample introduced binding interest arbitration and the remainder either required or permitted collective bargaining. Initial estimates indicated that binding interest arbitration coverage was associated with 8 percent higher wages, but the wage premium was probably not attributable to the interest arbitration itself. The results of what they deemed to be the appropriate specifications showed no statistically significant effect of binding interest arbitration on the level of police wages. This study concluded that there is no strong evidence

that binding interest arbitration tends to raise wage levels (Ashenfelter and Hyslop 2001).

A recent nationwide study (Kochan et al. 2010) examined the effects of binding interest arbitration on police and firefighter wages using census data from 1990 and 2000 found wages of police and firefighters covered by arbitration statutes were not significantly different from wage levels, wage increases, and wage growth for police and firefighters in states in which collective bargaining does not include arbitration (but typically includes mediation and fact-finding). A cross-sectional analysis indicated that wages of police officers covered by a duty-to-bargain law were 20 to 26 percent higher than wages of police officers not covered by an enabling collective bargaining law, but these high earnings may not be attributable to collective bargaining. The states that subsequently enacted the duty to bargain had median wages in 1960 that were approximately 28 percent higher than median wages in states that continued to have no collective bargaining statutes for police officers. In other words, high-wage states enacted binding interest arbitration laws for police, and these states remained high-wage states. This study concluded that binding interest arbitration is an effective tool for avoiding strikes, and it may be a more cost-effective dispute resolution procedure than mediation and fact-finding since it offers a higher degree of finality.

Part III. The data

This study utilizes decennial census data collected from 1960 to 2010 to enable a longitudinal analysis of the effect of public-sector labor law changes on the earnings of five employee groups across 50 states over 50 years. The microdata sample is constructed of five decennial U.S. census cross-section surveys for 1960, 1970, 1980, 1990, and 2000 and the U.S. Census Bureau's American Community Survey for 2010 (Ruggles et al. 2010). The individual weighted sample is restricted to full-time employees who worked for a state or local government entity for a full year in the year prior to the sample. The 1960 census does not identify whether an employee works for federal, state, or local government; therefore the 1960 data utilize only observations from the three identifiable occupations (police officers, firefighters, and teachers).

The main source of information on the public employee labor laws is *The NBER Public Sector Collective Bargaining Law Data Set* developed by Valletta and Freeman (1988). This dataset contains information on state-level public-sector collective bargaining laws from 1955–1984 for five state and local government employee groups in the 50 states. The five employee groups are state government employees, local police officers, local firefighters, local public school teachers, and other local government employees. Kim Rueben of the NBER extended the variables concerned with collective bargaining rights and union security laws through 1996, and I further extended the data for 2000 and 2010.

The data means in **Table 1** indicate that there was a rapid growth in public-sector collective bargaining from 1960 through the 1980s, from 2 percent of public employees covered by the right to collective bargaining in 1960 to more than one-third in 1970, to more than one-half in 1980, to roughly two-thirds in 1990, after which it largely leveled off. During the same period, some states enacted laws to prohibit public-employee collective bargaining for some or all employee groups. In 1960, one in 10 public employees was covered by legislation that prohibited collective bargaining; by 2010, the prohibition had been extended to one in five public employees. Most public employees (89 percent) are covered by a public-employee labor law (including laws that outlaw collective bargaining or merely permit but do not require bargaining). Public employees whose state law neither authorizes nor prohibits collective bargaining may nevertheless be covered by a municipal or county law that can enable collective bargaining, as for example, in Memphis, Tennessee and Birmingham, Alabama. A small number of states, employing 6.5 percent of public employees, have

opted for meet-and-confer laws for some government employers and employees, which require the parties to meet and confer over terms and conditions of employment. A few states permit collective bargaining if both parties are willing to reach an enforceable binding agreement.

There is considerable occupational variation in state public labor laws and occupational or group unionization. For example, professional firefighters have noncontroversially gained the greatest access to collective bargaining rights, which has permitted a high union membership rate of 77 percent (Farber 2005). Firefighters are prohibited from bargaining in only two states, while only four states allow bargaining as a local option but do not allow agreements to be legally enforceable. Another 14 states permit firefighter collective bargaining as a local option with enforceable agreements, and the 30 other states provide a duty to bargain, potentially enabling firefighter collective bargaining in 44 states. In midst of the recent controversies over public-employee labor laws, firefighter collective bargaining has remained stable, although concession bargaining (contracts under which employees need to accept lower wages or make larger contributions to health and pension funds or both) has been widespread. In contrast, teacher collective bargaining laws since 2010 have been a target of substantial reform or elimination in states such as Idaho, Tennessee, Wisconsin, Michigan, Illinois, and Ohio. In 2010, 35 states had laws that required teacher collective bargaining, while five states prohibited teacher collective bargaining; the other states provided various local options, leading to a teacher union-membership rate of 70 percent (Farber 2005). Dissatisfaction over educational outcomes and achievement, along with new opportunities to launch potentially profitable education businesses, a financial and economic crisis, and public disdain of perceived superior conditions of employment for teachers, has led some politicians to seek to restructure the legal employment frameworks for teachers. This type of political ebb and flow provides some of the variation across occupations, states, and time that this research utilizes to investigate the impact of public-sector labor-law frameworks.

Over time, dispute resolution procedures have undergone a somewhat surprising evolution given the widely shared concerns about the right to strike in the public sector. In 1970, the right to strike in the public sector was negligible, covering 0.1 percent of public employees. Census data show that by 1980, the right to strike had been extended to cover 9 percent of public employees and by 1990, 21 percent of public employees were in jobs covered by the right to strike. The growth of the right to strike suggests that it did not have the catastrophic effects predicted by Wellington and Winter (1971), or it was extended, as they suggested, to nonessential services where the public could accept disruption. Or possibly both are true, that non–public safety strikes are neither catastrophic nor shift power excessively to public employees. In contrast to the right to strike, interest arbitration, which has been shown to be a cost effective and widely accepted alternative to the right to strike, has grown slowly and not broadly, covering only 7.7 percent of public employees in 1980 and never covering more than 9.7 percent of public employees.

Fact-finding, the practice of advisory arbitration, remains the most widely enacted final dispute-resolution procedure, with one-third of public employees covered by laws that provide for fact-finding. With fact-finding, the public employer retains the right to implement its final offer, even if that offer is revised or rejected by the fact-finder. Somewhat surprisingly, mediation, which is widely available to facilitate settlements (49.6 percent) in most formal dispute resolution processes, is the final dispute resolution process that covers 7.9 percent of public employees. Mediation services are increasingly rare in meet-and-confer processes, as the public employer retains the strong unfettered right to implement changes after meeting and conferring with the employees' representative. One could reasonably expect that dispute resolution

TABLE 1

State and local government employees' characteristics (mean) and shares under different labor legal frameworks, by decade

	1960	1970	1980	1990	2000	2010
Legal frameworks						
Duty to bargain	1.9%	37.8%	53.8%	66.6%	64.8%	62.8%
Collective bargaining prohibited	9.6%	8.8%	13.5%	16.8%	18.4%	19.7%
Meet and confer	1.3%	9.0%	6.1%	8.2%	5.8%	6.5%
No state law	87.1%	44.4%	26.5%	8.4%	11.0%	11.0%
Dispute resolution procedures						
Right to strike	0.0%	0.1%	9.3%	21.0%	20.5%	20.4%
Binding interest arbitration	0.0%	1.9%	7.7%	9.2%	9.7%	9.5%
Fact-finding	0.6%	24.7%	37.4%	35.3%	32.9%	32.5%
Mediation final step	0.0%	3.3%	9.6%	8.7%	8.6%	7.9%
Meet-and-confer mediation	0.0%	1.5%	4.2%	3.6%	0.7%	0.8%
Mediation initial step	0.0%	23.3%	49.5%	53.3%	50.9%	49.6%
Dues and fees collection						
Dues checkoff	14.8%	42.6%	75.2%	85.0%	84.0%	83.4%
Open shop	15.8%	17.8%	23.7%	36.1%	38.5%	40.8%
Agency Shop	6.5%	10.5%	55.5%	50.1%	48.0%	45.9%
Characteristics						
Real annual earnings	$35,843	$43,194	$39,105	$45,010	$47,982	$51,552
Years of education	12.2	13.1	13.7	14.0	14.2	14.3
Bachelor's degree only	10.8%	14.8%	14.9%	20.9%	23.8%	26.0%
Graduate education	11.2%	19.7%	24.0%	20.7%	21.4%	27.7%
College graduates plus	22.0%	34.4%	38.8%	41.6%	45.2%	53.7%
Age	40.6	41.8	40.1	41.9	43.4	45.9
Central city resident	31.4%	31.3%	21.6%		13.8%	12.5%
City noncentral resident	26.5%	31.3%	30.2%		27.5%	28.9%
City resident	57.9%	62.6%	51.8%		41.4%	41.5%
Usual weekly hours			41.8	42.4	42.7	42.6

TABLE 1 (CONTINUED)

	1960	1970	1980	1990	2000	2010
Weeks worked in year	49.5	49.1	49.2	49.3	49.4	49.3
Female	26.4%	41.9%	45.5%	49.0%	52.5%	57.1%
Married	76.6%	75.2%	69.1%	68.7%	66.6%	66.9%
Black	9.2%	11.2%	13.6%	12.7%	13.3%	11.9%
Asian	0.8%	1.0%	1.6%	2.2%	2.5%	3.4%
Hispanic	2.3%	2.6%	4.4%	5.9%	7.6%	9.1%
Disabled		2.9%	3.9%	3.4%		
State government employee		31.2%	32.8%	34.0%	33.5%	30.6%
Teacher	10.6%	20.7%	19.6%	20.1%	19.7%	24.5%
Police officer	3.2%	5.0%	5.2%	5.5%	6.5%	5.5%
Firefighter	1.8%	2.4%	2.2%	2.1%	2.1%	1.9%
Other local government employee		40.7%	40.3%	38.3%	38.2%	37.5%
State private sector unionization	29.7%	27.7%	23.1%	16.3%	13.5%	11.8%
Observations	72,278	128,967	422,135	484,578	582,663	144,125

Note: The 1% individual weighted sample is restricted to full-time employees of state and local government who worked for a full year in the year prior to the sample.

Source: Public Use Microdata Sample of the U.S. Census for 1960, 1970, 1980, 1990, and 2000 and American Community Survey for 2010 (Ruggles et al. 2010) and NBER Collective Bargaining Law Data (Freeman and Valletta 1988)

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based on meet-and-confer laws, mediation as the final step in dispute resolution, and fact-finding serve to weaken union collective bargaining power. Whether unions can offset the resulting collective bargaining power deficit through their legally institutionalized political collective action is an empirical question.

Money is the lifeblood of most social institutions in American society, including labor organizations. Unions need a steady flow of revenue to support staff and to provide representation services. Given the complex legal environment of public-employee labor organizations, they tend to be highly dependent on expert legal services. Dues checkoff, whereby union dues and fees are deducted automatically from workers' paychecks with their permission, has enabled most unions to shift their resources away from basic revenue collection and, instead, rely on the employer's payroll services to deduct and transfer funds with, of course, each individual member's consent. Even states such as North Carolina and Virginia, which prohibit collective bargaining, have permitted dues checkoff (although in 2012 North Carolina repealed the checkoff rights for public employees, joining Wisconsin in 2010, and Michigan in 2012 for school employees). More than four out of five public employees (83.4 percent) worked for a government employer that allowed dues checkoff in 2010, though far fewer were represented by a union that had actually negotiated such a provision.

Always controversial, the nature of public employee union security provisions was settled by the Supreme

Court in *Abood v. Detroit Board of Education*, (431 U.S. 209, 1977), which upheld the use of agency-shop clauses requiring that nonunion employees represented by the union pay a service charge equal to union dues, provided that the agency service charges are used to finance collective-bargaining, contract-administration, and grievance-adjustment tasks, and not for political or ideological purposes. In 2010, approximately, 46 percent of public employees were in states that would enforce an agency-fee provision if one were negotiated, down from 55 percent in 1980; whereas 41 percent of public employees were covered by an open-shop legal requirement in 2010, up from 24 percent in 1980. This shift toward open shop frameworks would suggest a diminishment of union collective bargaining power in public employment, possibly as the result of the weakening of union interest group political power,[1] as well as population and employment growth in the "right-to-work" or "no-fair-share" states, which now include Wisconsin, Indiana, and Michigan in addition to the south, southwest, and mountain states (all of which have these laws except for Colorado, Mexico, and Montana).

From the mid-1950s to the 1960s, public-sector pay rose relative to private-sector pay, while beginning in the mid-1970s relative public-sector pay fell (Freeman 1985). Within the span of a decade, the relatively highly paid public-sector workers of the early 1970s lost their real compensation advantage over otherwise comparable private-sector workers. The census data confirm Freeman's analysis. At the same time, public employees' educational levels steadily increased by an average of two years from 12.2 years in 1960 to 14.3 years in 2010. More importantly, the share of college graduates among public employees increased from 22 percent in 1960 to 54 percent in 2010, making public employment one of the most highly educated sectors of the economy.

The average public-sector employee was five years older in 2010 than in 1960 (45.9 years old up from 40.6) and less likely to live in a city (42 percent compared with 58 percent). Public employees worked on average about one hour more per week in 2010 (42.6 hours) than in 1980 (41.8). Average weeks worked per year remained essentially unchanged over the five decades. Most public-sector employees were female in 2010 (57 percent); they were much more likely to be male in 1960 (74 percent). The public employee workforce grew increasingly racially and ethnically diverse between 1960 and 2010. For blacks the growth was modest, from 9 percent to 12 percent of the workforce, for Asians from less than 1 percent to 3.4 percent, and for Hispanics from 2 percent to 9 percent.

The five employee groups in this analysis are state government employees, local police officers, local firefighters, local public school teachers, and other local government employees. Teachers are the largest occupational group, accounting for one-fourth of state and local public employees in 2010. Police and firefighters accounted for a stable portion of public employment at 5.5 percent for police and 1.9 percent for firefighters in 2010. State government employment also has remained stable with 30.6 percent of public employment in 2010. Other local government employment has declined as a percentage of employment from 1970 to 2010 falling from 40.7 percent to 37.5 percent. The 1960 census did not identify state and local government employment, which prevents the reporting of that data for that year.

In summary, these data permit an analysis of the impact on employee earnings of the rapid growth of laws that enable public-sector collective bargaining, which covered only 2 percent of the workforce in 1960 but 63 percent by 2010. This research can also assess the impact of laws prohibiting collective bargaining, which covered 10 percent of public employees in 1960 and 20 percent of the public workforce in 2010. Given the concerns of Wellington and Winter (1971) about strikes in the public sector, these data enable an evaluation of the growth of the right to strike from negligible in 1970 to more prevalent in 2010, covering 20 percent of the public-employee

workforce. In comparison with the right to strike, other dispute resolution procedures, including binding interest arbitration and fact-finding, will be evaluated to determine their relative impact on public employee earnings. The analysis will also assess the effects on public employee earnings of laws permitting dues checkoff and legislation enabling or prohibiting agency-shop provisions.

Part IV. The analysis and results

The models presented in this analysis examine the effect of various aspects of public-sector labor law on public-employee wages. The sample is restricted to full-time employees (working more than 34 hours per usual work week) of state and local government who worked at least 39 weeks in the prior work year, and who had annual earnings above $10,000 in 2010 constant dollars.

The Consumer Price Index was used to adjust annual wages for inflation. The coefficients reported in Table 2 provide the results from various specifications of a standard wage equation, with the natural log of annual wages as the dependent variable. The basic model used in each specification includes variables for each of the 1,631,366 public employees in the sample, for each person's education level, age, weekly hours of work, annual weeks of work, and whether the individual meets any of the following conditions: is female (male omitted); is black, Asian, or Hispanic (white non-Hispanic omitted); lives in a central city or in a city but not the central city (noncity residents omitted); is disabled (nondisabled omitted); and works as a state employee, teacher, police officer, or firefighter (local government employee omitted). Columns 1 and 2 report the results of pooled cross sections with various controls for state and time trend. Columns 3 and 4 report state fixed-effects models, which use the independent variables to explain changes in the law by state. The state is fixed. With a time variable (column 4) both the state and the year become fixed as the independent variable seeks to explain the changes of the dependent variable.

In Table 2, Panel A the results are reported in relation to states that did not enact a collective bargaining law for one of the five employee groups over the 50 year period. In other words, the data columns show how much higher or lower the wages of employees in states with certain legal framework relative to wages in states with no policy on labor relations. Enactment of a labor policy was associated with higher earnings regardless of whether the law prohibited collective bargaining, enabled the parties to meet and confer, or provided for the duty to bargain. The duty to bargain is associated with the highest earnings, but as controls are added the premium shrinks and becomes negligible in the state fixed-effects model with a time trend. Columns 2 and 3 probably provide the best estimates of the effects of the duty to bargain, showing wages 5 percent to 8 percent higher for workers covered by this legal framework (from panels A and B). The effect of prohibiting collective bargaining is somewhat surprising. The wage effects are sizeable and significant, in the range of -6 percent to 6 percent, when compared with workers covered by no state law, and may reflect growing employment in those states. Meet and confer laws have positive and significant wage effects in the range of 2 percent.

Table 2, Panel B examines the duty to bargain in relation to all other laws, rather than to no law. Here the effect sizes increase slightly, associated with wages that are 6 percent to 8 percent higher; however, when the fixed-effects time trend is added to the model, the effect size falls to barely above zero.

In summary, Table 2 demonstrates that labor laws, even those that establish a duty to bargain, are associated with higher wages but not of the magnitude suggested by fears that they would shift governmental resources toward extravagant public-employee compensation.

Table 3 examines the impact of alternative dispute resolution procedures on employee wages. Panel A provides estimates for the entire sample of public employees, relative to mediation as the final process, and finds that

TABLE 2

The effects of different labor legal frameworks on public-employee wages

	Pooled cross-section 1960-2010		Fixed effects	
	(1)	(2)	(3)	(4)
Panel A. Relative to no policy				
Collective bargaining prohibited	-1.25%	-5.76%	5.80%	2.04%
Meet and confer	3.84%	2.07%	1.87%	-0.33%
Duty to bargain	10.36%	4.97%	6.70%	0.81%
State control added	Yes	Yes	Yes	Yes
Time control added	No	Yes	No	Yes
Observations	1,631,366			
Panel B. Relative to all other policies				
Duty to Bargain	10.68%	7.62%	5.54%	0.53%
State control added	Yes	Yes	Yes	Yes
Time control added	No	Yes	No	Yes
Observations	1,631,366			

Note: The dependent variable is the log of annual wages. The 1% individual weighted sample is restricted to full-time employees of state and local government who worked for a full year in the year prior to the sample. Every figure in the table is statistically significant at the .01 level.

Source: Public Use Microdata Sample of the U.S. Census for 1960, 1970, 1980, 1990, and 2000 and American Community Survey for 2010 (Ruggles et al. 2010) and NBER Collective Bargaining Law Data (Freeman and Valletta 1988)

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the effect sizes are modest. Focusing on columns 2 and 3, which provide results that control for state and time trend and for state fixed-effects, the wage effects are -1 percent to -3 percent for fact-finding, 3 percent to 4 percent for binding interest arbitration, and 5 percent to 6 percent for the right to strike. Panel B reports estimates for the alternative dispute resolution procedures, among the employees who are covered by duty-to-bargain legislation. For those employees, fact-finding is associated with a -2 percent to -5 percent employee wage penalty, arbitration has a small wage effect of less than 1 percent, and the right to strike is associated with higher wages in the range of 2 percent to 5 percent.

Table 4, Panel A reports estimates of the impact on public-employee wages of alternative dues collection laws. Dues checkoff is widespread and has a small positive effect on wages ranging from 0 percent to 3 percent (across all four data columns); however, we suspect it has a large effect on union membership. Open-shop laws are associated with significantly lower public-employee wages, with wage penalties ranging from -5 percent to -11 percent, with the exception of the state fixed-effect estimate of -4 percent. Agency-shop provisions are associated with significantly higher wages ranging from 2 percent to 7 percent for public employees. Table 4, Panel B examines the effect of agency-shop laws on public-

TABLE 3

The effects of alternative dispute resolution procedures on public employee wages

	Pooled cross sections 1960–2010		Fixed effects	
	(1)	(2)	(3)	(4)
Panel A. All public employees, relative to mediation				
Fact-finding	-1.77%	-1.43%	-2.66%	-2.28%
Binding interest arbitration	3.38%	2.54%	4.00%	3.04%
Right to strike	8.57%	5.38%	5.16%	0.94%
State control added	Yes	Yes	Yes	Yes
Time control added	No	Yes	No	Yes
Observations	1,633,501			
Panel B. Public employees covered by a law with a duty to bargain, relative to mediation				
Fact-finding	-4.29%	-2.39%	-4.55%	-2.46%
Binding interest arbitration	0.06%*	-0.35%*	0.76%	0.35%
Right to strike	4.44%	1.56%	4.57%	1.30%
State control added	No	No	Yes	Yes
Time control added	No	Yes	No	Yes
Observations	1,016,555			

*Every figure in the table is statistically significant at the .01 level except for these figures, which are statistically significant at .05

Note: The dependent variable is the log of annual wages. The 1% individual weighted sample is restricted to full-time employees of state and local government who worked for a full year in the year prior to the sample.

Source: Public Use Microdata Sample of the U.S. Census for 1960, 1970, 1980, 1990, and 2000 and American Community Survey for 2010 (Ruggles et al. 2010) and NBER Collective Bargaining Law Data (Valletta and Freeman 1988)

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employee earnings among those employees covered by dues-checkoff legislation. Compared with the open-shop laws, agency-shop provisions are associated with higher wages ranging from 5 percent to 12 percent; except that the state fixed-effect indicates a small negative effect. In summary, dues checkoff appears to have a small effect on wages, open-shop laws have a significant negative impact on public employee wages, and agency-shop provisions are associated with significantly higher wages for public employees.

Part V. Discussion and analysis

As noted earlier, no state government chose to wholly transplant the private-sector model of collective bargaining, but states did import pieces. While many policymakers were concerned about the right to strike, many states did extend the right to strike; as of 2010, this right extended to more than 20 percent of public employees, none of whom are in public safety positions. The right to strike has not had catastrophic results. Relative to medi-

TABLE 4

The effects of dues checkoff, open shop, and agency shop law on employee wages

	Pooled cross-sections 1960-2010		Fixed effects	
	(1)	(2)	(3)	(4)
Panel A. All public employees, relative to no policy				
Open shop	-7.14%	-11.20%	-4.43%	-4.86%
Dues checkoff	2.90%	-0.40%	3.19%	-0.05%
Agency shop	5.28%	6.57%	2.03%	4.95%
State control	Yes	Yes	Yes	Yes
Time trend	No	Yes	N0	Yes
Observations	1,631,366			
Panel B: Public employees with state dues-checkoff policy, relative to open shop policy				
Agency shop	7.86%	12.08%	-0.75%	4.59%
State control	Yes	Yes	Yes	Yes
Time control	No	Yes	No	Yes
Observations	1,336,812			

Note: The dependent variable is the log of annual wages. The 1% individual weighted sample is restricted to full-time employees of state and local government who worked for a full year in the year prior to the sample.

Source: Public Use Microdata Sample of the U.S. Census for 1960, 1970, 1980, 1990, and 2000 and American Community Survey for 2010 (Ruggles et al. 2010) and NBER Collective Bargaining Law Data (Valletta and Freeman 1988)

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ation coverage, employees covered by the right to strike earn about 2 percent to 5 percent more than those without it. Public safety employees are effectively covered by binding interest arbitration, which has prevented strikes and has resulted in cost-effective and widely accepted settlements by the participants. As with other studies of binding interest arbitration, this research finds no wage effect attributable to interest arbitration for public employees covered by a duty-to-bargain law when compared with mediation and only a small effect, in the range of 3 percent to 4 percent higher, for all public employees when compared with mediation. The results reported in this analysis indicate that fact-finding, the most widely employed final dispute-resolution procedure, tends to favor the public employer, resulting in significantly lower wages for public employees in the range of 2 percent to 5 percent less than mediation.

In summary, it is difficult to conclude that the relatively small wage effects of public-sector labor laws have led to serious distortions in the democratic process. Collective bargaining has resulted in higher public employee wages in the range of 5 percent to 8 percent. There is some indication that collective bargaining has offset employer monopsony power in the public sector (Keefe 2015; Lewin, Kochan, and Keefe 2012), thus not pro-

ducing excessive or distorted public-employee compensation.

The research on public expenditures further confirms that there are few if any shifts in public expenditures attributable to collective bargaining. Using longitudinal models on data from 700 cities between 1977 and 1980, Valleta (1993) found little support for the claim that union bargaining and political activities resulted in a demand shift. Zax (1989), on the other hand, using data from 13,749 departments of city and county governments with unchanged union status between 1977 and 1982, reported that municipal unions in units with a duty to bargain were associated with a 3.1 percent greater departmental employment and an 8.5 percent greater monthly payroll per employee than departmental units without a duty to bargain. However, Trejo (1991) found evidence of simultaneity bias that contaminated previous estimates of positive employment effects by municipal labor unions. Using data on teachers union certifications from Iowa, Indiana, and Minnesota, Lovenheim (2009) examined the effect of teachers unions on school district resources. Lovenheim found no net impact on per student district expenditures. Lindy (2011) used the 1999 sunset and 2003 reauthorization of public-employee collective bargaining in New Mexico to examine the impact of mandatory collective bargaining laws on public schools. Employing a fixed-effects model, Lindy found that mandatory bargaining had no significant impact on per-pupil expenditures. Frandsen (2012) reported cross-section results showing that states with collective bargaining laws have much higher per-pupil salary and educational expenditure than states without such laws (with a 10 percent greater salary per pupil and a 12.3 percent greater educational expenditure per pupil); however, the fixed-effect models showed results that are very close to zero for all specifications of log per-pupil salary and for log per-pupil expenditure, and statistically insignificant for the most reliable estimates. This finding follows the state pattern on wages, i.e., the states with higher expenditures on education were also the states that adopted collective bargaining for public employees. Collective bargaining did not cause higher education expenditures, but it is associated with greater expenditures.

The research to date, however, has not examined the impact of the scope of bargaining on either employee earnings or the impact of union bargaining on public issues normally reserved for democratic decision-making. This is important area for future research investigation. The scope of bargaining varies greatly by state (Najita and Stern 2001) even where there is a duty to bargain.

Part VI. Conclusion

Critics of public-sector collective bargaining based on the private-sector model have raised concerns that it could result in distortions of democracy that would shift governmental resources disproportionately toward public-employee compensation and result in the overemployment of economically and politically advantaged and powerful groups of public employees (Wellington and Winter 1971). This fear was never realized. The full private-sector model was never transplanted. The various state public labor laws that permitted collective bargaining resulted in relatively small pay increases for public employees. In many circumstances, even where there is a duty to bargain, the public employer has retained considerable power by adopting laws that provide for mediation and fact-finding as the final steps in dispute resolution. In addition, the public employer has also preserved the right to privatize public services and has demonstrated a willingness to privatize services, often earning elected officials political support from the private interests that benefit directly from the privatization.

Binding interest arbitration, however, with strong strike prohibitions and penalties, has been widely accepted by employees in public safety, where demand for labor may be inelastic. Elsewhere, there are alternatives to the public provision of services and the public has tolerated inconveniences resulting from labor disputes rather than support tax increases. The alternatives to

strikes—arbitration, fact-finding, mediation, or bargaining without some final resolution mechanism—have become increasingly legitimate and accepted as fair; consequently strikes have steadily lost public support, except in exceptional circumstances.

While criticism of public-sector labor law continues, in political disputes about it, the public has consistently expressed support for the right of public employees to engage in collective bargaining (Keefe 2010; Freeman and Han 2012). Whether the public employer has a duty to bargain remains the threshold issue in public-employee labor relations. A clear majority of public employees (63 percent) possessed that right in 2010; however, this share reflects the absence of a consensus on the value of public-sector collective bargaining and public-employee unions. Nonetheless, public-sector collective bargaining laws and unions constitute an effective force in securing competitive market compensation for public employees (Keefe 2015) and an anchor for middle-class employment in an increasingly polarized labor market.

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Endnotes

1. In contrast to the rising open shop employment, as recently as 2009, public labor laws were tilting towards unions. Between 2000 and 2009 a total of eight states enacted card-check legislation for public-sector employees (Chandler and Gely 2011), while only Indiana retreated from collective bargaining. In his first day in office in 2005, Indiana Governor Mitch Daniels signed an executive order ending collective bargaining with state public-employee unions.

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