The Heritage Foundation
LEADERSHIP FOR AMERICA

BACKGROUNDER

No. 2781 | MARCH 25, 2013

# Official Education Spending Figures Do Not Incorporate Full Cost of Teacher Pensions

*Jason Richwine, PhD*

**Abstract**
*Despite the centrality of pensions in debates over government budgeting and education policy, the federal government dramatically underestimates teacher pension costs in its official education spending figures. States report to the federal government only the yearly contributions to teacher pension funds rather than the present value of accrued benefits. Since states and local school districts routinely contribute less to their pension funds than is needed to cover future benefits, correcting this accounting problem could add tens of billions of dollars—somewhere around $1,000 per pupil—to official education spending estimates. The federal government should revise its data collection procedures to require proper accounting of teacher pension costs, giving taxpayers a more accurate picture of education expenditures.*

This paper, in its entirety, can be found at **http://report.heritage.org/bg2781**

Produced by the Domestic Policy Studies Department

**The Heritage Foundation**
214 Massachusetts Avenue, NE
Washington, DC 20002
(202) 546-4400 | heritage.org



The cost of pensions for public school teachers is a major focus of debates over education spending. In Wisconsin, for example, Democrats strongly opposed reforms championed by Governor Scott Walker (R) that prevented teachers and other public employees from collectively bargaining over pensions. In Florida, teachers filed a lawsuit in response to a new requirement that state employees contribute 3 percent of their salary to their pension plan, which had been funded exclusively by taxpayers.[1] Part of the intense media coverage of the recent teacher strike in Chicago was the fact that the city—instead of teachers themselves—paid most of the "employee contribution" to the teacher pension fund.[2]

Despite the prominence of pensions in these debates, however, the federal government dramatically undercounts the cost of teacher pensions in its official education spending estimates, which include the widely cited per-pupil spending figures. This undercounting occurs because the National Center for Education Statistics (NCES), a division of the U.S. Department of Education, allows states to define teacher pension costs as whatever school districts happen to contribute to their pension funds each

## Key Points

- Despite the centrality of pensions in debates over government budgeting and education policy, the federal government dramatically undercounts the cost of teacher pensions in its official education spending estimates.
- This undercounting occurs because the National Center for Education Statistics (NCES) allows states to define teacher pension costs as whatever school districts happen to contribute to their pension funds each year, rather than the amount needed to pay for future pension benefits.
- Because governments frequently underfund their pensions, the contribution does not reflect a pension's true cost.
- Proper accounting would reveal tens of billions of dollars in extra teacher pension costs, equivalent to somewhere around $1,000 in unreported spending per student.
- The NCES should revise its data collection procedures to require proper accounting of teacher pension costs, giving taxpayers a more accurate picture of education expenditures.

year. Because governments frequently underfund their pensions, the contribution does not reflect the true costs of their pensions. The correct accounting, which is embraced by other federal agencies and virtually all economists, measures pension costs based on the present value of future pension benefits that teachers have accrued.

Using proper accounting, teacher pension costs are several times higher than the amount recorded in NCES estimates. Although exact figures are not available, making this correction adds somewhere around $1,000 to the current per-pupil spending estimates. The NCES should revise its data collection procedures to require proper accounting of teacher pension costs, giving taxpayers a more accurate picture of education expenditures.

## How Teacher Pension Costs Are Incorporated into Education Spending Estimates

The NCES publishes school expenditure statistics each year. Unfortunately, its numbers are always a few years behind, presumably due to the lengthy data collection and analysis involved. The 2012 report lists total state and local expenditures for elementary and secondary education at $12,309 per pupil during the 2009–2010 school year, which is the most recent year for which data are available.[3]

The NCES also publishes "current" expenditures for education, which came to $10,652 per student. Current expenditures are intended to reflect the ongoing, day-to-day cost of running the school system. Therefore, unlike total expenditures, current expenditures do not include debt service payments or one-time capital investments, such as building construction.

How then do pension costs fit into these per-pupil figures? The NCES derives its estimates from the National Public Education Financial Survey (NPEFS). The NPEFS represents an attempt by the NCES to bring some consistency to state-level financial accounting by asking states to report school revenues and expenditures in standardized categories. One of those categories is "employee benefits" (federal object code: 200), which the NCES describes in this way:

> Amounts paid by the school district on behalf of employees (amounts not included in gross salary but in addition to that amount). Such payments are fringe benefit payments and, while not paid directly to

### Explanation of Key Terms

A **defined-benefit (DB) pension** is a traditional retirement plan that pays recipients a fixed sum at regular intervals between retirement and death. Most government employees are enrolled in a DB pension plan, but DB plans are increasingly rare in the private sector.

The **present value** of a future dollar amount is a smaller amount that has been discounted to reflect the time value of money. For example, $103 paid next year may have a present value of only $100.

A **discount rate** is a percentage used to reduce a future dollar amount to its present value. In the example above, applying a 3 percent discount rate converts the value of $103 paid next year to $103/(1 + 0.03) = $100 today. Public pension actuaries use a high discount rate—usually between 7.5 percent and 8 percent—that makes the future pension benefits they owe seem less costly in present value terms. A lower discount rate would increase the present value of pension liabilities.

The **normal cost** of a pension is the amount of money that must be set aside today to pay for the future pension benefits that have accrued this year. In other words, the normal cost is the present value of newly accrued pension benefits at a given discount rate.

**Unfunded liabilities** are accrued benefits for which the pension fund has not yet set aside money.

1. Tami Luhby, "Florida Teachers Sue State in Pension Dispute," CNN, June 20, 2011, http://money.cnn.com/2011/06/20/news/economy/florida_teachers_pension_lawsuit/index.htm (accessed March 8, 2013).
2. Mary Williams Walsh, "Next School Crisis for Chicago: Pension Fund Is Running Dry," *The New York Times*, September 19, 2012, http://www.nytimes.com/2012/09/20/business/teachers-pension-a-big-issue-for-chicago.html (accessed March 8, 2013).
3. Stephen Q. Cornman, Jumaane Young, and Kenneth C. Herrell, "Revenues and Expenditures for Public Elementary and Secondary Education: School Year 2009-10 (Fiscal Year 2010)," U.S. Department of Education, National Center for Education Statistics, November 2012, Tables 3 and 8, http://nces.ed.gov/pubs2013/2013305.pdf (accessed March 15, 2013). Note that calculating total expenditures per pupil requires dividing $607,235,611,000 from Table 8 by 49,333,543 students in Table 3.

employees, nevertheless are part of the cost of personal services.[4]

The typical way that states report their pension costs is to include in this employee benefits category the total amount contributed by public employers to their pension funds each year.[5] However, this measure of pension costs substantially underestimates the real costs, which leads in turn to underestimating per-pupil spending.

## Proper Estimation of Teacher Pension Costs

The annual government contribution to the pension fund is an inaccurate estimate of actual pension costs. To understand why this is the case, a brief review of how pensions operate is needed.

In this paper, the term "teacher pensions" refers broadly to state and local defined-benefit (DB) plans for all public school employees, including administrators and non-instructional staff.[6] A DB retirement plan is a traditional pension that pays recipients a fixed sum (sometimes with cost-of-living increases) at regular intervals between retirement and death. Pension benefits to retirees are determined by a formula based principally on years of service and salary near retirement. For example, a typical benefit formula might be 2 percent of final salary multiplied by years of teaching service.

Public pensions are designed to be fully funded, meaning that plan administrators set aside money each year to pay the pension benefits that active teachers earn (or "accrue") in that year. Administrators put these pension contributions into an investment fund. The combination of the annual contribution and the interest earned on that contribution is then supposed to pay for future benefits that current teachers have accrued.

However, since it is impossible to know precisely how long specific teachers will work, what their average salaries will be when they retire, and how long they will live past retirement, some assumptions are needed to estimate costs. Using these assumptions, actuaries working for pension funds develop estimates of the "normal cost" of pensions, which is the amount of money that must be set aside today to pay for the future pension benefits that have accrued during the year. Teachers are often required to contribute a portion of this normal cost through a payroll deduction.

The employer's portion of the normal cost is conceptually the correct way to think about the ongoing, year-to-year cost to taxpayers of operating a public pension. Additional pension costs come in the form of "unfunded liabilities," which are accrued benefits for which the pension fund has not yet set aside money. Unfunded liabilities are often too large to pay off all at once, so plan administrators will amortize (i.e., set up a long-term payment schedule for) the liability, usually over a period of 30 years. The total cost of operating a pension is the sum of the normal cost and the payments toward the unfunded liabilities.

## Why the Government Contribution Is Not the Full Cost of a Pension

The government contribution to a pension fund does not reflect the actual cost of the pension for the simple reason that governments frequently do not make the required contribution to cover future costs. The NCES definition of pension cost is merely what public employers decide to contribute, not what they necessarily need to contribute to pay for accrued benefits. Because pension benefits are guaranteed by state law and often by state constitutions, underfunding pension plans today does not reduce benefits or save money in the long term. It simply delays paying for steadily accruing benefits, forcing future taxpayers to deal with the growing problem.

But negligent legislatures are not the only ones responsible for the rampant underfunding of teacher pensions. State and local governments throughout the nation use a pension accounting method—detractors might call it an accounting trick—that is roundly rejected by financial economists,[7] private pension administrators, and

4. National Forum for Education Statistics, "Forum Guide to Core Finance Data Elements," U.S. Department of Education, p. 26, http://nces.ed.gov/pubs2007/2007801.pdf (accessed March 8, 2013).
5. Surprisingly, no publication (of which the author is aware) explicitly instructs states to report pension costs in this way. However, discussions with the NCES and several state officials responsible for NPEFS reporting made it clear that this method is the most widely used. It is possible, although unlikely, that a minority of states use a different method.
6. In some jurisdictions, all public school employees are enrolled in the same pension. In other cases, certified teachers and administrators have their own plan, while non-instructional staff members are enrolled in a separate pension. This paper focuses on pension benefits for all employees of public schools, regardless of whether their pension plan includes actual teachers.
7. Jeffrey R. Brown and David W. Wilcox, "Discounting State and Local Pension Liabilities," *American Economic Review*, Vol. 99, No. 2 (May 2009), pp. 538–542.

public-sector pension regulators in other industrialized nations.[8]

The details are a little complicated, but important to understand.[9] Government actuaries base their cost calculation on the expected rate of return on plan investments—typically 7.5 percent to 8 percent for teacher plans—which does not account for the risk inherent in those investments. Therefore, government actuaries "discount" (reduce the estimated size of) future pension liabilities at a rate that is too high.

A basic principle of financial economics is that liabilities must be discounted at a rate that reflects their risk.[10] Pension benefits to teachers are virtually guaranteed to be paid. Therefore, nearly all financial economists argue that the discount rate should be based on a virtually risk-free rate of return, such as the yield on U.S. Treasury bonds, which is currently around 3 percent. In 2008, then-Vice Chairman of the Federal Reserve Board Donald Kohn put it best:

> While economists are famous for disagreeing with each other on virtually every other conceivable issue, when it comes to this one there is no professional disagreement: The only appropriate way to calculate the present value of a very-low-risk liability is to use a very-low-risk discount rate.[11]

Pension funds may or may not achieve 8 percent average returns, but they must pay their promised pension benefits regardless. Thus, the published cost reflects only part of the full cost of the pension plan. Additional cost comes from the guarantee that benefits will be paid even if the plan's investments do not generate the predicted returns. When the discount rate is lowered to reflect that risk, the total cost of teacher pensions can be several times greater than reported, yet state and local budgets do not account for this component of pension cost. As two economists from the federal Bureau of Economic Analysis (BEA) recently stated:

> If the assets of a defined-benefit plan are insufficient to pay promised benefits, the plan sponsor must cover the shortfall. This obligation represents an additional source of pension wealth for participants in an underfunded plan.[12]

Public pension accounting practices do not currently measure the cost of that obligation, nor is it present in the NCES standard for measuring pension costs.

Because pension fund administrators and associated groups often try to argue that risk-adjusted discounting is merely a niche movement,[13] it is important to emphasize that economists practically unanimously support this method. As noted above, Kohn cited essentially "no professional disagreement" on risk-adjusting pension costs.[14] Furthermore, in a 2012 poll, 38 of 39 leading economists agreed with this statement: "By discounting pension liabilities at high interest rates under government accounting standards, many U.S. state and local governments understate their pension liabilities and the costs of providing pensions to public-sector workers."[15] The bottom line is that the defenders of public pension accounting methods, not their critics in mainstream economics, are the embattled contrarians.

Another inadequacy of the current NCES definition of pension costs concerns total expenditures versus current

8. Aleksandar Andonov, Rob Bauer, and Martijn Cremers, "Pension Fund Asset Allocation and Liability Discount Rates: Camouflage and Reckless Risk Taking by U.S. Public Plans?" Working Paper, May 1, 2012, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2070054 (accessed March 8, 2013).
9. For more information on this pension accounting issue, see Jason Richwine, "The Real Cost of Public Pensions," Heritage Foundation *Backgrounder* No. 2694, May 31, 2012, http://www.heritage.org/research/reports/2012/05/the-real-cost-of-public-pensions.
10. The classic theoretical paper is Franco Modigliani and Merton H. Miller, "The Cost of Capital, Corporation Finance and the Theory of Investment," *American Economic Review*, Vol. 48, No. 3 (June 1958), pp. 261–297. For its application to modern pension funding, see Brown and Wilcox, "Discounting State and Local Pension Liabilities."
11. Donald L. Kohn, speech at the National Conference on Public Employee Retirement Systems Annual Conference, New Orleans, May 20, 2008, http://www.federalreserve.gov/newsevents/speech/kohn20080520a.htm (accessed March 8, 2013).
12. Marshall B. Reinsdorf and David G. Lenze, "Defined Benefit Pensions and Household Income and Wealth," Bureau of Economic Analysis, *Survey of Current Business*, Vol. 89, No. 8 (August 2009), p. 51, http://www.bea.gov/scb/toc/0809cont.htm (accessed March 8, 2013).
13. This is labeled "Fallacy 4" in Jason Richwine, "Nine Fallacies Used to Defend Public-Sector Pensions," Heritage Foundation *Backgrounder* No. 2765, February 5, 2013, http://www.heritage.org/research/reports/2013/02/nine-fallacies-used-to-defend-public-sector-pensions.
14. Kohn, speech at the National Conference on Public Employee Retirement Systems Annual Conference.
15. The one economist who did not agree voted "uncertain" and commented that he was "not sure why they do that" in reference to the discount-rate policy used by public pensions. IGM Economic Experts Panel, "U.S. State Budgets," Initiative on Global Markets, October 1, 2012, http://www.igmchicago.org/igm-economic-experts-panel/poll-results?SurveyID=SV_87dlrlXQvZkFB1r (accessed March 8, 2013).

expenditures. As noted above, the government's annual pension contribution is supposed to include both payments to fund benefits accruing in the current year (the normal cost) and payments toward unfunded liabilities, which are previously accrued benefits for which the government has not yet set aside money. Since payments toward unfunded liabilities are a form of debt service, this component of the cost should be limited to "total expenditures" and not included in "current expenditures." However, the NCES appears to designate pension costs as falling entirely within the current expenditures category. This distinction between total expenditures and current expenditures becomes important in the next section, which attempts to produce corrected pension cost estimates.

## A Rough Estimate of Corrected Spending Figures

This section uses some back-of-the-envelope calculations to estimate what corrected spending figures might look like. Given the uncertainties in the available data, the numbers discussed here should be viewed as illustrations of how large the existing error might be. They should not be considered exact figures. (For full details of the calculations, see the Appendix.)

Based in part on previous Heritage Foundation research, replacing the government's pension contribution figure with the risk-adjusted normal cost of teacher pensions will increase overall teacher benefits by 42.6 percent. The cost of all employee benefits in the NPEFS is currently reported as about $109 billion, which translates to $2,215 per pupil.[16] This means that benefit costs should be augmented in the NPEFS by $46 billion (which is 42.6 percent of $109 billion), or about $944 per pupil.

This $944 figure represents the additional ongoing cost of teacher pensions that is not reflected in official per-pupil estimates. In other words, current expenditures per pupil are not $10,652 as reported by the NCES, but something closer to $11,596.

What about total expenditures? When the government contribution figure is replaced with both the risk-adjusted normal cost *and* the payments toward unfunded liabilities (a form of debt service), the cost of overall benefits goes up by 78.8 percent. (See the Appendix.) This adds about $86 billion (which is 78.8 percent of $109 billion), or $1,745 in per pupil expenditures. Official total expenditures per-pupil would rise from $12,309 to $14,054.

To reiterate, these corrected figures are just back-of-the-envelope estimates. However, underreporting education spending by tens of billions of dollars—somewhere around $900 to $1,000 per pupil in current expenditures, and an additional $700 to $800 per pupil in debt service—is not a trivial omission.

## Recommendations for the NCES

The NCES should follow proper pension accounting rules by requiring states to report the risk-adjusted cost of accruing benefits and unfunded liability payments rather than their contributions to the pension funds. Estimating costs using the present value of liabilities instead of mere contributions would prevent states and localities from hiding the real cost of their teacher pensions by simply contributing less than the required amount. Crucial to determining the present value is risk adjusting the liabilities—that is, incorporating the cost of guaranteeing future benefit levels regardless of fund performance.

By reforming how it collects data on pension costs, the NCES would join a growing list of federal agencies endorsing better accounting. Federal Reserve and BEA officials already support risk-adjusted discounting of pension obligations. Beginning this year, the National Income and Product Accounts, which are the official ledger books of the U.S. economy, will use a measure of public pension liabilities that captures the value of benefit guarantees to employees.[17] In addition, the Congressional Budget Office has issued a report that was widely taken as a confirmation of the market valuation approach[18] and has endorsed "fair value" discount rates for cost projections in other contexts as well.[19]

The NCES should join this movement in order to provide more accurate estimates of teacher pension costs and of education spending in general. Perhaps the best approach for the NCES is to adopt the BEA's new methodology for measuring pension costs.

16. Author's analysis of NPEFS data for the 2009–2010 school year, using fall enrollment to count the student population.
17. Brent Moulton, "Looking Ahead: 2013 NIPA Comprehensive Revision," U.S. Department of Commerce, Bureau of Economic Analysis, June 7, 2011, pp. 11–12, http://www.bea.gov/national/pdf/conference/Looking%20Ahead%202013%20NIPA.pdf (accessed March 8, 2013).
18. Congressional Budget Office, "The Underfunding of State and Local Pension Plans," *Economic and Budget Issue Brief*, May 2011, http://www.cbo.gov/publication/22042 (accessed March 8, 2013).
19. Congressional Budget Office, "Fair-Value Estimates of the Cost of Federal Credit Programs in 2013," June 2012, http://www.cbo.gov/publication/43352 (accessed March 8, 2013).

Any change in reporting requirements does present logistical challenges and transition costs. Fortunately, individual public pensions already publish comprehensive annual financial reports (CAFRs), which provide detailed information about plan liabilities. States collecting pension cost data for the NPEFS would need to reference these CAFRs instead of school district accounting ledgers. While states will probably need to risk-adjust the liabilities—using the same procedure as the BEA, if they prefer—all of the raw data should already be available.

If changing the way states report teacher pension costs for some reason proves too difficult or expensive in the near term, the NCES should at least attach a disclaimer to its data indicating that pension costs are substantially underestimated, and that users should proceed with caution until the data are improved.

## Conclusion

Despite the centrality of pensions in debates over government budgeting and education policy, the NCES dramatically underestimates pension costs in its official education spending figures. States report to the NCES only the yearly contributions to teacher pension funds rather than the present value of accrued benefits. Since governments routinely contribute less than is needed to cover future pension benefits, correcting this accounting problem could add tens of billions of dollars to official education spending estimates—somewhere around $900 to $1,000 per pupil in ongoing year-to-year costs, plus roughly $700 to $800 per pupil in annual debt service. The NCES should join other federal agencies in measuring the cost of pensions with actual risk-adjusted pension liabilities rather than annual contributions.

*—**Jason Richwine, PhD,** is Senior Policy Analyst for Empirical Studies in the Domestic Policy Studies Department at The Heritage Foundation.*

## Appendix

This appendix details the back-of-the-envelope calculations that produced the corrected pension cost estimates discussed in the main text. The major obstacle to correcting pension costs is that the NPEFS does not have separate subcategories representing specific benefits in its "employee benefits" variable. Therefore, the portion of benefit costs currently attributable to pensions is unknown. Without that number, it is impossible to know exactly how much a corrected pension estimate would increase overall spending numbers in the NPEFS.

Fortunately, the Employer Costs for Employee Compensation (ECEC) survey, a dataset published by the Bureau of Labor Statistics, sheds some light on the issue. The ECEC covers a similar set of fringe benefits. Unlike the NPEFS, however, it breaks down the costs into subcategories, including one category for DB pensions.[20]

The ECEC treats teacher pension costs the same way as the NPEFS—reporting the government contribution to the pension fund rather than the actual cost of accrued benefits. This means that correcting the cost of pensions in the ECEC should increase the total cost of benefits in the ECEC by the same proportion that correcting pension costs would increase total costs reported in the NPEFS.

A previous Heritage Foundation research paper analyzed how replacing the government contribution figure in the ECEC with the risk-adjusted normal cost of teacher pensions increases overall teacher benefits.[21] After adding together the ECEC benefit categories of paid leave, insurance coverage, legally required contributions (e.g., Social Security taxes), retiree health costs (not part of the ECEC, but obtained elsewhere), and the government contribution to teacher pension funds, benefits for teachers come to 49.1 percent of their wages.

Replacing the government contribution to pension funds with the risk-adjusted employer normal cost nearly triples pension costs, bringing total teacher benefits to 70 percent of wages.[22] In other words, teacher benefits are 70/49.1 = 1.426 times higher after the correction. As noted in the main text, the total cost of employee benefits in the NPEFS is about $109 billion, or $2,215 per pupil. Applying the same 42.6 percent markup to this per-pupil figure would increase the per-pupil cost in the NPEFS by 0.426 * $2,215 = $944 in benefits.

To estimate the effect of proper accounting on *total* expenditures, the contribution must be replaced with both the risk-adjusted employer normal cost from above and the risk-adjusted amortization cost from unfunded liabilities. To calculate the latter figure, average assets and liabilities for teacher pensions as of 2009 were obtained from the Public Plans Database.[23] The difference between the two is the unfunded liability at that time.[24] This unfunded liability was adjusted upward based on a 4 percent discount rate (commonly used as the risk-free rate in 2009) rather than the average discount rate of 7.9 percent used by the plans themselves. Assuming 4 percent wage growth, the risk-adjusted amortization payment would then be a level 17.8 percent of payroll over 30 years.

In other words, governments would need to contribute 17.8 percent of wages to guarantee that their unfunded liabilities from teacher pensions will be paid off in the average 30-year time frame.

Including unfunded liability costs as well as the normal cost would increase teacher benefits to 87.8 percent of wages. Teacher benefits are then 87.8/49.1 = 1.788 times higher after the correction. Therefore, total expenditures per pupil in the NPEFS should be increased by 0.788* $2,215 = $1,745 after rounding.

As noted in the main text, these calculations merely illustrate the possible effects of improved accounting. Data limitations make it impossible to produce exact figures at this time.

20. Using the ECEC as a proxy for the NPEFS has some drawbacks. For example, the ECEC data cover only teachers, while the NPEFS data cover all education employees. There is also no guarantee that the set of benefits covered by the ECEC is exactly the same set covered by the NPEFS. Indeed, the ECEC excludes retiree health costs, whereas the NPEFS appears to include them. This specific inconsistency on retiree health is accounted for in the calculations, but there could be other inconsistencies. Despite its drawbacks, the ECEC data at least give a sense of how large the pension accounting errors in the NPEFS might be.
21. Jason Richwine and Andrew G. Biggs, "Assessing the Compensation of Public-School Teachers," Heritage Foundation *Center for Data Analysis Report* No. 11-03, November 1, 2011, pp. 13-16, http://www.heritage.org/research/reports/2011/10/assessing-the-compensation-of-public-school-teachers.
22. For a discussion of risk-adjusting the normal cost of teacher pensions, see ibid., p. 15.
23. Public Plans Database, http://pubplans.bc.edu/pls/apex/f?p=1988:3:16576128457205::::: (accessed March 8, 2013).
24. Note that the stock market has rebounded since 2009, so unfunded liabilities would likely be smaller if this exercise were conducted with newer data. At the same time, however, the return on U.S. Treasuries—often cited as a better discount rate for public pensions, given its very low level of risk—has gone down. This means that the price of guaranteeing future benefits has become greater over the same time period.