RI Public and Private Sector Compensation Comparison
Low-Pay Private Sector Having to Support High Government Compensation
By Justin Katz, Research Director

Executive Summary

State and local government workers enjoy significantly higher compensation levels than their private sector counterparts, according to data compiled for Rhode Island as part of a national study conducted by economists William Even, of Miami University, and David Macpherson, of Trinity University.

Even and Macpherson apply the most complete controls for such variables as education, experience, and broad job category and the most accurate accounting of benefits to date. They find that state and local government workers across the country receive a "premium" above their private-sector neighbors, but Rhode Island amplifies the difference:

- **Rhode Island:** 26.5% higher total compensation
- **New England:** 18.8% higher total compensation
- **United States:** 14.9% higher total compensation

Furthermore, a preliminary review of the effects of Rhode Island's pension reform suggests that the changes to their retirement benefits did not appreciably reduce government workers' advantage, only reducing the premium for government work to 26.24%.

Looking at base pay alone shows that job security and better benefits in government do not correspond with lower salaries, at least in Rhode Island and New England, where state and local workers receive:

- **Rhode Island:** 10.4% higher base pay
- **New England:** 2.8% higher base pay
- **United States:** 1.5% *lower* base pay

Averaging all jobs at every level, total public-sector pay and benefits in Rhode Island are competitive with Massachusetts and Connecticut, but private-sector workers earn nearly 25% less than their peers across state borders. Consequently, comparing averages within Rhode Island yields the following results:

- **Total compensation:** 20% higher for government workers
- **Pay (base salary):** 4% higher for government workers
- **Benefits:** 58% higher for government workers
- **Hours worked:** 5% less for government workers
- **Value of paid time off:** 5% higher for government workers

Compared with the New England region, Rhode Island's government employees are unique in having a higher average base salary than the private sector as well as a higher value for paid time off. They also enjoy a total compensation premium well above the regional average, even as they work the fewest total hours.

If there is to be any hope of keeping current compensation levels and benefit promises to government workers, the state must experience an immediate boom in the private-sector economy. Without rapid economic growth and a boost to their prosperity, taxpayers' tolerance and capacity to pay for government beyond their means will continue to wane.
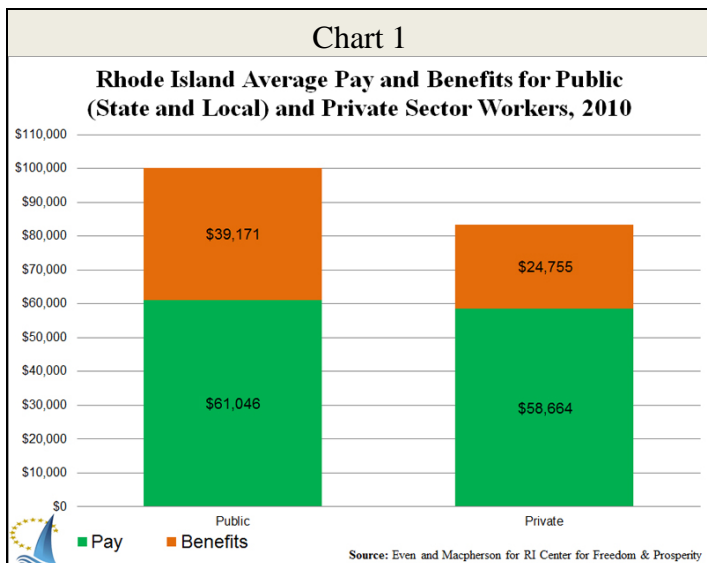
Full report at: www.rifreedom.org/2012/11/ri-public-and-private-sector-compensation-comparison
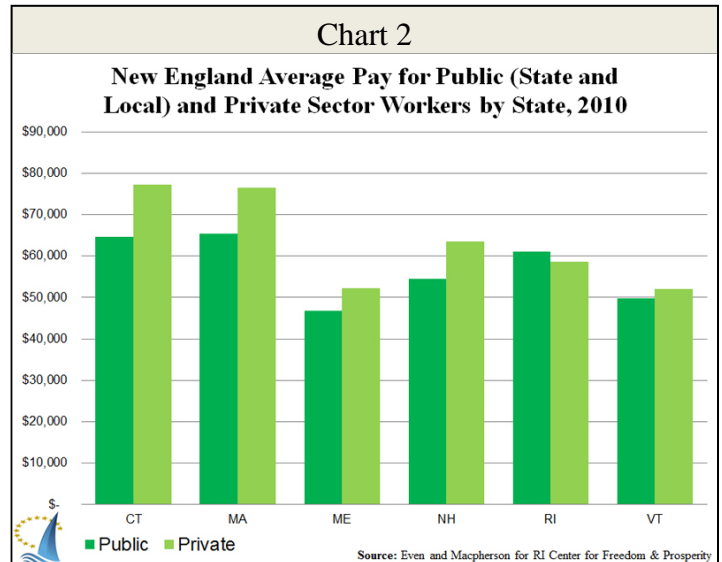
Data Analysis

Overall Averages

Rhode Island's state and local government employees receive higher compensation than their private-sector neighbors by every measure, according a study comparing public-sector and private-sector compensation that the RI Center for Freedom & Prosperity requested from economists William Even, of Miami University, and David Macpherson, of Trinity University.

Chart 1 shows the average real earnings and benefits (in 2010 dollars) for state and local workers versus private-sector Rhode Islanders. Benefits take into account pensions, health insurance (including post-employment/retiree), other insurance, legally required benefits, like Social Security payments, and paid time off. The total compensation for the average public-sector employee in Rhode Island was $100,217, which was more than 20% higher than the private-sector average of $83,419.

Chart 1

Rhode Island Average Pay and Benefits for Public (State and Local) and Private Sector Workers, 2010

Source: Even and Macpherson for RI Center for Freedom & Prosperity

Rhode Island is inarguably in a high-cost, public-labor-friendly region, but even so, it is unique within New England. Chart 2 shows that Rhode Island is the only New England state in which the average wage earnings (base salary) of all state and local workers, on its own, was greater than that for all private-sector workers.

The most conspicuous reason for Rhode Island's poor showing, here, is the huge gap between its economy and that of the two states that envelop it. While the Ocean State's public sector is competitive with Connecticut and Massachusetts (with earnings only $4,294, or 6.6%, below the region-leading Bay State), its private sector has a $15,398 (23.3%) deficit.

Chart 2

New England Average Pay for Public (State and Local) and Private Sector Workers by State, 2010

Source: Even and Macpherson for RI Center for Freedom & Prosperity

Even when benefits are factored in, the private sectors in Massachusetts and Connecticut outstrip government employees. In contrast, Table 1 shows that Rhode Island adds a relatively large amount of compensation via benefits in its public sector and a relatively low amount in its private sector.

Another significant perk to working in Rhode Island's public sector is time off. According to the data collected by Even and Macpherson, Rhode Island is the only New England state in which the value of the public sector's paid time off ($7,208) is greater than the private sector's ($6,857). (These numbers are included in the total for benefits.)

And while government workers in all New England states put in fewer hours than their private-sector neighbors, Rhode Island's public employees put in the fewest. Moreover, only in Vermont is the gap between the sectors larger. (Note: Annual hours are calculated from weekly-hour responses on employee surveys.)

Table 1 New England Average Pay and Benefits for Public (State and Local) and Private Sector Workers by State, 2010								
	Wage Earnings		Benefits		Total Compensation		Annual Hours Worked	
	Public	Private	Public	Private	Public	Private	Public	Private
Connecticut	64,734	77,235	42,756	30,315	107,490	107,550	2,124	2,267
Massachusetts	65,340	76,444	36,587	30,055	101,927	106,499	2,164	2,257
Maine	46,761	52,186	34,182	23,196	80,943	75,382	2,188	2,221
New Hampshire	54,594	63,558	38,175	26,110	92,769	89,668	2,151	2,262
Rhode Island	**61,046**	**58,664**	**39,171**	**24,755**	**100,217**	**83,419**	**2,103**	**2,222**
Vermont	49,837	52,158	38,652	22,696	88,489	74,854	2,161	2,241

Source: Even and Macpherson for the RI Center for Freedom & Prosperity
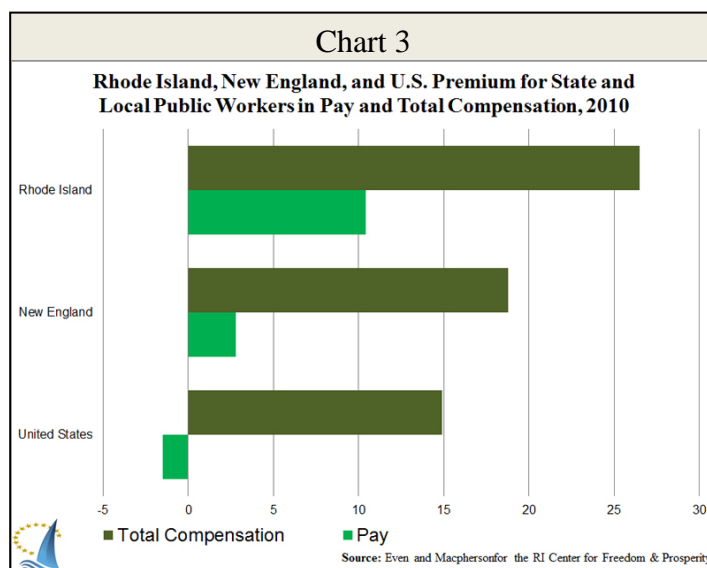
Variable-Controlled Premiums

A common objection to such comparisons of average pay is that the types of jobs available within the public sector lend themselves to more-highly educated employees. Therefore, the argument goes, it is entirely appropriate for them to make more than the average of *all* private-sector jobs, because they skew toward the higher end of the workforce.

To investigate this explanation, Even and Macpherson performed a regression analysis for Rhode Island, the New England Census division, and the United States in order to compare similarly situated employees. Chart 3 shows a summary of the results.

The percentage shown is the premium for working in the public sector — that is, the percentage advantage in compensation from working in the public sector, taking into account employee characteristics (such as education and experience) as well as broad job category (such as management versus office and administrative support). (See Table 2.)

On salary alone, state and local employees enjoy a 10.4% premium in Rhode Island, even when controlling for other variables like education, experience, and broad job category. For New England overall, the premium is 2.8%. Nationwide, the public-sector actually has a salary *penalty* of 1.5% below the private sector.

Chart 3

Rhode Island, New England, and U.S. Premium for State and Local Public Workers in Pay and Total Compensation, 2010

Source: Even and Macpherson for the RI Center for Freedom & Prosperity

Adding in the total value of benefits (before pension reform), Rhode Island's state and local workers receive a premium of 26.5% over their similarly situated private-sector counterparts. That compares with 18.8% for New England as a whole and 14.9% nationwide.

A significant consideration that Even and Macpherson were unable to quantify due to a lack of data is job security. Given higher rates of unionization and the ability to affect their employers through political activities, government workers are generally understood to face less volatility than do private-sector employees. In theory, economists could apply a monetary value to that intangible benefit, but such an investigation would be beyond the scope of this study.

Table 2		
Rhode Island Public (State and Local) and Private Sector Attributes, 2010		
	Public	Private
Average worker attributes		
Retirement age	59	63
Active worker age	46.8	43.5
2010 real earnings (pay; $)	61,046	58,664
Pension value (pre-reform; $)	10,692	3,827
Health insurance (including retiree health) value ($)	18,301	8,118
Other insurance value	208	550
Legally required benefits (e.g., Social Security; $)	2,762	5,403
Paid leave value ($)	7,208	6,857
Total compensation ($)	100,217	83,419
Annual hours worked	2,103	2,222
Workforce attributes (%)		
High school	16.8	28.5
Some college	10.2	16.8
Associates degree	12.6	10.2
Bachelor's degree	25.7	25.3
Master's degree	25.8	6.9
Professional degree	3.1	1.6
Doctorate	3.3	2.2
Female	48.1	42.9
Black	4.3	5.8
Asian	1.6	3.4
Hispanic	2.6	8.5
Disabled	2.4	2.0
Broad job category (%)		
Management occupations	9.2	13.4
Business and financial operations occupations	3.6	5.0
Computer and mathematical science occupations	2.0	3.9
Architecture and engineering occupations	1.1	3.2
Life, physical, and social science occupations	1.4	0.9
Community and social service occupations	4.7	2.2
Legal occupations	1.1	0.9
Education, training, and library occupations	32.0	4.1
Arts, design, entertainment, sports, and media occupations	0.5	1.6
Healthcare practitioner and technical occupations	3.1	5.6
Healthcare support occupations	0.3	2.8
Protective service occupations	16.6	1.3
Food preparation and serving related occupations	0.0	3.1
Building and grounds cleaning and maintenance occupations	4.7	2.2
Personal care and service occupations	1.8	1.8
Sales and related occupations	0.0	9.7
Office and administrative support occupations	11.8	13.7
Farming, fishing, and forestry occupations	0.3	0.3
Construction and extraction occupations	3.4	4.6
Installation, maintenance, and repair occupations	0.6	4.3
Production occupations	0.3	10.3
Transportation and material moving occupations	1.4	5.1

Source: *Even and Macpherson for the RI Center for Freedom & Prosperity*

Pensions & Pension Reform

One important adjustment that Even and Macpherson have made to the raw compensation data is to determine the current value of pension benefits using a 4% discount rate. In a defined-benefit system, actuaries value the guaranteed level of income that employees will receive during retirement by assuming that investments will produce a certain return.

Rhode Island currently assumes a 7.5% return. Prior to the adjustment that spurred the 2011 pension reform at the state level, the assumption was 8.25%. Because this study uses data from 2010, that is the starting point for this data. By comparison, the average private-sector assumption is 6%.

In all cases, therefore, Even and Macpherson had to mark up benefit values to account for the likelihood that investment profits will fall short of predictions. It may seem counterintuitive that a benefit is worth *more* when invested money receives *less* profit. However, in the case of guaranteed pensions, the benefit is defined in the future, not the present.

Therefore, lower profits from investments would require greater payments by the employer, making the benefit of greater value to the employee now. In effect, the employer is promising a greater return to the worker than he or she would be able to achieve by investing on his or her own.

Because pensions make up 10-20% of the typical government employee's total compensation, compared with 4-6% in the private sector, large reforms can greatly affect the premium that public-sector workers receive over the private market-place. For this study to be complete, therefore, some accounting of the effect of the Ocean State's pension reform on the value of state employees' benefit packages had to be included.

However, the imposing complexity of pension calculations is such that an accurate estimate of the reform's effects would be well beyond Even and Macpherson's scope. In particular, during the transition from the defined benefits pension to the newly developed hybrid plan, each individual employee's benefit will be different, and results vary from job to job and across state and local governments. It will be a matter of years before accurate data is available.

Consequently, the public-sector premium given above can be considered the outcome if the lawsuit currently pending on behalf of the relevant labor unions succeeds in overturning the reform. For some sense of the result if the state prevails in its defense of the reform, the Center for Freedom & Prosperity asked Even and Macpherson to provide a rough calculation.

It's important to note, here, that the pension data throughout this study assumes that all municipal employees are receiving the same weighted average contribution as those in the state's two largest plans — state workers and teachers — with and without 2011's reform.

Be that as it may, the effect of the reform on this study was relatively minor. The guaranteed payments provided through the defined-benefit portion of the state's new hybrid pension system have gone down. But the state has increased the percentage of payroll that it must contribute each year, to make up for the 5% of their pay that employees are putting toward their defined-contribution plans. The state has added a 1%-of-payroll contribution to those plans, as well.

Consequently, the annual value of government employees' pension benefit has only decreased from $10,692 to an estimated $10,476. In terms of the "premium" that state and local workers receive over similarly situated private-sector Rhode Islanders, the percentage advantage has decreased from 26.49% to 26.24%.

Policy Analysis

Living Beyond Our Means

When a family comes to a decision about purchasing any product or service, it doesn't merely accept the seller's sense of what's reasonable. In addition to the market rate, consumers must take into account the quality of the thing they're buying as well as their own ability to afford it.

With deteriorating infrastructure, doubts about the quality of government services, and the high-profile specter of unfunded municipal and state retirement liabilities looming over the state during

this current period of economic stagnation, the compensation of public-sector employees has become a subject of heated debate about fairness and affordability.

Rhode Island is the only state in New England in which public employees have higher base salaries than the private sector. At the same time, state and local workers in the Ocean State work the fewest hours in the region. When benefits are factored in, Rhode Island has the highest premium for public-sector workers over private-sector workers, even if pension reform survives the lawsuit that unions have filed to overthrow it.

Meanwhile, the state's economy is reeling, with arguably the worst employment picture in the United States, certainly the region. With dwindling taxable incomes and general economic activity, the state and its cities and towns will not long be able to continue to squeeze more revenue from a population that is losing ground economically and seeing many of its productive residents and college graduates flee to states with healthier economies.

Adjustments around the edges that do not take on the significant public policy issues we face will not be sufficient to turn the state around. Without rapid economic growth and a boost to their prosperity, taxpayers' tolerance and capacity to pay for government beyond their means will continue to wane. Painful struggles between powerful insiders and the average citizen will worsen. Even more taxpayers may decide that the battle is not worth the benefits of living within the Ocean State's borders.

Economic Growth Benefits
Public and Private Sectors

With all of the emphasis on improving economic development in Rhode Island, there have been two conspicuous omissions.

The first is the need for a complete change in the way that state and local governments treat taxpayers and businesses — as a matter of regulation, as a matter of spending, and as a matter of taxation.

The second, as emphasized in the data revealed in this study, is the fact that government workers should be out in front of the crowd advocating for change — not for tax-the-rich schemes that will never produce sufficient revenue, but for precisely the policies founded in economic liberty that will close the gap between private-sector Rhode Island's earnings and those of its nearest neighbors.

If there is to be any hope of keeping current compensation levels and benefit promises to government workers, the state must experience an immediate boom in the private-sector economy.

Even the dramatic pension reform that sent unions to their lawyers and made state Treasurer Gina Raimondo a national policy star barely nudged Rhode Island's public sector toward the national ratio of public-to-private workers. It hardly even brought the tiny Ocean State nearer to the average for the union-stronghold region of New England.

While additional compensation cuts and even deeper benefit reforms will be necessary in the public sector, the more significant factor in the public-private imbalance, locally, comes from the substandard economic conditions in which the Rhode Island taxpayer in the private sector is forced to survive. That is where dramatic improvement is most necessary, and most attainable, if public policy can be properly aligned.

Central Falls retirees discovered all too painfully that unsustainable compensation arrangements, whether salaries or benefits, are by no means guaranteed if obvious warning signs are not acted upon responsibly. The comparison of the public sector and the private sector in Rhode Island is one such sign of unsustainable compensation levels.

The people of Rhode Island depend upon government workers for the appropriate and necessary functions of government, but those workers depend upon the private sector to maintain a healthy economy and, in turn, sufficient government revenue. The top priority for employees on both sides of Rhode Island's taxing and spending, therefore, should be reasonable reform that makes public-employee compensation sustainable combined with the elimination of policies that restrain economic growth in the Ocean State.

Methodology

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This section describes the sources and methods used to compute compensation for state and local public and private sector workers. It also describes the regression methods used to estimate the compensation difference between private sector and state/local employees for the examined states.

Annual Wages

Annual wages are drawn from the 2007-2011 Current Population Survey Annual Social and Economic Supplement (CPS-ASE), which is conducted in March of each year. The Annual Demographic Supplements are chosen because, unlike the other monthly surveys, questions are asked regarding annual earnings in the prior year. The sample is restricted to full-time, full-year workers who are 18 or over and employed in the state or local government, or the private sector. Excluded from the sample are employees of the federal government, self-employed workers, anyone who has earnings imputed, and workers who report annual earnings that imply an hourly wage below the federal minimum of $7.25. We also exclude anyone who reports more than one employer in the prior year since information is available only for the employer associated with the longest job in the prior year. All earnings are converted into 2010 dollars using the Consumer Price Index for all urban consumers.

Fringe Benefits

We use data from several sources to estimate the employer's contributions for health insurance, pensions, retiree health insurance, and legally required contributions for fringe benefits. Since reported salary in the CPS-ASE is likely to include compensation for sick, vacation, and supplemental pay, we do not adjust earnings for those benefits.

The methods for estimating each of these fringe benefits is discussed below. An important data source for estimating the value of fringe benefits is the 2010 Employer Cost of Employee Compensation (ECEC).[1] Using unpublished data provided by the Bureau of Labor Statistics, we obtained estimates of the average hourly cost of fringe benefits for each of the nine census divisions for private and state and local workers. For private sector workers, there is a further breakdown of hourly cost for eight occupations, three firm size categories (1-99, 100-499, and 500+ employees). This yields 24 private sector job cells for each of the nine census divisions, for a total of 216 job cells.[2]

For state and local workers, there is a breakdown by occupation, but not by employer size. Thus, for state and local workers, there are eight job cells based on occupation for each census division, resulting in a total of 72 job cells.

Health Insurance

To estimate the value of health insurance for a worker in the CPS-ASE, we start with the hourly cost for a given worker type based on their "job cell," reflecting census division, occupation, public-sector employment, and firm size for private sector workers. For each job cell, we then calculate an average for annual hours and pension and health insurance coverage rates using data.

An hourly cost of pension and health insurance coverage conditional on coverage is then calculated as the hourly cost divided by the relevant coverage rate.[3] For each job cell, we then calculate the annual cost of the fringe benefit for covered workers by multiplying annual hours times the hourly cost of the benefit conditional on coverage.

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[1] A description of this data can be found at www.bls.gov/opub/hom/pdf/homch8.pdf.

[2] In some cases, the BLS does not provide estimates for detailed occupations. Data had to be aggregated to higher levels to obtain estimates. For example, if there wasn't an estimate provided for SOC code 49 (installation, maintenance, and repair), we used the estimate for the broader category of 45-49 (natural resources, construction, and maintenance).

[3] For example, if the hourly cost for pension coverage is $2 per hour, but only one-half of workers are covered by a pension, the hourly cost conditional on coverage would be $4=$2/0.5.

For each worker reporting health insurance coverage in the CPS-ASE, we estimate the annual cost of the relevant fringe benefit as the annual cost conditional on coverage for their relevant job cell.[4]

Retiree Health Insurance

The CPS-ASE does not provide information on retiree health coverage. We use information provided by Munnell et al (2011) for valuation. For public sector workers, it is assumed that anyone eligible for health insurance coverage is eligible for retiree health insurance.

The average normal cost for retiree health in 2009 was 7.6% of payroll. After reducing the value by 50% because of the uncertainty of eventual receipt of retiree health and increasing the figure by 25% to reflect the value of having access to group instead of individual rates, the adjusted normal cost of retiree health in the public sector is valued at 3.9%.

For private-sector workers, we assume that normal cost is the same as that in the public sector and that workers without private health insurance do not have retiree health. Since 18% of workers in the private sector are eligible for retiree health and 68% of private-sector workers have health insurance coverage, we assume that 26.5% (.68/.18) of workers with private health insurance will have access to retiree health insurance.

Legally Required Benefits

The ECEC provides estimates of the hourly cost of legally required benefits for each job cell. This is converted into a percentage of pay for each job cell by dividing by the average hourly wages in the ECEC. Using data on public pension plans (see below), we adjust legally required benefits to account for workers who are not covered.[5] For example, if only one-half of state and local workers are covered by Social Security, we reduce the employer's legally required contribution rate for Social Security by one-half of wages and salaries.

Pensions

Pensions are a much larger share of compensation for state and local than private sector workers. Also, defined benefit (DB) plans are much more common in the public sector and proper valuation of these benefits can be sensitive to assumptions about rate of return assumptions.

For private sector employees, we use the ECEC to estimate the employer contribution rate as a percentage of wages for each job cell. This is converted into a contribution rate conditional on coverage by dividing by the pension coverage rate for that job cell. Annual contributions for each pension-covered worker in the CPS-ASE are calculated as the employer contribution rate (conditional on coverage) times the worker's reported annual earnings from the CPS-ASE.

In the ECEC, employer contributions to a DB plan reflect actual contributions, but contributions to DB plans in a given year could be over- or under-statements of the true cost of the promise. DB contribution rate adjustments are discussed below. For defined contribution (DC) plans, employer contributions reflect actual cost and require no adjustments to the employer contribution rate.

To estimate the value of employer contributions to pensions in the public sector, we use 2006-2009 data from the Public Plans Database (PPD) provided by the Center for Retirement Research at Boston College.[6] The PPD contains data on 126 state and local DB plans and represents more than 85% of total state and local government pension assets and members.[7] The PPD also includes 2006 data for 20 state-administered DC plans and single-year data between 2005 and 2007 for an additional 70 major municipal DC plans.

For DC plans, for each state, we estimate the average employer contribution rate to DC plans. For public-sector DB plans, we start with the reported "normal cost" in the PPD representing an actuarial estimate of the percentage of payroll that

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[4] Keefe (2010) Biggs and Richwine (2011), Munnel et al (2011) also use ECEC data to estimate the value of health insurance.

[5] The percentage of state and local government workers with Social Security covered employment is available in Nuschler et al (2011) for each of the 50 states.

[6] The Public Plans Database is available at crr.bc.edu/data/public-plans-database. We exclude 2010 data, but it was incomplete and less representative of pensions than the other years.

[7] The PPD covers 90% of all state government pension assets and members, but only about 20% for local governments.

must be contributed to fund the benefit that is promised at retirement. The normal cost for a given DB plan is sensitive to the assumed rate of return, mortality rates for retirees, retirement age, and a host of other factors. Since employees frequently contribute to public sector DB plans, the employee contribution rate is subtracted from the normal cost to estimate the employer's share of normal cost.

Most state and local pension plans assume an annual return of 8.0% when calculating normal cost. Several researchers have criticized this practice as being overly optimistic and resulting in a significant understatement of costs.[8] Recent studies of the public-sector wage differential correct for this by adjusting the normal cost to reflect a risk-free interest rate.[9] The size of these adjustments can be quite large. Biggs and Richwine (2011) estimate changing the assumed rate of return from 8 to 4% causes the normal cost to more than triple.

To estimate the mark-up to normal cost associated with switching from one rate of return to another, for each public sector DB plan, we estimate the increase in normal cost associated with switching to a 4 percent rate of return. The calculation for a given plan is made for a worker with the plan's average age for active workers retiring at the plan's average age of retirement with remaining life expectancy matching that for the U.S. population at that retirement age.[10] To calculate the adjustment factor, for each assumed interest rate we calculate

$$a(r) = \frac{1-(1+r)^{-L(R)}}{r(1+r)^{R-A}}$$

where r is the assumed rate of return), R is the average retirement age, A is the average age of covered workers, and $L(R)$ is the remaining life expectancy for a worker retiring at age R. The mark-up factor for switching to a lower discount rate equals

$$a(.04)/a(assumed\ investment\ return)$$

For example, using an average retirement age of 63, an average age for active workers of 45.2, and

remaining life expectancy of 20.2 years for a worker retiring at age 63, the adjustment factor associated with switching from an 8% to a 4% discount rate is 2.72.

After estimating the mark-up, we calculate the employer's adjusted normal cost rate as the reported normal cost rate after marking up to reflect a 4% rate of return and then subtract the employee contribution rate.

For private-sector workers, we adjust ECEC data on contributions to DB plans to adjust for two factors. First, the ECEC data reports employer contributions to DB plans, not normal cost. Since employer contributions could include money contributed to amortize unfunded liabilities, we adjust contributions to remove any amortization. This is accomplished by using Form 5500 data from 2006 through 2010 to estimate the average share of employer contributions to DB plans devoted to amortization of unfunded liabilities.[11]

In the United States, the average share of employer contributions directed to amortization (weighted by employer contributions) is 31%. We thus reduce the ECEC employer contribution rate to DB plans by this amount.

The second adjustment reflects the fact that private-sector DB plans also tend to assume overly optimistic rates of return in calculating their normal costs. For mark-ups to DB contributions to private pensions, we estimate how much normal cost increases if the rate of return assumption is reduced from 0.06 (the average return assumed by private-sector DB plans in the form 500 data) to 0.04.

We also assume an average age for active employees of 43.5, based upon the average age of workers with pension coverage in the CPS-ASE, and an average retirement age of 63 based on form 5500 data for private DB plans. Since fewer than 1% of private-sector DB plans are contributory, we mark up employer contributions only to make the adjustment for a lower discount rate.[12]

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[8] See, for example, Brown and Wilcox (2009), Novy-Marx and Rauh (2009, forthcoming).

[9] See, for example, Biggs and Richwine (2011) and Munnell et al (2011).

[10] See McGill (2005, p. 628) for a description of how normal cost is calculated and how the assumed rate of return enters the calculation.

[11] To estimate contributions for amortization, we relied on Freedom of Information releases of the form 5500 schedule B data which are not available for 2008. The data is available at www.dol.gov/ebsa/foia/foia-5500.html.

[12] The ECEC data provides total pension contributions for each job cell, but a breakdown of DB and DC [continued]

Our approach to estimating the value of pension compensation differs from most earlier studies. Keefe (2010) does not make any adjustment to the ECEC data for either amortization or overly optimistic assumptions on rates of return. Biggs and Richwine (2011) and Munnell et al (2011) mark up the normal cost for public sector pensions but make no similar adjustment for private sector pensions.[13] Keefe (2010) also does not adjust private-sector employer contributions measured in the ECEC for the fraction of contributions devoted to amortization of prior liabilities.

Paid Time Off

The earnings report in CPS-ASE includes earnings from the employer during the prior year. If, however, workers receive different amounts of paid or vacation time, an adjustment should be made to reflect the differences. For example, if two workers have identical earnings for the year and one receives no paid vacation while the other receives four weeks of paid vacation, the latter person is receiving a higher level of compensation.

To adjust compensation to reflect differences in paid time off, we estimate how much a person would have earned if he or she had not taken any time off. To make this calculation, we use the ECEC to estimate the fraction *x,* which is defined as the hourly cost of paid leave as a fraction of total earnings (wages + supplemental pay + paid leave).

We then estimate the adjusted level of compensation by dividing total earnings by (1-x). For example, if a person reports $50,000 of total earnings and 20% of earnings are for paid leave, the person's adjusted annual compensation is $50,000/(1-0.2)=$62,500. That is, a person who earns $50,000 for working 80% of the year would earn $62,500 if they worked 100% of the year.[14]

Estimating the Public-Private Differential in Compensation

To estimate the public-private pay differential, we use a regression method to control for other factors that might result in pay differences. The regression model is

$$y_i = \beta_0 + Public_i\beta_1 + X_i\beta_2 + e_i$$

where the subscript i indexes workers, y_i is the natural log of annual compensation, $Public_i$ is a dummy variable indicating that the workers is employed by state or local government, X_i is a vector of characteristics describing the worker, and e_i is an error term that is assumed to be independently and identically distributed across workers.

The coefficient corresponding to the public sector dummy variable (β_1) is the estimate of the public sector premium or penalty. For example, if $\beta_1 = .1$, public-sector workers have approximately a 10 percentage point premium relative to private-sector workers. If the estimate of β_1 is negative, public sector workers receive an earnings penalty.

The control variables included in our regression analysis are as follows:

1. Dummy variables for nine different education categories
2. Sex
3. Dummy variables indicating whether a person is black, Asian, or Hispanic
4. A dummy variable indicating whether a person is disabled
5. Dummy variables for the year that annual earnings were measured in the CPS-ASE
6. The natural log of annual hours worked.

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contributions is available only by firm size for each Census division. To generate an estimate of DB and DC contributions for each job cell, we calculate the percentage of pension contributions going to DB and DC plans by employer size and use that to estimate DB and DC contribution levels for each occupation in the corresponding employer size cell. For example, if 75% of pension contributions go to DB plans in the largest firm size category in a given census division, we assume that all occupations in the same firm size and census division have 75% of pension contributions directed to DB plans.

[13] Another difference is that Munnell et al (2011) assume a discount rate of 6.23% when estimating the mark up to normal cost.

[14] Podgursky and Tongrut (2006) adjust hours worked instead of annual pay to account for differences in paid leave across jobs using the ECEC estimates of the share of total earnings due to paid leave. Either approach implies the same hourly wage for work hours. In a regression context, the two adjustments would result in an identical estimate of the public pay premium if the coefficient on the log (annual hours worked) in the earnings regression equals one. In practice, making the hours adjustment instead of the earnings adjustment causes small, nonsystematic, differences in the estimated public sector premium.

We deliberately exclude two control variables: union status and employer size. Union status is excluded because we do not attempt to disentangle the portion of the public-sector premium due to union, as opposed to public sector, status. Firm size is excluded because virtually all public-sector workers would be classified at the largest firm size (500+ employees), and thus the public-sector premium would primarily entail a comparison of public-sector workers with private-sector workers at the largest firms. By excluding the firm-size control, we are comparing the earnings of public sector workers with workers at all firm sizes.

To calculate annual hours worked, we multiply weeks worked by usual hours worked per week. In the case of teachers, Podgursky and Tongrut (2006) establish that the weeks worked reported in the CPS is an overstatement. They note that the majority of teacher contracts are for 38 weeks, and yet 72% of teachers report working 52 weeks per year. Moreover, they present evidence that only 21% of teachers report receiving any summer pay for teaching or other school-related work and that, for those who report working in the summer, summer pay is only 5.6% of their nine-month salaries. Using data from a question in the American Time Use Survey on whether a person was at work in the prior seven days, Krantz and Kent (2008) estimate that less than half of teachers worked in July.

Since weeks worked is likely to be overstated for teachers, a failure to correct for this yields an understatement of hourly compensation. One possible change is to adjust annual hours to reflect 39 weeks per year, but this would likely understate work hours, since some teachers do work summers.

We choose a more conservative approach and use data from the 2010 ATUS to adjust weeks worked. For the months of June through August, we estimate the average percentage of teachers who report working in the week prior to the survey *(p)*. We then adjust teacher weeks worked (both private and public sector) by reported weeks worked by (0.75 + 0.25 * *p*). This essentially assumes that teachers work full-time during nine months of the year and the fraction *p* work full time during the summer.

Notice that any paid time off during the other part of the year is handled through the adjustment for paid time off discussed above. That is, if teachers receive paid time off during the school year, this will be reflected by an adjustment to their annual compensation based on the value of paid leave as a fraction of total earnings.[15]

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[15] The ECEC data for teachers does not count summer months as paid vacation. See Podursky and Tongrut (2006).