

Compensation for State and Local Government Workers[†]

Maury Gittleman and Brooks Pierce

Are state and local government workers overcompensated? This question has taken on considerable heat in the last year or two, as many states and localities face budgetary stress. In this paper, we step back from the highly charged rhetoric and address this question with the two primary data sources for looking at compensation of state and local government workers: the Current Population Survey (CPS) conducted by the Bureau of the Census for the Bureau of Labor Statistics, and the Employer Costs for Employee Compensation (ECEC) microdata collected as part of the National Compensation Survey (NCS) of the Bureau of Labor Statistics. The fundamental difference between these two sources of data is that the CPS is a household survey while the ECEC is a survey of employers. Data from the NCS have been used in studies of union–nonunion, interindustry, and occupational wage differentials (Gittleman and Pierce 2007, 2011; Levenson and Zoghi 2011) and in studies of compensation inequality (Pierce 2001, 2010). However, while NCS publications regularly present tabulations separately for the private sector, on the one hand, and state and local government, on the other, the microdata from the NCS have not been previously used to compare compensation in the private sector to that in the state and local government sectors.

We begin by presenting some tabulations on pay differences across sectors from these two data series—both raw pay differences between public and private sectors and also some breakdowns by education level of workers (for the Current Population Survey) and skill level of the job (for the Employer Costs for Employee

■ *Maury Gittleman and Brooks Pierce are Research Economists, Bureau of Labor Statistics, Washington, D.C. Their e-mail addresses are <gittleman.maury@bls.gov> and <perce.brooks@bls.gov>.*

[†]To access the Appendix, visit <http://dx.doi.org/10.1257/jep.26.1.217>.
doi=10.1257/jep.26.1.217

Compensation series). We also discuss some important differences between these two data sets: in particular, the ECEC data has the considerable advantage that it includes costs of fringe benefits.

In both data sets, the workers being hired in the public sector have higher skill levels than those in the private sector, so the challenge is to compare across sectors in a way that adjusts suitably for this difference. We look at current wage and compensation gaps, trends in these gaps over time, and public–private differentials at different points of the distribution. We explore a number of methodological choices appearing in this literature, like whether or how to adjust for occupation or the size of an employer, and seek to understand which of these choices are important.

After controlling for skill differences and incorporating employer costs for benefits packages, we find that, on average, public sector workers in state government have compensation costs 3–10 percent greater than those for workers in the private sector, while in local government the gap is 10–19 percent. We caution that this finding is somewhat dependent on the chosen sample and specification, that averages can obscure broader differences in distributions, and that a host of worker and job attributes are not available to us in these data. Nonetheless, the data suggest that public sector workers, especially local government ones, on average, receive greater remuneration than observably similar private sector workers. Overturning this result would require, we think, strong arguments for particular model specifications, or different data.

Descriptive Statistics

Some tabulations for the raw wage gap between employees of state and local government and private sector employees are provided in Tables 1A and B. The first three columns of each table show the proportions of employment for state government, local government, and private sector workers, and then average hourly and weekly earnings by sector. In both datasets, the raw wage gap shows public sector workers being paid more. In the Current Population Survey data, the raw gap in hourly earnings is about 4 percent; in the Employer Costs for Employee Compensation data, hourly wages in the government sectors exceed those in the private sector by an average of about 30 percent.

To understand these numbers more deeply, it's useful to look more closely at the underlying data sources. The Current Population Survey is a monthly survey of about 60,000 households. In any given month, one adult household member reports employment and other information for each member of the household. A subset of households reports earnings and hours information. These are the “outgoing rotation groups,” and each year since 1979 these interviews are gathered together into a single Merged Outgoing Rotation Group (MORG) file. The CPS-MORG includes demographic information on schooling and age, and information on jobs held such as industry, occupation, and the employer's sector, including state

Table 1A

Employment, Earnings, and Education by Ownership (Current Population Survey Data)

	Sample fraction	Average hourly earnings	Average weekly earnings	Fraction with education level				
				Less than high school	High school degree	Some college	College degree	Post-graduate
State government	.056	\$22.55	\$965.32	.017	.166	.246	.281	.290
Local government	.099	\$22.33	\$965.92	.026	.188	.256	.280	.251
Private sector	.845	\$21.55	\$960.58	.087	.300	.301	.217	.096
Combined sample	1.0	\$21.69	\$961.41	.077	.281	.293	.227	.122

Source: Based on data from the 2009 Current Population Survey, Merged Outgoing Rotation Group (CPS-MORG) file.

Notes: "Sample fraction" gives the hours-weighted sample proportion for each ownership group. Average weekly earnings are for full-time workers only. Sample size: 112,579.

Table 1B

Employment, Earnings, and Work Level by Ownership (National Compensation Survey Data)

	Sample fraction	Average hourly earnings	Average weekly earnings	Fraction with work level				
				Missing	1-4	5-8	9-12	13-15
State government	.039	\$25.79	\$1,016.70	.091	.197	.450	.241	.020
Local government	.101	\$26.38	\$1,055.07	.092	.281	.340	.284	.003
Private sector	.860	\$20.18	\$877.42	.107	.513	.268	.104	.007
Combined sample	1.0	\$21.18	\$903.90	.105	.478	.283	.128	.007

Source: Based on data from the Employer Costs for Employee Compensation (ECEC) in the 2009 National Compensation Survey (NCS).

Notes: NCS interviewers assign a level of work to all jobs in the survey, which ranges from 1 to 15, corresponding to pay levels in the General Schedule that sets levels of pay for federal workers. "Sample fraction" gives the hours-weighted sample proportion for each ownership group. Average weekly earnings are for full-time jobs only. Column entitled "Missing" provides proportion of jobs where work level information could not be obtained or in occupations that are considered "unlevelable." Sample size: 303,295.

government, local government, or private sector. For the CPS panel, Table 1A, the final five columns show a breakdown by education level. It's clear that state and local government employees are much more likely to have college degrees and post-graduate degrees than are private sector workers. Thus, later sections of this paper will seek to analyze what difference it makes to adjust these wage gaps by education level and other factors.

Table 1B shows descriptive statistics based on the Employer Costs for Employee Compensation, which is part of the National Compensation Survey (NCS). The NCS is a longitudinal establishment survey of nonfederal and nonagricultural employers. Interviewers visit newly sampled establishments and obtain information on the establishment and the jobs of a random sample of workers in the establishment. Jobs are defined using the employer's most narrow occupational classification or job title and other dimensions, including union coverage and full-time status. Information on individuals' earnings, job work schedules, and job work levels (described below and in the online Appendix available with this paper at (<http://e-jep.org>)) is collected, but demographic information on job incumbents is not.

Because this survey captures information on the number of hours per week and weeks per year that employees in a job are scheduled to work, this information can then be used to convert earnings and compensation into hourly statistics. However, a potential problem arises here: the information on hours reflects employers' conceptions of scheduled work time. In most cases, work schedules are standard and easy to collect. However, an important exception for this study involves primary and secondary school teachers, whose actual hours worked per week are generally not available because time spent in lesson preparation, grading, and other nonclassroom activities are not available to employers. These data use the length of workday as specified by contract ("contract hours") for teachers in determining the work schedule, but given that, on average, teachers work more hours than their contract requires, the estimates of hourly earnings will be higher than if actual hours could be used (Schumann 2008; Allegretto, Corcoran, and Mishel 2004). Because of this measurement issue, we primarily analyze weekly earnings shown in the third column of the table, and we also restrict samples to full-time jobs (to help control for differences in weekly hours). When analyzing Employer Costs for Employee Compensation hourly earnings, we exclude certain occupations where contract hours are prevalent. We refer to this as "excluding teachers," even though that category includes much smaller job classifications in nonteaching occupations with collected contract hours, such as airline pilots, flight attendants, and others.¹ With the weekly earnings sample, state and local government earnings exceed those of the private sector by around 16–20 percent in the ECEC.

Although the National Compensation Survey does not collect information on education and experience by employee, the information on job levels can be used to compare pay at different skill levels across government and nongovernment jobs. This situation arises because the President's Pay Agent—an interagency group consisting of the Secretary of Labor and the Directors of the Office of Management and Budget and the Office of Personnel Management—uses the National Compensation Survey data to compare rates of pay for federal workers to nonfederal rates of pay, as called for by the Federal Employees Pay Comparability Act of 1990. For this reason, NCS interviewers assign a level of work to all jobs in the survey, which

¹ This does not exclude the entire educational sector. See the online Appendix available with this paper at (<http://e-jep.org>) for more information on measurement issues related to teachers' hours worked.

ranges from 1 to 15, corresponding to pay levels in the General Schedule system. In Gittleman and Pierce (2011), we demonstrate a close relationship between, on the one hand, education and experience in jobs in the Current Population Survey, and on the other, the factors underlying the work levels assigned to jobs by the National Compensation Survey interviewers.

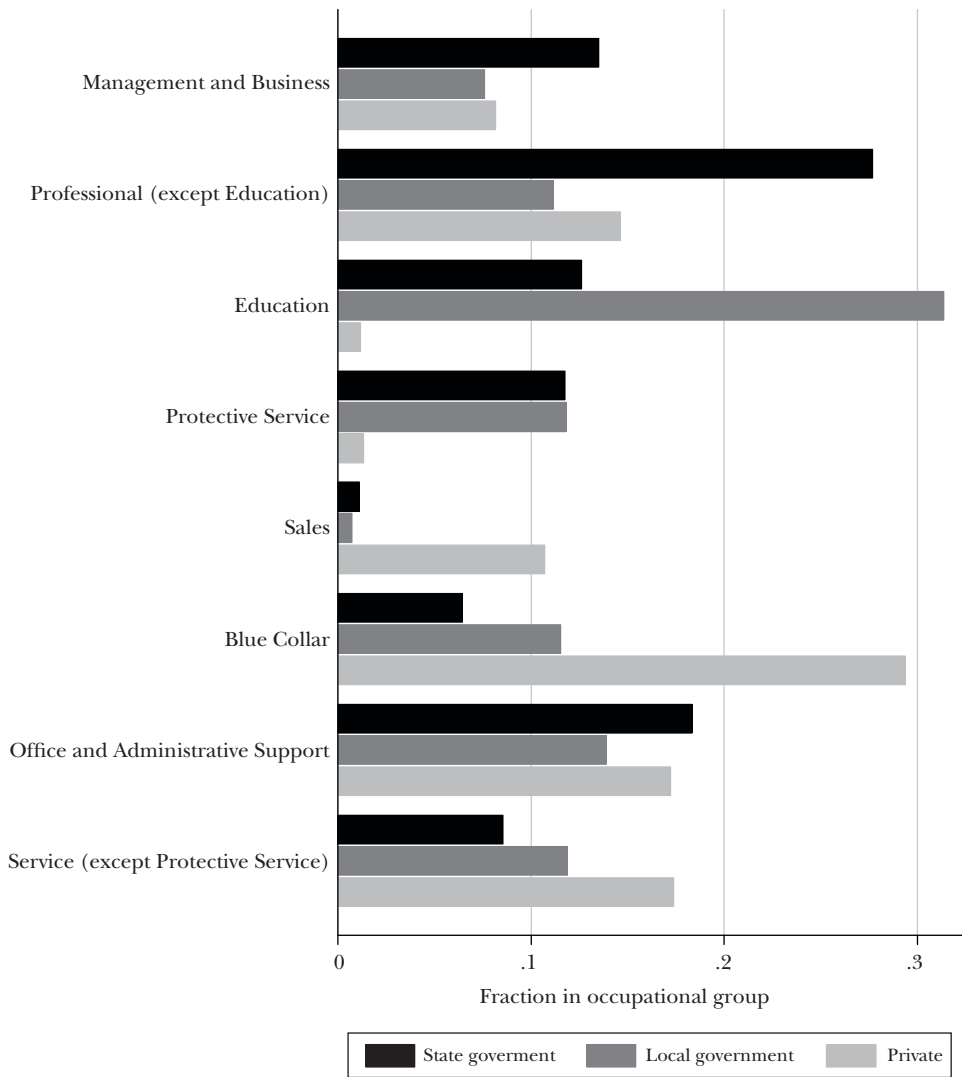
In the last few columns of the Table 1B, we first divide work levels into four categories, though only a small amount of employment is at the highest work levels (13–15). It is immediately apparent that a far higher fraction (0.513) of employment in the private sector is in the bottom category of work levels (1–4) than is the case for the local (0.281) and state governments (0.197). Again, this means that controlling for skill differences across sectors should substantially reduce estimated pay gaps.

Figure 1 presents, for the ECEC, the distribution of employment across eight occupational groups, formed by aggregating the 22 two-digit occupations in the Standard Occupational Classifications.² To focus on occupations that are important in government, Education remains split out from other Professional occupations, while Protective Service is kept separate from other Service. The occupational groups are ordered from high earnings at the top to low earnings at the bottom, based on earnings from all sectors combined. Consistent with the skill differences evident in Table 1A and B, the government proportions tend to be higher in the occupations at the top, and the private shares greater in those occupations at the bottom. Highlighting the difficulty of making private–government comparisons, even at this level of aggregation, some occupations, such as sales, are virtually all private, while others are almost all public. Differences between state and local government are also evident, with state government having higher concentrations in Professional and Management, and local government being disproportionately represented in Education. As one might expect, this coarse level of aggregation hides some interesting distinctions. For example, within the Education group, employment is relatively concentrated in kindergarten and preschool for the private sector, in primary and secondary teaching for local government, and in postsecondary teaching for state government.

Along with data on wages, the Bureau of Labor Statistics also collects the information on benefit costs necessary to compile the Employer Costs for Employee Compensation data for roughly half of the National Compensation Survey sample.

² The 22 two-digit Standard Occupation Classification codes are mapped into eight groups in Figure 1 as follows. *Management and Business* includes 1) Management and 2) Business and Financial Operations. *Professional, except Education* includes 1) Computer and Mathematical; 2) Architecture and Engineering; 3) Life, Physical, and Social Science; 4) Community and Social Services; 5) Legal; 6) Arts, Design, Entertainment, Sports, and Media; and 7) Healthcare Practitioner, and Technical. *Education* has no official subcategories but includes jobs in Education, Training, and Library. *Protective Service* has no subcategories. *Sales* has no subcategories. *Blue Collar* includes 1) Farming, Fishing, and Forestry; 2) Construction and Extraction; 3) Installation, Maintenance, and Repair; 4) Production; and 5) Transportation and Material Moving. *Office and Administrative Support* has no subcategories. *Service, except Protective Service* includes 1) Healthcare Support; 2) Food Preparation and Serving Related; 3) Building and Grounds Cleaning and Maintenance; and 4) Personal Care and Service.

Figure 1
Occupation Distributions by Sector



Source: Employer Costs for Employee Compensation (ECEC) in the 2009 National Compensation Survey (NCS).

Broadly speaking, this includes employer costs associated with paid leave, health and other insurance plans, retirement and savings plans, certain forms of supplemental pay, and legally required benefit costs (such as Social Security), but excludes costs associated with retiree health plans. The ECEC data are converted to a cost-per-hour-worked average for incumbents within a job. It should be noted that these data

can be difficult for a respondent to report. As an example, there is a certain amount of measurement error involved in getting job-specific data for some of the components of the ECEC because respondents are sometimes able to report data only for a broader group than the job incumbents, such as the average for all white-collar workers or for all workers. To give another example, it is quite difficult to price out the defined benefit pension obligations associated with current employees, and the NCS typically reverts to employer expenditures, which will depend on account funding rules and plan asset investment returns. It is possible that these kinds of measurement errors are not randomly distributed across the data, but, instead, that certain errors are more common in certain sectors.³

It is commonly understood that nonwage benefits form an important part of public sector compensation packages. Government workers are much more likely to be offered health insurance and retirement plans, and are more likely to enroll in such plans if offered. In addition, public sector plan structures tend to offer more comprehensive coverage. Public sector health plans tend to require lower employee contributions and have higher employer premiums, and are more likely to come bundled with supplemental dental, vision, or prescription drug plan components. Private sector retirement plans, when offered, are typically defined contribution plans rather than higher-cost defined benefit plans. Furthermore, differences exist within retirement plan type; for example, public sector defined benefit plans are more likely to include post-retirement cost-of-living adjustments. Public workers are also more likely to be eligible for retiree health benefits.⁴

Table 2 shows that such qualitative differences factor into employer costs. As the table indicates, the costs per hour worked for the various benefits collected are much greater in the public sector (about \$14) than in the private sector (around \$8). Spending on health insurance in the government (\$4.30 at the state level and \$4.56 at the local level) is more than double that in the private sector (\$2.14), while expenditures on retirement and savings are more than triple (\$3.18 and \$3.37 versus \$1.00). Within retirement and savings, the vast majority of spending in government goes toward defined benefit plans, while in the private sector, the breakdown is much more even between defined benefit and defined contribution plans. Paid leave is also more generous in government, more than double the private sector level in state government and more than 50 percent higher in local government. For the remaining category of “other benefits,” which includes nonproduction bonuses, short- and long-term disability benefits, and all legally required benefits, the private sector has an edge. Two explanations for this are that bonuses tend to be higher in the private sector and that not all government workers are covered by Social Security.

³ Another proviso is that employer costs for wages and benefits will differ from employee valuations of those same wages and benefits due to a number of considerations: taxes; the fact that benefits are not always easily adjustable to a given worker’s desired level; and any divergence between an employer’s price for a benefit and what an employee would have to pay as an individual (Famulari and Manser 1989).

⁴ See (<http://www.bls.gov/ncs/ebs/benefits/2010/ownership.htm>) (Bureau of Labor Statistics) for supporting statistics.

Table 2

Employer Costs per Hour Worked and as a Percentage of Compensation, by Sector

<i>Compensation component</i>	<i>Average cost per hour worked (\$/hr)</i>			<i>Percent of compensation (%)</i>		
	<i>Private</i>	<i>State govt.</i>	<i>Local govt.</i>	<i>Private</i>	<i>State govt.</i>	<i>Local govt.</i>
Wages and salaries	20.37	25.79	26.38	71.6	64.5	66.1
Total benefits	8.08	14.18	13.50	28.4	35.5	33.9
Health insurance	2.14	4.30	4.56	7.5	10.8	11.4
Retirement and savings	1.00	3.18	3.37	3.5	8.0	8.5
Defined benefit	0.43	2.65	3.09	1.5	6.6	7.7
Defined contribution	0.57	0.54	0.28	2.0	1.3	0.7
Paid leave	1.96	3.98	2.95	6.9	10.0	7.4
Vacation	1.02	1.82	1.10	3.6	4.6	2.7
Holiday	0.63	1.24	0.88	2.2	3.1	2.2
Sick	0.24	0.77	0.75	0.8	1.9	1.9
Personal	0.07	0.15	0.22	0.3	0.4	0.6
Other benefits	2.94	2.64	2.57	10.3	6.6	6.5
<i>Excluding teachers</i>						
Wages and salaries	20.18	23.42	22.69	71.6	63.3	63.6
Total benefits	8.02	13.60	12.97	28.4	36.7	36.4

Source: Authors' estimates based on employer costs from the 2009 Employer Costs for Employee Compensation sample of the National Compensation Survey.

Notes: Estimates are hours-weighted statistics. "Wages and salaries" include wages, commissions, piece rates, overtime pay, and shift differentials, but do not include nonproduction bonuses. "Other benefits" include nonproduction bonuses, short- and long-term disability benefits, and all legally required benefits. "Excluding teachers," refers to the exclusion of certain occupations where contract hours are prevalent; this excludes much smaller job classifications in nonteaching occupations with collected contract hours, such as airline pilots and flight attendants, but does not exclude the entire educational sector. See the online Appendix for details.

We caution that different benefits profiles do not automatically indicate that public sector plans are "too generous." It seems plausible that public sector workers demand a compensation package skewed more towards benefits. After all, they have higher incomes and are older and more educated. More speculatively, they may have preferences such as greater risk aversion or different rates of time preference that would induce greater demand for retirement and health insurance benefits. There may be contract design issues related to optimal retirement dates and specific human capital accumulation that make defined benefit plans more sensible for public sector workers. Furthermore, public sector employers almost certainly find plan provision cheaper due to economies of scale—for example, by avoiding some adverse selection issues in health insurance that plague small private firms.

However, one clearly must consider benefits together with wages; as such, we believe that the Employer Costs for Employee Compensation data (from the National Compensation Survey) contain valuable information for the problem at hand. They come from a representative sample, comprehensively cover the benefit spectrum, and are derived from employer and administrative records. While more

work is undoubtedly needed on reconciling household and establishment surveys, we believe the National Compensation Survey likely contains more accurate data on wages, industry, occupation, and sector than does the Current Population Survey, which seems more subject to a number of possible error sources such as respondent error and imputations due to partial nonresponse.⁵ One would expect more accurate information to lead to sharper estimated sector differentials.⁶

Making Comparisons: Approaches

When comparing the pay of two different groups, the economics literature has typically followed one of two paths (Moulton 1990; Belman and Heywood 2004b). One approach is the “opportunity wage definition” of comparability, sometimes also called the “people approach,” in which workers with given characteristics in the government sector should be paid the same as they would be in the private sector. The alternative is a “positions approach,” in which one would search the private sector for positions that match the descriptions of those in the public sector and then compare compensation, ignoring the characteristics of those who actually hold the positions. As Moulton (1990) has observed in the case of federal/nonfederal comparisons, the two approaches need not provide an answer of the same sign, let alone similar magnitudes.

Our approach depends to some extent on the dataset we are employing. With the Current Population Survey, we adopt an opportunity wage or a “people approach,” because this household survey source lets us use demographic data. However, we can also add a control variable for occupations, which makes this approach something of a hybrid. The Employer Costs for Employee Compensation dataset, however, is a sample of jobs rather than of individuals. Thus, when we are using these data, we are primarily examining the characteristics of positions.

The two main regression-based approaches in the literature are the Oaxaca–Blinder decomposition⁷ and a dummy variable approach, where wages are a function of the covariates and indicator variables for the different sectors. The two

⁵ For example, an implausible 10.1 percent of Current Population Survey state government workers are in elementary, middle, and secondary school teaching occupations, versus 0.3 percent in the National Compensation Survey, suggesting some difficulty in CPS reports or imputations of sector of work or occupation.

⁶ In Gittleman and Pierce (2011), we find sharper industry and occupation differentials in the National Compensation Survey. In addition, in that paper, we report R^2 values approaching 0.8 from wage regressions on the factors underlying work level, which is much higher than analogous wage regressions using the Current Population Survey.

⁷ Fortin, Lemieux, and Firpo (2010) give an excellent exposition of this and other decomposition methods. There are, of course, more sophisticated approaches than either the Oaxaca–Blinder decomposition or the dummy variable approach that one could use to take account of unobserved heterogeneity and selectivity into the sectors (examples are Gyourko and Tracy 1988; Krueger 1988a; Lee 2004). The logic of such models does not carry over as well to a job-based dataset such as the Employer Costs for Employee Compensation. Moreover, these approaches rely heavily on the appropriateness of certain identifying assumptions (Moulton 1990; Gregory and Borland 1999). We do not attempt them here.

give similar results, and so, in this section, we focus on the first approach. For the purposes of the Oaxaca–Blinder decomposition, we specify that

$$\ln(y_{jk}) = \mathbf{X}_{jk}\beta_j + \varepsilon_{jk},$$

where for sector j , which can be state, local, or private, and individual k , y_{jk} is either a wage or compensation measure, \mathbf{X}_{jk} is a vector of characteristics and β_j is the corresponding coefficient vector for the relevant sector, and ε_{jk} is an error term with mean zero and variance σ_j^2 . We then use the coefficients from this regression to estimate the log wage or log compensation that the average public sector worker would earn in the private sector, either state or local. Denoting the government and private sectors with subscripts g and p respectively, differences in sector-average log wages or compensation would be decomposed into an explained portion or composition effect $(\bar{\mathbf{X}}_p \hat{\beta}_p - \bar{\mathbf{X}}_g \hat{\beta}_p)$, and an unexplained remainder $(\bar{\mathbf{X}}_g \hat{\beta}_p - \bar{\mathbf{X}}_g \hat{\beta}_g)$, the wage structure effect. This unexplained portion shows how much more or how much less an average public sector worker would earn in the private sphere (absent any general equilibrium effects on the private wage structure associated with workers changing sectors). We therefore take what a public worker would earn in the private sector to be the relevant counterfactual to the worker's actual public sector earnings. When discussing the main results, we provide the differential in log points, though we also report differentials transformed into percentage terms in the tables.

What control variables are appropriate in this regression? Linneman and Wachter (1990), Hirsch, Wachter, and Gillula (1999), and others have argued that it is important to distinguish between skill-related factors that an individual can transfer from job to job and a second set of variables that are descriptive of the job or sector and possibly indicative of noncompetitive pay differentials such as rent-sharing. It is, of course, not always clear whether a variable falls in one camp or another. In regressions using the Current Population Survey data, we control for schooling and work experience in a more-or-less standard set of covariates. In regressions using data from the Employer Costs for Employee Compensation, we control for differences in human capital via a series of dummy variables for work level. Therefore, we assume that individuals, on average, possess the requisite skills to fill the positions and that these skills would carry over to the private sector.

We treat union status and organizational size as not reflecting worker skills. Controlling for union coverage seems inappropriate, because union wage premia probably do not reflect ability differences, and those in the public workforce would not likely take their public sector unionization rates with them if they were to move to the private sector. The situation is murkier in the case of employer size, because less of a consensus exists as to causes of the size premium. The traditional explanation has been that larger employers have greater product market power, and that workers capture some of these rents. If, however, employee compensation rises with the size of employer because larger employers hire better-quality workers—that is, employer size is a proxy for unobserved worker ability, even in the public sector—then including size as a control is desirable. Troske (1999) tests several explanations

of the employer size-wage effect and a significant unexplained premium remains. This and other evidence leaves the door open for the possibility that rent-sharing may be involved. Absent evidence that larger public sector organizational size reflects unobserved ability, we do not control for employer size.⁸ Estimates of differentials are sensitive to these choices and we will provide measures of this sensitivity.

Another issue on which the literature on public sector differentials has not reached a consensus is whether to account for occupation and, if so, at what level of detail. Of recent studies of state and local government differentials, Schmitt (2010) and Keefe (2010) use no occupational controls, while Bender and Heywood (2010) use them only in robustness checks. On the other hand, in Moulton's (1990) study of federal wage differentials, he argues that it is essential to control for occupation at as detailed a level as possible. Over the years, the modal choice has probably been one-digit or major occupation controls (Belman and Heywood 2004b). If occupation reflects unmeasured human capital and working conditions common to the private and public sectors, then including occupation controls will help net out cross-sectoral differences in these wage-influencing factors. But as Belman and Heywood discuss, even if one believes that occupation controls are important, it is not obvious how fine one should go: coarse controls may leave occupations too heterogeneous, while finer controls can remove unique occupations from the analysis. Given the lack of consensus, we present models with different treatments for occupation.

What is the Current Private–Public Pay Gap?

Estimates Based on Current Population Survey Data

We display the results of a comparison of private and public sector workers in Table 3, using weekly earnings for full-time workers in the Current Population Survey in the first pair of columns, and weekly earnings and compensation for full-time jobs in the Employer Costs for Employee Compensation from the National Compensation Survey in the second and third pairs of columns. The first column in each pair in Table 3 presents the log differences and, the second, the percentage differences, where the percentage differences are relative to public sector statistics. In this section, we discuss differentials in terms of log points because the Oaxaca–Blinder decomposition is in terms of logs. In later sections, we adopt a somewhat looser approach and only display percentage differences.⁹ Asterisks are used to indicate statistical significance at the 1 and 5 percent levels.

⁸ Brown and Medoff (1988) conclude that measured ability to pay accounts for about 15 percent of the public sector size–wage effect.

⁹ We present both log differentials and percentage differences because they measure different things. Researchers often approximate percentage differentials by exponentiating log differentials. But, as stressed in Blackburn (2008), this standard transformation gives misleading results if wage dispersion differs substantially across sectors. It is well known that earnings distributions are less dispersed in the public than in the private sector (for example, Poterba and Rueben 1994), which would cause

Table 3

Private–Public Pay Differentials for Weekly Wage and Compensation

	CPS <i>weekly wage</i>		NCS <i>weekly wage</i>		NCS <i>weekly compensation</i>	
	<i>logs</i>	<i>percent</i>	<i>logs</i>	<i>percent</i>	<i>logs</i>	<i>percent</i>
<i>A. Private–State Government</i>						
Raw differential	-0.085**	-0.5	-.203**	-13.7**	-.335**	-21.8**
Unexplained differential						
Base controls, including education (CPS) or work level (NCS)	0.108**	16.2**	.048**	8.1**	-.076**	-3.2*
Plus major occupation	-0.005	2.7**	-.012	1.3	-.143**	-10.1**
Plus detailed occupation	0.020*	4.9**	-.003	2.3	-.125**	-8.7**
<i>B. Private–Local Government</i>						
Raw differential	-0.097**	-0.6	-.246**	-16.8**	-.347**	-23.0**
Unexplained differential						
Base controls, including education (CPS) or work level (NCS)	0.080**	13.6**	-.054**	-2.5**	-.149**	-10.5**
Plus major occupation	-0.091**	-5.2**	-.123**	-9.6**	-.236**	-18.5**
Plus detailed occupation	-0.067**	-3.5**	-.115**	-9.2**	-.220**	-17.6**

Sources: Based on data from the 2009 Current Population Survey, Merged Outgoing Rotation Group (CPS–MORG) file and data from the Employer Costs for Employee Compensation (ECEC) sample in the 2009 National Compensation Survey (NCS).

Notes: Samples are restricted to full-time workers or full-time jobs for these models. Estimates are private–public differentials in log points and percentage differences. Unexplained differentials are from Oaxaca–Blinder decompositions that net out sectoral differences in controls, using private sector returns. Base controls in the CPS include sex, Census division interacted with metropolitan area, four education dummies, and a quartic in experience. Base controls in the NCS include dummy variables for work level, and Census division interacted with metropolitan area. When detailed occupation controls are included, the raw differentials sometimes deviate slightly from the raw differential provided because occupations for which there are government workers but no private sector workers are excluded.

** and * indicate statistical significance at 1 and 5 percent levels, respectively.

Beginning with estimates based on the Current Population Survey Data, we see that the raw average earnings of state workers exceed those of private workers by about 0.09 log points and that the earnings of local government workers surpass those of private workers by about 0.10 log points. However, after including the baseline controls for education, experience, sex, full-time status, and the interaction of Census division with metropolitan area,¹⁰ it is *private sector workers* who appear to

the standard transformation to understate private sector relative to public sector pay. See the online Appendix available with this article at (<http://e-jep.org>) for details on how we use log wage regression results to derive estimated differentials in percentage terms.

¹⁰ Interacting Census division with metropolitan area is more flexible than just including Census division and metropolitan area dummies by themselves in that the metropolitan–nonmetropolitan differential is allowed to vary by division.

earn more than their state and local government equivalents, by 0.11 and 0.08 log points respectively. The implication of this regression is that public sector workers earn more on average than private sector workers because public sector workers have higher levels of human capital, particularly education—not because they receive higher pay for a given level of human capital.

But if one takes into account major occupation differences using the two-digit level of the Standard Occupational Classification system (which contains 22 occupations), the estimates once again change markedly. With a swing of 0.171 log points from the base control case, relative pay estimates now favor local government workers, who are paid 0.091 log points more than can be explained by the controls. For state workers, the shift from the base control case is smaller (0.113 points), so that the gap in log points virtually disappears. Our results using major occupational controls indicate that, conditional on the baseline variables—especially schooling levels—government workers are more likely to be in lower-paying two-digit occupations than their private sector counterparts. College-educated government workers are in less-lucrative two-digit occupations (like teaching) than their private counterparts, who are more likely to be healthcare practitioners or in areas like business and management. On the other end of the educational spectrum, those without a high school degree in the private sector are more likely to be in the relatively lucrative (conditional on schooling) production and construction occupations.

Moving from two-digit occupational controls to the most detailed occupational controls contained in the Current Population Survey—consisting of nearly 500 occupations—relative pay differentials shift about 0.02–0.03 log points in favor of private sector workers, so that private sector workers are 0.020 log points above the state government workers, while local government workers are about 0.067 points above the private sector. Of course, the models with and without occupational controls represent very different thought experiments. Readers who believe it likely that, say, college-educated teachers and managers have different levels of unmeasured human capital will tend to gravitate toward the models controlling for occupation. They will prefer to compare, conditional on schooling and other factors, teachers to teachers, and indeed they may prefer to compare elementary school teachers to elementary school teachers via detailed occupational controls. The alternative view is that it is more useful to make across-sector comparisons unconditional on occupation: perhaps occupation does not accurately reflect unmeasured skills, and occupational controls only exacerbate difficulties from (say) unmeasured differences in pecuniary or nonpecuniary factors.

All in all, the data from the Current Population Survey does not provide an unambiguous answer to the question of whether comparable workers receive higher wages in the public sector. Results differ by specification, and local government workers appear to generally fare better than state government workers. More importantly, however, the Current Population Survey does not contain comprehensive information on nonwage benefits. For that, we need to turn to the Employer Costs for Employee Compensation microdata.

Estimates Based on the Employer Costs for Employee Compensation Data

The baseline controls used in the regressions with the NCS Employer Costs for Employee Compensation microdata are as similar as possible to those in the Current Population Survey. However, in these regressions, instead of controlling for education and experience, we control for job work levels.

As already noted in Table 1, the baseline raw differentials are wider in the Employer Costs for Employee Compensation (ECEC) microdata. As shown in the third column of Table 3, the state and local government raw weekly earnings gap is 0.203 and 0.246 points, respectively, above the private sector. Using the base controls, which in this case include job work levels, private sector jobs with the same characteristics as state sector jobs pay about 0.048 log points more, which is smaller than the 0.108-point difference based on Current Population Survey data in column 1. For local government jobs, the ECEC results suggest an edge in pay for public sector workers of 0.054 points, versus the estimate of a 0.080-point advantage for the private sector in column 1. In general, the explained portions of the raw wage gaps are larger in the ECEC than in the CPS, which suggests that the work-level information provides more information about skill differences across jobs than is apparent in the demographic data about workers in the Current Population Survey. However, the remaining unexplained wage gap between private sector and local government workers indicates that local government workers are paid higher wages, and this is a departure from CPS-based studies that routinely find the opposite.

Because the work-level data were designed to make different jobs comparable, adding occupational controls does not affect the measured public sector premia as much in the “NCS weekly wage” column as it did with the Current Population Survey data in the first set of columns, where education level is the main control. With detailed occupational controls, there is little ground between the state and the private sector, but a difference of 0.115 log points remains in favor of the local government.

What effect do the more generous benefits provided to government workers have on private–public differentials? When nonwage compensation is included, as in the “NCS weekly compensation” columns of Table 3, the raw differentials widen markedly in favor of the state and local government workers. The state differential widens by 0.132, to 0.335 points, and the local differential by 0.101, to 0.347 points. When compensation is the dependent variable, the regression-adjusted estimates move (relative to the NCS weekly wage column) by almost as much as the raw differentials in favor of government workers. This shift tends to fall in the range of 0.10–0.12 log points.

Are government jobs more highly compensated than corresponding private sector jobs? The answer from the Employer Costs for Employee Compensation microdata appears to be “yes,” although the magnitude of the difference depends upon sector of government and specification used.¹¹

¹¹ Nonwage compensation in state and local government exceeds that of the private sector. Is there a way to determine which particular benefit categories contribute to this difference, conditional on job characteristics? The decomposition methodology in logs used here is ill-suited for this task since some

Table 4
Private–Public Percentage Pay Differentials for Hourly Wage and Compensation

	CPS hourly wage (%)	NCS hourly wage (no teachers) (%)	NCS hourly compensation (no teachers) (%)
<i>A. Private–State Government</i>			
Raw differential	–4.4**	–13.8**	–23.8**
Unexplained differential			
Base controls, including education (CPS) or work level (NCS)	12.4**	9.1**	–3.7*
Base controls and major occupation	0.7	3.5*	–9.2**
Base controls and detailed occupation	2.4*	2.5	–9.5**
<i>B. Private–Local Government</i>			
Raw differential	–3.5**	–11.1**	–20.9**
Unexplained differential			
Base controls, including education (CPS) or work level (NCS)	11.0**	–2.3**	–12.9**
Base controls and major occupation	–5.7**	–7.2**	–18.2**
Base controls and detailed occupation	–4.8**	–4.8**	–14.8**

Sources: Based on data from the 2009 Current Population Survey, Merged Outgoing Rotation Group (CPS–MORG) file and data from the Employer Costs for Employee Compensation (ECEC) sample in the 2009 National Compensation Survey (NCS).

Notes: Estimates are private–public differentials in percentage differences. Unexplained differentials are from Oaxaca–Blinder decompositions that net out sectoral differences in controls, using private sector returns. Base controls are as in Table 3, but also include indicators for full-time workers or jobs. When detailed occupation controls are included, the raw differentials sometimes deviate slightly from the raw differential provided because occupations for which there are government workers but no private sector workers are excluded.

** and * indicate statistical significance at the 1 and 5 percent levels respectively.

Hourly Sample Results and Comparisons with Other Studies

In Table 4, we present the results of the same specifications as in Table 3, except this time using an hourly wage or compensation sample, rather than a weekly one. To save space, we report the results only in percentage terms, which is what most recent studies do, though we caution that these other studies may not convert from log points into percentages in the manner that we do.¹² The hourly results serve

categories of benefits have zero costs for nontrivial numbers of observations. In the online Appendix available with this article at (<http://e-jep.org>), we describe a methodology that first determines what the average level of benefit costs would be if private sector returns are applied to public sector characteristics and then calculates the ratio of this quantity to the actual average of public sector benefit costs. After controlling for work-level differences, the sectoral differences in health insurance costs are approximately 30–40 percent, and the analogous differences in retirement and savings costs are perhaps 50 percent, as measured relative to the public sector cost.

¹² Relative to simply exponentiating the log differentials, our method of conversion adds 2–4 percentage points in favor of the private sector, depending on the specification.

both as a sensitivity check, and provide an opportunity to reconcile our results with these earlier studies. In the first column, with the Current Population Survey hourly wage sample, we estimate that, with the base controls but without occupational controls, the wages of the private sector exceed those of the state government by 12.4 percent and exceed those of the local government by 11.0 percent, magnitudes which are somewhat lower than their counterparts in the weekly sample. Owing to some differences in sample inclusion criteria and specification and, perhaps, to differences in the method for converting from log points to percentages, our estimates of hourly gaps are wider than those of Schmitt (2010, table 3), who estimated a wage premium of 4–6 percent for the private sector for the same year. The gaps we estimated are about the same as the 11–12 percent wage premium for the private sector estimated by Bender and Heywood (2010) using the 2008 Current Population Survey, although they include “covered by a union contract” as one of their covariates. As noted, we prefer not to control for union status, because we doubt it reflects ability that is portable across sectors. When we experimented with including union coverage in our covariates for the purposes of reconciliation, our gaps widen to 18 to 19 percent in favor of the private sector.

Our results are similar in magnitude to those of Keefe (2010), who estimates that state and local government workers earn 15.57 percent and 9.46 percent below comparable private sector workers, respectively. He uses data from the March Current Population Survey, which compiles earnings on an annual basis. However, he uses organizational size as a control variable, something that is not available in the Merged Outgoing Rotation Group data from the CPS that we use, and a choice that is controversial (Linneman and Wachter 1990). Government is a large employer, and so the inclusion of employer size means that more of the raw differential in favor of government will be viewed as a size effect rather than a government effect, making it more likely that private sector workers will be viewed as overpaid. In the Employer Costs for Employee Compensation data, adding establishment size to our baseline controls shifts differentials by roughly 6 percentage points in favor of the private sector for wages and by about 8 points for compensation, though it is difficult to say whether the effect would be of the same magnitude in the CPS.

The inclusion of occupational indicators in hourly wage regressions moves the relative pay estimates in a direction favorable to government workers, as it did in Table 3, so that state workers are about even with those in the private sector, while local government workers are estimated to earn 5.7 percent more than their private sector counterparts. Recent work on state and local public sector differentials has tended to eschew occupational controls, with the exception of a robustness check by Bender and Heywood (2010). With controls at approximately the same level, they estimate that state workers earned 6.5 percent below private sector workers in 2008, and local workers 3.7 percent below—but, again, they control for union coverage, which may explain part of the difference with our results.

The final two columns of Table 4 display the results for the NCS Employer Costs for Employee Compensation hourly sample, which excludes teachers because of the difficulties in knowing their actual hours worked, as explained earlier. The results

for state government hourly wages are not much different than the comparable ones for weekly wages. For local government, the exclusion of teachers and other occupations for which weekly hours are unreliable narrows the raw differential by about 6 percentage points. For the baseline regressions, the hourly and weekly results are also similar, but that is not the case for the regressions with occupational controls, as the estimated edge for local government workers narrows from 9 to 10 percent at both levels of occupational detail to about 7 percent with two-digit controls and 5 percent with detailed controls.

When nonwage benefits are added to hourly wages in the Employer Costs for Employee Compensation microdata in the third column of Table 4, the differentials relative to the second column shift by 10 to 13 percentage points in favor of government workers, a movement that is somewhat greater than the shift in the weekly earnings sample. The hourly compensation differentials are between 3 and 10 percent in favor of state government workers and 13 to 18 percent in favor of local government employees, depending on the specification.

There are two recent studies in this area that include nonwage compensation information, though they do so indirectly. Using unpublished information from the Employer Costs for Employee Compensation for December 2009, Keefe (2010) calculated the ratio of total compensation to wages by major occupation group for state and local government combined and for three establishment-size classes for the private sector. Applying these markups to earnings in the March CPS for 2009, he estimated (in his table 6) that the compensation of a state government employee is 7.55 percent below that of an equivalent private sector employee, while that of a local government employee is 1.84 percent below. Because the same regression specifications for earnings yielded estimated gaps of 15.57 percent and 9.46 percent for state and local government workers, respectively, the implication is that including nonwage compensation moves relative pay estimates in favor of government employees by roughly 8 percentage points.¹³

Bender and Heywood (2010) also use markups from the Employer Costs for Employee Compensation microdata, but with a somewhat different approach than Keefe. Whereas Keefe applied different markups by major occupation group and size to Current Population Survey microdata and then calculated regression-adjusted compensation gaps, Bender and Heywood apply the markups directly to wage gaps that have already been regression adjusted. After having estimated that the average hourly pay in 2000–2008 for state workers was 11.4 percent below that for private sector workers and for local workers was 12.0 percent below, they use markups from 2004–2008 to estimate that state and local compensation remained at 6.8 percent and 7.4 percent below the private sector, respectively.¹⁴ Thus, for

¹³ Using Employer Costs for Employee Compensation data for Census divisions rather than for the nation, Keefe also conducted a number of studies for individual states that use compensation markups, available at (<http://www.epi.org>) (search on “Keefe”).

¹⁴ The results reported here use the markup from the entire ECEC. They also apply a markup calculated using just those establishments with 100 or more workers, and obtain correspondingly larger private sector premia.

these authors, controlling for nonwage compensation makes a difference of about 4.5 percentage points.

As noted above, we see a shift of 10 to 13 percentage points in favor of government workers when nonwage compensation is included, which is greater than those movements calculated by other authors. There are at least a few reasons for the difference. Keefe (2010) removes paid leave from compensation before calculating his markups, which raises the relative markup in the private sector. He indicates he takes this step because he believes that paid leave is included in the measure of wages in the Current Population Survey. We have doubts as to whether this is consistently true, but, in any case, paid leave is certainly not included in the Employer Costs for Employee Compensation wage measure. In addition, as we will see, the choice of period for calculating the markups can make a difference, and would have for the Bender and Heywood calculations. Finally, we use a somewhat different set of regression controls and therefore make different comparisons than do these other recent papers.

How Has the Private–Public Pay Gap Changed over Time?

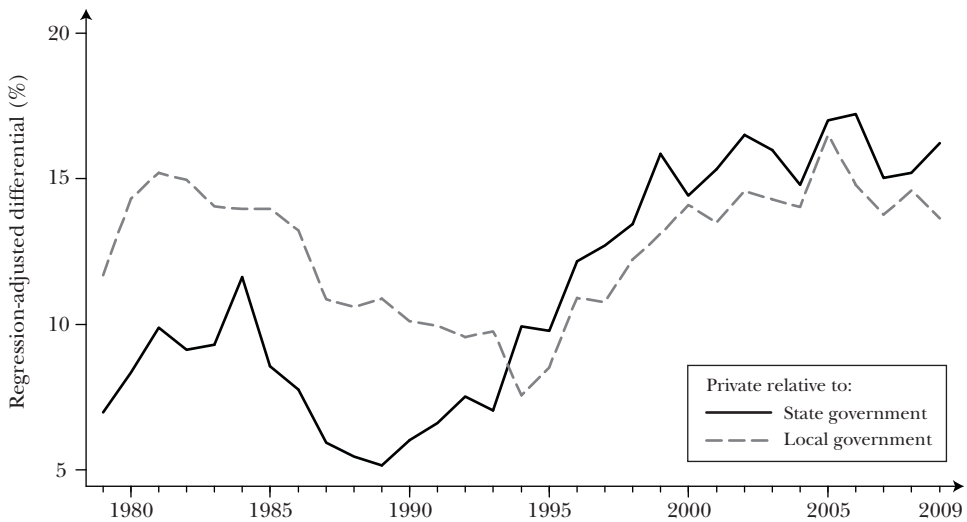
Is the private–public pay gap a new phenomenon? For example, did the gap change during the 2007–09 recession? To get at questions like these, Figure 2 graphs the unexplained differentials for weekly wages (the “base controls” specification in Table 3) for the Current Population Survey data over the 1979–2009 period.¹⁵

Figure 2 suggests that, for this specification, private sector workers have received higher wages than their state and local counterparts over the entire period. The private sector advantage has ranged from 5 to 17 percent. These series do not appear to suggest cyclical factors as driving mechanisms. During much of the period, from 1989 to 2006, the private sector was gaining on the state sector, though within a relatively narrow range. For the local government sector, the pattern is more of a V-shape, with the private sector losing ground in the first half of the period and regaining it during the second half. When considering wages alone in the CPS, one does not get the impression that there was a recent and sudden surge of the relative pay of the public sector.

Using the Employer Costs for Employee Compensation data, we earlier estimated a current compensation gap in favor of state and local government workers. Ideally, we would like to use the same methodology to estimate differentials over time, but we cannot because the work-level information that is so important for controlling for cross-sectoral differences in the skill distribution of jobs goes back

¹⁵ There were several changes in Current Population Survey data over this period, including a 1994 redesign that altered earnings questions and a lack of allocation flags in certain years. Some of the more important changes involve coding for schooling and occupation. We use the base controls specification to skirt changing CPS occupational coding schemes. The CPS education questions changed in 1992, and we use the approach suggested by Jaeger (1997) to code workers as consistently as possible into five education groups.

Figure 2

Private–Public Percentage Wage Differentials

Source: Based on data from the Current Population Survey, Merged Outgoing Rotation Group (CPS-MORG), 1979–2009.

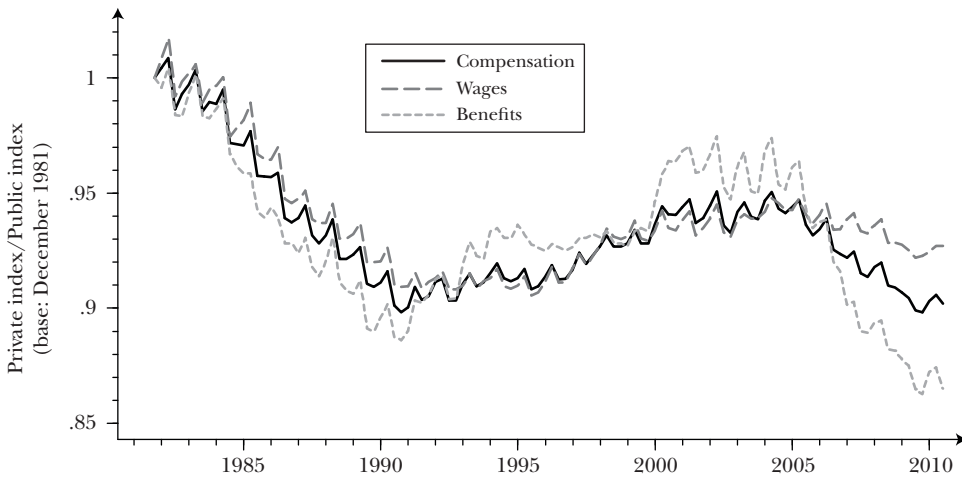
Note: Figure 2 graphs the unexplained differentials for weekly wages (the “base controls” specification in Table 3) for the Current Population Survey data over the 1979–2009 period.

only a few years. Instead, we take an indirect approach, by looking at the relative growth rates of private and public sector compensation, after controlling for changes in employment composition in jobs in each of these sectors.

To do this, we make use of data from the Bureau of Labor Statistics’ Employment Cost Index (ECI) series, which are based on the same microdata as the Employer Costs for Employee Compensation.¹⁶ We first take the quarterly private sector ECI indexes for wages, benefits, and total compensation and base each at 100 for December 1981. We base the corresponding public sector ECI indexes in the same manner. Figure 3 plots the ratio of private to public for each series. Faster cost growth in the public sector than in the private manifests as a decline in the plotted series. Because the index growth rates exploit the longitudinal nature of the data at the job level, they abstract from any shifts in the composition of jobs. The series would, however, reflect other developments such as relative wage movements that benefit one sector more than another (for example, a rising return to education) and institutional changes that affect the degree of rent capture in the two sectors. If

¹⁶ The Employment Cost Index is a Laspeyres index for employer costs, with cells defined by industry and occupation. Quarterly rates of change are calculated within each cell using jobs that are in sample both quarters. See Bureau of Labor Statistics (n.d.) for details on the construction of the ECI series. In this figure, we use a combined public sector, combining state and local government. We thank Tom Moehrl for constructing these series, which are not seasonally adjusted.

Figure 3
Changing Private–Public Relative Pay



Source: Based on data from the Bureau of Labor Statistics' Employment Cost Index (ECI) series for 1981–2010.

the methodology of the previous section could be used for this exercise, the former effect would not be present, but the latter would be.

Figure 3 can be divided roughly into three parts: 1) the 1980s, when relative private pay was decreasing (Poterba and Rueben 1994); 2) from roughly 1990 to 2005, when relative pay was fairly stable or, if anything, the private sector was gaining on the public sector; and 3) 2005 to the present, when relative private pay is again falling—though not as fast a rate as in the first period. The third period also differs from the first in that benefits account for a greater portion of total compensation gains (for the public sector relative to the private sector) in the third period than in the first. The wage series in Figures 2 and 3 are broadly consistent, but factoring in benefit costs does seem to change the story somewhat. The relative compensation series shifts 4–5 percent over the last five years. If the analysis on 2009 data in the previous section was possible a half-decade earlier, the findings would likely reflect smaller public–private compensation differentials. Unlike earlier periods, much of the recent shift depends on relative benefit cost changes. Many current popular reports on public sector pay focus on benefits; Figure 3 offers a partial explanation for that focus.

Private–Public Differentials across the Distribution

Up until this point, our focus has been on mean public–private compensation differentials. However, differences in the wage distributions of the public and private sectors extend beyond the differences at the mean—in particular, the

Table 5
Private–Public Percentage Differentials by Quantile

	Quantile				
	10 th	25 th	median	75 th	90 th
CPS weekly earnings					
Private–State Government	-4.5**	-1.8*	2.9**	7.9**	11.7**
Private–Local Government	-10.5**	-8.4**	-2.9**	3.4**	9.0**
ECEC weekly earnings					
Private–State Government	0.9	0.5	3.5*	5.6**	7.5**
Private–Local Government	-7.0**	-7.5**	-5.6**	-4.8**	-0.7
ECEC weekly compensation					
Private–State Government	-13.2**	-11.6**	-9.3**	-7.5**	-5.5**
Private–Local Government	-19.7**	-18.7**	-16.4**	-14.0**	-10.5**

Sources: Based on data from the 2009 Current Population Survey, Merged Outgoing Rotation Group (CPS–MORG) file and data from the Employer Costs for Employee Compensation (ECEC) sample in the 2009 National Compensation Survey (NCS).

Notes: Columns report quantile regression results at the given percentile. Controls are the same as for the “base controls and major occupation” weekly earnings models of Table 3.

** and * indicate statistical significance at the 1 and 5 percent levels, respectively.

distribution of pay in the public sector tends to be less dispersed (Poterba and Rueben 1994; Belman and Heywood 2004a). We revisit this point here, using quantile regression techniques to assess public–private differentials at different points of the distribution.

The dummy variable approach uses the single regression equation:

$$\ln(y_{jk}) = \mathbf{X}_{jk}\beta + S_k\delta_s + L_k\delta_l + \varepsilon_{jk}.$$

Again, for sector j , which can be state, local, or private, and individual k , y_{jk} is either a wage or compensation measure, \mathbf{X}_{jk} is a vector of characteristics, and β is the corresponding coefficient vector, which does not differ by sector. This specification also includes S_k and L_k , which are dummy variables for state and local government with corresponding coefficients δ_s and δ_l . In this case, the coefficients on the two sectoral dummy variables directly provide the log differentials between state government pay relative to private pay (the omitted variable), and between local government pay and private pay. Table 5 gives estimates of this specification, with major occupation controls, using quantile regressions. Since we are estimating differentials at particular points in the distribution, here a simple exponentiation of the public sector coefficients is appropriate for deriving percentage differences, and we present these estimates in Table 5.

In the Current Population Survey data in the first row of Table 5, consistent with expectations, the private sector premium rises as one moves across the columns,

through the distribution of weekly earnings. Below the median, the private sector premium is negative (higher relative pay for state and local government), but, at the 90th percentile, the private sector premium is 11.7 percent relative to state government and 9.0 percent versus local government.

In the rows of Table 5 based on the Employer Costs for Employee Compensation earnings and compensation microdata, the same movement in favor of the private sector is evident as one moves up the quantiles, but the interquantile spread is narrower in the ECEC than in the data from the Current Population Survey. In the CPS, there is a spread of 16.2 percentage points between private–public percentage differentials in the 10th and 90th percentiles for the state government and one of 19.5 points for the local government. In the ECEC, the private sector premium for weekly earnings relative to state workers is 0.9 percent at the 10th percentile versus 7.5 percent at the 90th percentile, a difference of only 6.6 percentage points. The spread across the quantiles in the bottom row (ECEC weekly compensation, private–local government) is a somewhat larger 9.2 percentage points, yet even at the 90th percentile, compensation for private sector workers is lower than that for local government workers, by 10.5 percent.

Concluding Remarks

We have sought to address the broad question of whether workers in state and local government are better compensated than their private sector counterparts. A more detailed analysis might delve into particular occupations. For example, teachers are a large part of the local government workforce, but assessing teacher pay is a difficult task because private and public sector teachers operate in different environments. We have not tried to take into account the unique dangers faced by certain public workers like firefighters and police officers. More generally, implicit in some of the discussion in the popular press is the question of whether state and local government jobs are *better* jobs than those in the private sector, which would require considering not only pecuniary benefits, but also nonpecuniary ones. For example, job security is better in the public sector, which has been an especially salient point in recent years. According to data from the Job Openings and Labor Turnover Survey (JOLTS), the annual layoff and discharge rate for the private sector ranged from 17.6 percent to 22.8 percent in 2006–2010 in contrast to a range of 5.9 percent to 7.0 percent for state and local government. Other nonpecuniary benefits that could affect the relative attractiveness of public sector employment might involve working conditions. Work-related injury rates appear to be higher in the public sector (Bureau of Labor Statistics 2011), and there may be differences in work effort or work schedules for which our regression controls do not account completely. An analysis of nonpecuniary job benefits might use job queues (Krueger 1988a, b; Heywood and Mohanty 1993), where higher numbers of applicants may be indicative of the presence of rents for a job, or might try to directly price out the value of a benefit (Richwine and Biggs 2011), but such analyses are beyond the scope of this paper.

Are state and local government workers better paid than similar workers in the private sector? When considering wages only, the answer is ambiguous. When we add nonwage compensation, however, public sector workers do appear to be better compensated, although the magnitude of the difference depends upon which sector of government is being considered and the degree to which occupations are controlled for. With no controls for occupations, we estimate that compensation in state government is higher than in the private sector by 3.2 percent in the weekly sample and 3.7 percent in an hourly sample. Local government workers are even more highly compensated, with the differential being 10.5 percent in the weekly sample and 12.9 percent in the hourly sample. The addition of occupation controls, particularly those for two-digit occupations, serves to widen the premium for the government. We should note, however, that none of these results control for establishment size. Such a control, in models with detailed occupation, tends to reduce the private–local government compensation differential, and approximately equalizes the compensation of state and private sector workers. There has been no major recent rise in the relative wages of state and local government workers, but recent years have seen a faster rate of increase in benefit costs in the public sector, translating into a somewhat faster increase in overall compensation costs.

Future work might seek to reconcile the raw wage differentials in the Current Population Survey and the Employer Costs for Employee Compensation data. One avenue would be to attempt replication of the ECEC wage findings in other administrative records or establishment survey data. Other avenues are to identify important survey measurement errors, or to determine whether the CPS and ECEC substantially measure different things (and if so, what the preferred construct is).

Finally, we wonder about the forces driving the premia we estimate. There are interesting agency questions here: politicians are agents for citizens in compensation settings and may face conflicts of interest in dealing with the public sector workforce. There are likely to be additional agency considerations involving local government pay setting, since wages are determined by local government actors and those wage choices can affect state-level liabilities in benefit funding. There are a wide variety of state- and local-level political institutions, including different rules governing bargaining, different budgets and expenditures, and different abilities to renege on promised benefits, and it would be interesting to ascertain how such structural differences influence observed outcomes.

■ *The views expressed here are those of the authors and do not necessarily reflect the views or policies of the Bureau of Labor Statistics (BLS) or any other agency of the U.S. Department of Labor. We thank participants at a BLS seminar for useful discussions. We are particularly grateful to David Autor and Timothy Taylor for their guidance and to Will Carrington, Chad Jones, Chinhui Juhn, John List, and Rick Schumann for helpful comments.*

References

- Allegretto, Sylvia A., Sean P. Corcoran, and Lawrence Mishel.** 2004. *How Does Teacher Pay Compare? Methodological Challenges and Answers*. Washington, DC: Economic Policy Institute.
- Belman, Dale, and John S. Heywood.** 2004a. "Public-Sector Wage Comparability: The Role of Earnings Dispersion." *Public Finance Review* 32(6): 567–87.
- Belman, Dale, and John S. Heywood.** 2004b. "Public Wage Differentials and the Treatment of Occupational Differences." *Journal of Policy Analysis and Management* 23(1): 135–52.
- Bender, Keith A., and John S. Heywood.** 2010. "Out of Balance? Comparing Public and Private Sector Compensation over 20 Years." Report for the National Institute for Retirement Security and the Center for State and Local Government Excellence, April.
- Blackburn, McKinley L.** 2008. "Are Union Wage Differentials in the United States Falling?" *Industrial Relations* 47(3): 390–418.
- Blinder, Alan.** 1973. "Wage Discrimination: Reduced Form and Structural Estimates." *Journal of Human Resources* 8(4): 436–55.
- Brown, Charles C., and James L. Medoff.** 1988. "Employer Size, Pay, and the Ability to Pay in the Public Sector." In *When Public Sector Workers Unionize*, edited by Richard B. Freeman and Casey Ichniowski, 195–216. Chicago: University of Chicago Press.
- Bureau of Labor Statistics, U.S. Department of Labor.** 2003. *National Compensation Survey: Guide for Evaluating Your Firm's Jobs and Pay*. <http://www.bls.gov/ncs/ocs/sp/ncbr0004.pdf>.
- Bureau of Labor Statistics, U.S. Department of Labor.** 2011. "Workplace Injuries and Illnesses—2010." News Release, October 20. <http://www.bls.gov/news.release/pdf/osh.pdf>.
- Bureau of Labor Statistics, U.S. Department of Labor.** N.d. "National Compensation Measures." Chap. 8 in *Handbook of Methods*. <http://www.bls.gov/opub/hom/pdf/homch8.pdf>.
- Duan, Naihua.** 1983. "Smearing Estimate: A Nonparametric Retransformation Method." *Journal of the American Statistical Association* 78(383): 605–10.
- Famulari, Melissa, and Marilyn E. Manser.** 1989. "Employer-Provided Benefits: Employer Costs vs. Employee Value." *Monthly Labor Review* 112(12): 24–32.
- Fortin, Nicole, Thomas Lemieux, and Sergio Firpo.** 2010. "Decomposition Methods in Economics." NBER Working Paper 16045.
- Gittleman, Maury, and Brooks Pierce.** 2007. "New Estimates of Union Wage Effects." *Economics Letters* 95(2): 198–202.
- Gittleman, Maury, and Brooks Pierce.** 2011. "Inter-Industry Wage Differentials, Job Content and Unobserved Ability." *Industrial and Labor Relations Review* 64(2): 356–74.
- Gregory, Robert G., and Jeff Borland.** 1999. "Recent Developments in Public Sector Labor Markets." In *Handbook of Labor Economics, Vol. 3*, edited by Orley C. Ashenfelter and David Card, 3574–3630. New York: Elsevier Science.
- Gyourko, Joseph, and Joseph Tracy.** 1988. "An Analysis of Public- and Private-Sector Wages Allowing for Endogenous Choices of Both Government and Union Status." *Journal of Labor Economics* 6(2): 229–53.
- Heywood, John S., and Madhu S. Mohanty.** 1993. "Testing for State and Local Government Job Queues." *Journal of Labor Research* 14(4): 455–67.
- Hirsch, Barry T., and Edward J. Schumacher.** 2004. "Match Bias in Wage Gap Estimates due to Earnings Imputation." *Journal of Labor Economics* 22(3): 689–722.
- Hirsch, Barry T., Michael L. Wachter, and James W. Gillula.** 1999. "Postal Service Compensation Standard." In *Research in Labor Economics, Vol. 18*, edited by S. W. Polachek and J. Robst, 243–79. JAI Press.
- Jaeger, David A.** 1997. "Reconciling the Old and New Census Bureau Education Questions: Recommendations for Researchers." *Journal of Business and Economics Statistics* 15(3): 300–309.
- Keefe, Jeffrey.** 2010. "Debunking the Myth of the Overcompensated Public Employee: The Evidence." EPI Briefing Paper 276, Economic Policy Institute. September 15.
- Krueger, Alan B.** 1988a. "Are Public Sector Workers Paid More than Their Alternative Wage?" In *When Public Sector Workers Unionize*, edited by Richard B. Freeman and Casey Ichniowski, 217–42. Chicago: University of Chicago Press.
- Krueger, Alan B.** 1988b. "The Determinants of Queues for Federal Jobs." *Industrial and Labor Relations Review* 41(4): 567–81.
- Lee, Sang-Hyop.** 2004. "A Reexamination of Public-Sector Wage Differentials in the United States: Evidence from the NLSY with Geocode." *Industrial Relations* 43(2): 448–72.
- Lemieux, Thomas.** 2010. "What Do We Really Know about Changes in Wage Inequality?" In *Labor in the New Economy*, edited by Katharine G. Abraham, James R. Spletzer, and Michael J. Harper, 42–59. Chicago: University of Chicago Press.
- Levenson, Alec, and Cindy Zoghi.** 2011.

“Occupations, Human Capital and Skills.” *Journal of Labor Research* 31(4): 365–86.

Linneman, Peter D., and Michael L. Wachter. 1990. “The Economics of Federal Compensation.” *Industrial Relations* 29(1): 58–76.

Manning, Willard G., N. Duan, and W. H. Rogers. 1987. “Monte Carlo Evidence on the Choice between Sample Selection and Two-Part Models.” *Journal of Econometrics* 35(1): 59–82.

Moulton, Brent R. 1990. “A Reexamination of the Federal–Private Wage Differential in the United States.” *Journal of Labor Economics* 8(2): 270–93.

Oaxaca, Ronald. 1973. “Male–Female Wage Differentials in Urban Labor Markets.” *International Economic Review* 14(3): 693–709.

Park, Jin Heum. 1994. “Estimation of Sheepskin Effects and Returns to Schooling Using the Old and the New CPS Measures of Educational Attainment.” Princeton University, Industrial Relations Section Working Paper 338.

Pierce, Brooks. 2001. “Compensation Inequality.” *Quarterly Journal of Economics* 116(4): 1493–1525.

Pierce, Brooks. 2010. “Recent Trends in Compensation Inequality.” In *Labor in the New Economy*, edited by Katharine G. Abraham, James R. Spletzer, and Michael J. Harper, 63–98. Chicago: University of Chicago Press.

Poterba, James M., and Kim S. Rueben. 1994.

“The Distribution of Public Sector Wage Premia: New Evidence Using Quantile Methods.” NBER Working Paper 4734.

Podgursky, Michael, and Ruttaya Tongrut. 2006. “(Mis-)Measuring the Relative Pay of Public School Teachers.” *Education Finance and Policy* 1(4): 425–40.

President’s Pay Agent. 2009. “Report on Locality-Based Comparability Payments for the General Schedule.” Annual Report of the President’s Pay Agent, 2009. <http://www.opm.gov/oca/payagent/2009/2009PayAgentReport.pdf>.

Richwine, Jason, and Andrew Biggs. 2011. “Are California Public Employees Overpaid?” A Report of the Heritage Center for Data Analysis, CDA 11-01.

Schmitt, John. 2010. “The Wage Penalty for State and Local Government Employees.” Center for Economic and Policy Research, May. <http://www.cepr.net/documents/publications/wage-penalty-2010-05.pdf>.

Schumann, Richard. 2008. “Work Schedules in the National Compensation Survey.” Originally posted July 28 at U.S. Department of Labor, Bureau of Labor Statistics website. <http://www.bls.gov/opub/cwc/cm20080722ar01p1.htm>.

Troske, Kenneth R. 1999. “Evidence on the Employer Size–Wage Premium from Worker–Establishment Matched Data.” *Review of Economics and Statistics* 81(1): 15–26.

This article has been cited by:

1. Jitka Špeciánová. The Impact of Educational Attainment on Gross Wages: A Comparative Analysis of the Public and Private Sectors in Czechia 433-440. [[Crossref](#)]
2. Maria Josefina Baez, Pablo Brassiolo, Ricardo Estrada, Gustavo Fajardo. 2022. Going subnational: Wage differentials across levels of government in Brazil, Mexico, and Uruguay. *World Development* **160**, 106085. [[Crossref](#)]
3. McKinley L. Blackburn. 2021. Are U.S. teacher salaries competitive? Accounting for geography and the retransformation bias in logarithmic regressions. *Economics of Education Review* **84**, 102169. [[Crossref](#)]
4. Miriam Marcén, Marina Morales. 2021. The intensity of COVID-19 nonpharmaceutical interventions and labor market outcomes in the public sector. *Journal of Regional Science* **61**:4, 775-798. [[Crossref](#)]
5. Sun-Ki Choi, John Garen. 2021. The federal-private wage differential: how has it evolved?. *Applied Economics* **53**:5, 536-554. [[Crossref](#)]
6. T.H. Gindling, Zahid Hasnain, David Newhouse, Rong Shi. 2020. Are public sector workers in developing countries overpaid? Evidence from a new global dataset. *World Development* **126**, 104737. [[Crossref](#)]
7. Sutirtha Bagchi. 2019. The effects of political competition on the generosity of public-sector pension plans. *Journal of Economic Behavior & Organization* **164**, 439-468. [[Crossref](#)]
8. Eric J. Brunner, Andrew Ju. 2019. State Collective Bargaining Laws and Public-Sector Pay. *ILR Review* **72**:2, 480-508. [[Crossref](#)]
9. Sun-Ki Choi, John E. Garen. 2019. The Federal-Private Wage Differential: How Has It Evolved?. *SSRN Electronic Journal* . [[Crossref](#)]
10. Gregory B. Lewis, Rahul Pathak, Chester S. Galloway. 2018. Trends in Public-Private Pay Parity in State and Local Governments. *Review of Public Personnel Administration* **38**:3, 303-331. [[Crossref](#)]
11. Trang Hoang, Doug Goodman. 2018. Public Pensions and Collective Bargaining Rights: Evidence from State and Local Governments. *Public Administration Review* **78**:5, 772-784. [[Crossref](#)]
12. Konstantinos Tzioumis. 2018. Risk Preferences Across Public and Private Sector Employees: Evidence From Mortgage Choices. *SSRN Electronic Journal* **34** . [[Crossref](#)]
13. Rebecca Diamond. 2017. Housing Supply Elasticity and Rent Extraction by State and Local Governments. *American Economic Journal: Economic Policy* **9**:1, 74-111. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
14. Mark J. Warshawsky, Ross A. Marchand. 2016. State and Local Public Pension Finances and Reform Proposals: Are Lump-Sum Payout Offerings a Solution?. *The Journal of Retirement* **4**:2, 71-89. [[Crossref](#)]
15. Jason L. Kopelman, Harvey S. Rosen. 2016. Are Public Sector Jobs Recession-proof? Were They Ever?. *Public Finance Review* **44**:3, 370-396. [[Crossref](#)]
16. Masayuki Morikawa. 2016. A comparison of the wage structure between the public and private sectors in Japan. *Journal of the Japanese and International Economies* **39**, 73-90. [[Crossref](#)]
17. Andrew Chamberlain. 2015. Are State Workers Overpaid? Survey Evidence from Liquor Privatization in Washington State. *Journal of Labor Research* **36**:4, 347-388. [[Crossref](#)]
18. Michael Thom, Thom Reilly. 2015. Compensation Benchmarking Practices in Large U.S. Local Governments. *Public Personnel Management* **44**:3, 340-355. [[Crossref](#)]
19. Max Schanzenbach. 2015. Explaining the Public-Sector Pay Gap: The Role of Skill and College Major. *Journal of Human Capital* **9**:1, 1-44. [[Crossref](#)]

20. Barry T. Hirsch, Julia Manzella. Who Cares – and Does it Matter? Measuring Wage Penalties for Caring Work 213-275. [[Crossref](#)]
21. Maury Gittleman, Brooks Pierce. 2015. Pay for Performance and Compensation Inequality: Evidence from the ECEC. *ILR Review* **68**:1, 28-52. [[Crossref](#)]
22. Justin R. Falk. 2015. COMPARING FEDERAL AND PRIVATE-SECTOR WAGES WITHOUT LOGS. *Contemporary Economic Policy* **33**:1, 176-189. [[Crossref](#)]
23. Ruben Enikolopov. 2014. Politicians, bureaucrats and targeted redistribution. *Journal of Public Economics* **120**, 74-83. [[Crossref](#)]
24. Gregory B. Lewis, Rahul Pathak. 2014. The Employment of Veterans in State and Local Government Service. *State and Local Government Review* **46**:2, 91-105. [[Crossref](#)]
25. Alexei Izyumov, John Vahaly. 2014. Rent-Based Exploitation: Top, Bottom and Horizontal. *Kyklos* **67**:1, 74-81. [[Crossref](#)]
26. Andrew Chamberlain. 2014. Are State Workers Overpaid? Survey Evidence from Liquor Privatization in Washington State. *SSRN Electronic Journal* . [[Crossref](#)]
27. Masayuki Morikawa. 2014. A Comparison of the Wage Structure between the Public and Private Sectors in Japan. *SSRN Electronic Journal* . [[Crossref](#)]
28. Barry T. Hirsch, Julia Manzella. 2014. Who Cares - And Does It Matter? Measuring Wage Penalties for Caring Work. *SSRN Electronic Journal* **11**. . [[Crossref](#)]
29. Maury Gittleman, Brooks Pierce. 2013. How Prevalent is Performance-Related Pay in the United States? Current Incidence and Recent Trends. *National Institute Economic Review* **226**, R4-R16. [[Crossref](#)]
30. Max M. Schanzenbach. 2013. The State and Local Pay Penalty: The Effect of Skill and College Major. *SSRN Electronic Journal* **121**. . [[Crossref](#)]
31. Jason Richwine. 2013. How Much Time Do Teachers Spend Working? Evidence from the American Time Use Survey. *SSRN Electronic Journal* . [[Crossref](#)]
32. Jeffrey Keefe. 2012. Public Employee Compensation and the Efficacy of Privatization Alternatives in US State and Local Governments. *British Journal of Industrial Relations* **50**:4, 782-809. [[Crossref](#)]
33. David Lewin, Jeffrey H. Keefe, Thomas A. Kochan. 2012. The New Great Debate about Unionism and Collective Bargaining in U.S. State and Local Governments. *ILR Review* **65**:4, 749-778. [[Crossref](#)]
34. Lawrence F. Katz. Introduction to “Changes in the Structure of Wages in the Public and Private Sectors” 717-720. [[Crossref](#)]
35. Andrew G. Biggs, Jason Richwine. 2012. The Impact of Act 10 on Public Sector Compensation in Wisconsin. *SSRN Electronic Journal* . [[Crossref](#)]
36. Ruben Enikolopov. 2010. Politicians, Bureaucrats and Targeted Redistribution: The Role of Career Concerns. *SSRN Electronic Journal* **119**. . [[Crossref](#)]