



Policy Memorandum

ECONOMIC POLICY INSTITUTE • APRIL 14, 2011 • POLICY MEMORANDUM #179

DISCOUNTING PUBLIC PENSIONS

Reports of trillions in shortfalls ignore expected returns on assets

BY MONIQUE MORRISSEY

While the market downturn that accompanied the Great Recession reduced the value of assets held by public pensions, it is hardly the crisis touted by some conservative critics. Unrealistic projections that inflate pension liabilities are stoking fears that future taxpayers will inherit large unfunded pension liabilities absent some sort of intervention. But the critique is based on the assumption that pension funds will earn a very low rate of return on pension assets. Accepting these alternative valuations could spur unnecessary drastic actions, from doubling contributions to pensions to scrapping them altogether in favor of 401(k) plans.

Public pensions now have an estimated \$700 billion in unfunded liabilities (Lav and McNichol 2011). According to the Center for Retirement Research, public pensions last year had around 78% of what they needed set aside to pay for pension benefits (Munnell et al. 2010b). To make up the difference, state and local governments would have to devote about 5% of their budgets to pension contributions over the next 30 years, up from under 4% today, assuming an average 8% return on fund assets (Munnell et al. 2010b).¹

This is a significant bump, but hardly untenable, especially for the majority of state and local governments that have kept up with their pension fund contributions. (The average funding ratio and required contribution cited above includes a few states like California, Illinois, and New Jersey that short-changed some or all of their pension funds over many years.) Nor is such an increase unprecedented: State pension contributions were around 6% before the long bull market that began in the mid-1980s (Munnell et al. 2010c).

Conservative critics, however, have gotten considerable political mileage from claims that public pensions' unfunded liabilities are in the many trillions, two to six times larger than the conventional measures based on pension reporting, which hover around \$700 billion. Under their scenario, required contributions could double or more, thus imposing an enormous burden on taxpayers (see, for example, Barro and Buck 2010; Biggs 2010a; de Rugy 2011; Norcross 2010). Their arguments hinge on assumptions that current and future pension fund investments will earn historically low rates-of-return going forward. Specifically, the critics contend that when pensions calculate the amount of money they need to set aside today to make promised payments to retirees in the future, they should assume that pension investments will earn rates equivalent to those of Treasury bonds and similarly low- to no-risk assets. In economic terms, this means argu-

ing that low yields on Treasury bonds and similar assets be used to “discount” future pension obligations (i.e., translate the future stream of estimated payments to retirees into a single present value). Republican members of Congress have adopted the cause, introducing a bill (H.R. 567) that would require state and local governments to discount pension obligations using Treasury yields or else forfeit the right to issue federally tax-exempt bonds.

Economists often use Treasury yields to convert or discount future assets and liabilities, though other discount rates are also used depending on the context. Using a risk-free discount rate, as Treasury yields are often characterized, \$10,025 next year is the equivalent of \$10,000 today because you can invest \$10,000 in a one-year Treasury bill with a 0.25% rate of return and your investment will earn \$25.

Of course, one might instead choose to invest in normally higher-yielding assets like stocks, especially since short-term Treasury yields are very low right now. Most economists believe that the expected return on stocks is significantly higher than the risk-free rate. The Congressional Budget Office has estimated the difference, known as the equity premium, to be around 3.5 percentage points above the long-run rate of return on 10-year Treasury bonds (CBO 2007). This higher expected return on stocks comes with risk, however; in contrast, the rate of return on Treasury bonds, while relatively low, is both known in advance and virtually guaranteed (i.e., there is no risk of default).

The risk-free rate is, however, a malleable yardstick: Yields fluctuate with market conditions, vary according to maturity, and are affected by monetary policy, among other things. In recent years, for example, yields have been depressed as the Federal Reserve engaged in expansionary monetary policy. This had little bearing on pension fund adequacy yet would have adversely affected funding ratios if these had been calculated using risk-free rates.

Instead of using Treasury yields to assess the adequacy of pension reserves, public fund managers assume their funds will earn a long-run rate of return of around 8% in nominal terms. This is slightly less than the roughly 9% return these funds have averaged over the past 25 years (Brainard 2011; Callan Associates 2010), but it is much higher than the yield on longer-term Treasury bonds, currently around 3.5% for 10-year bonds and 4.5% for 30-year bonds.

The Government Accounting Standards Board (GASB) calls for public pensions to use a discount rate “based on an estimated long-term investment yield for the plan, with consideration given to the nature and mix of current and expected plan investments” (GASB 1994). In practice, the rate of return assumed by most public pension funds is stable and varies little across plans, a tacit acknowledgement that such projections are not precise, and so a reasonably conservative standard should be adopted. Uniformity facilitates comparisons across plans and gives fund managers little incentive to load up on risky assets in order to inflate projections. Though GASB is revisiting its standards to require even more uniformity in financial reporting, it has rejected the use of the risk-free rate in determining appropriate funding levels (Lav 2011; GASB 2010).

What is the expected return on fund assets?

Past performance is no guarantee of future results, as the standard disclaimer goes. Historical returns should not be the sole basis for projecting future returns, especially during stock market bubbles when prices are out of line with earnings and projected growth rates. During the debate around Social Security privatization, for example, economists Dean Baker and Peter A. Diamond cautioned that the 7% inflation-adjusted return on stocks (around 11% in nominal terms) assumed by various official bodies in evaluating privatization proposals was inconsistent with both the high price-earnings ratios at the time and the Social Security Actuary’s conservative economic growth projections (Baker 1997; Diamond 2000).

More recently, however, Baker has noted that during 30-year periods when the price-earnings ratio was close to the historic norm, as it is today, stocks have provided average returns after inflation of more than 8%, which translates into roughly 10-11% in nominal terms. Baker concludes that it is reasonable to assume an 8% nominal return on public fund portfolios, roughly two-thirds of which are invested in equities (Baker 2011a and 2011b).

This does not mean that public pension funds are guaranteed to earn 8% over the next 25 years. But the worst-case scenario is that contributions will have to be adjusted upward gradually. There is very little risk that the funds will run

out of money since benefit outlays are a small fraction of assets (this is true of any advance-funded pension system as long as employers keep up with contributions and the size of the workforce is not shrinking rapidly). Last year, for example, public funds paid out only one-fourteenth of their reserves in benefits (Brainard 2011).

A double standard?

Do pension fund critics really expect long-term returns on stocks to be as low as Treasury yields? A few do, but most do not. For example, when the American Enterprise Institute's Andrew G. Biggs was promoting Social Security privatization back in 2002, he was very bullish on stocks. Biggs even claimed that investing in stocks was safer than investing in Treasuries because the latter sometimes yielded negative returns after inflation (Biggs 2002). Now, however, Biggs claims that pension funds that invest in stocks have a "high probability of funding shortfalls" and should not count on a return higher than Treasury yields (Biggs 2010a).

Biggs' change of heart is not due to the market downturn. In 2002, he was also writing in the wake of a burst stock bubble, assuring people that the dip was temporary and advocating the creation of private accounts for Social Security. Rather, Biggs' apparent double standard is based on the idea that pension obligations are fixed while the returns on stocks are variable: "Discounting liabilities at the plan's projected rate of return has intuitive appeal, but financial economists and the practice of financial markets object to using an interest rate derived from risky investments to discount the value of a riskless liability" (Biggs 2010a).

Biggs' claim that pension liabilities are "riskless" is based on the assertion that "public-pension benefits haven't been reduced even when governments face severe fiscal distress." In fact, pension benefits have been trimmed across the country in response to the weak economy (Picur and Weiss 2011). Furthermore, the measure of pension obligations that both Biggs and the pension funds use is not limited to the benefits workers have already earned, but also prudently accounts for a projected rise in salaries since benefits are typically tied to workers' salaries at the ends of their careers, projected cost-of-living adjustments, and other factors that increase obligations. In other words, Biggs is happy to use realistic projections to inflate pension liabilities, just not to discount them.

Since pension contributions are adjusted periodically based on realized returns, and since outlays are a small fraction of pension fund reserves, it is reasonable for funds to invest in moderately risky portfolios even if liabilities are "riskless," as claimed by Biggs. There is no need for pension funds to closely match assets and liabilities, though some boutique investment firms earn high fees advocating this approach.

There is even less reason to project a risk-free return on risky assets—a point acknowledged obliquely by Jeffrey R. Brown and David W. Wilcox (2009): "[M]ost trustfund liabilities are longer term and do not impose high liquidity needs. Thus, the discount rate need not reflect the high degree of liquidity of Treasury markets, for example." Recognizing that an ideal discount rate is often unattainable, Brown and Wilcox argue that "the characteristics of the object being discounted determine the appropriate discount rates." They do not address what happens when comparing assets and liabilities that have different characteristics. (However, even though more nuanced than Biggs, Brown and Wilcox nevertheless call for using a measure close to the risk-free rate to discount pension fund liabilities, albeit one that attempts to correct for the fact that Treasury yields fall during financial crises.)

Contrary to much media coverage of this issue, there is no single discount rate that is appropriate for every circumstance. For practical purposes, economists frequently project higher expected returns for stocks, and when they do, they typically adopt the same discount rate for consistency (see, for example, Burtless and Toder 2010). Public finance textbooks typically devote a section to a discussion of discount rates because there is no consensus on the appropriate rate to use in the public sector, and government agencies often use a discount rate higher than the risk-free rate (see, for example, Gruber 2004; Rosen 1999; Stiglitz 1988).

Even the critics do not agree on the appropriate discount rate for public pensions, though they all say that it should be very low. For example, Robert Novy-Marx and Joshua Rauh have proposed using state-specific municipal yields as

discount rates in addition to—or instead of—Treasury yields (Novy-Marx and Rauh 2009 and 2010). Though still much lower than the expected rate of return on pension fund assets, yields on municipal bonds are a little higher than Treasury rates and vary with the perceived risk of default. Novy-Marx and Rauh say this “credits states for the possibility they could default on pension payments” (Novy-Marx and Rauh 2010). If this proposal were adopted, the shakier a state’s local government finances (and thus the higher the yields on their municipal bonds), the less state and local governments would need to contribute to their pension funds! Unintentionally, Novy-Marx and Rauh demonstrate one of the many problems with using the supposed riskiness of pension liabilities as the main consideration in choosing a discount rate.

Pension fund critics generally avoid discussing actual investment strategies and expected rates of return, presumably to avoid tripping over their bullish expectations about stocks in other contexts. The implication is that investing pension assets in stocks is fine as long as pension funds discount liabilities using a risk-free rate (i.e., as long as they calculate what they need to invest as if they were not getting the higher return that they are expected to get). However, the critics never address the practical implications of using a discount rate that is several percentage points below the expected return on pension fund assets. Furthermore, simply discounting with a risk-free rate does not actually safeguard returns or encourage prudent investment practices, it just makes all pension funds appear underfunded. It also allows critics to argue that public-sector workers are paid more than they appear to be paid since the cost of their pension benefits (i.e., what must theoretically be socked away) is supposedly greater than the contributions made to the funds (Biggs 2010b).

Focusing on the wrong problem

Focusing on pension liabilities rather than expected rates of return makes it easy to avoid subjecting 401(k)s and proposed Social Security private accounts to the same treatment. (Like Biggs, Brown et al. 2006 and Wilcox 2009 appear to support Social Security privatization). The unspoken argument is that since these accounts promise nothing, their liabilities cannot be discounted—or if they are, it is appropriate to use the expected return on the actual assets in these accounts.

By any reasonable measure, however, the shift from traditional pensions to 401(k)s has left a much bigger hole to fill than public pension shortfalls. The Center for Retirement Research, for example, has estimated that the total “retirement income deficit” for households ages 32-64 is \$5.2-7.9 trillion (Retirement USA 2010). The lower \$5.2 trillion estimate, which is based on an inflation-adjusted return that is approximately one percentage point lower than the 8% projected return on public pension assets, is nevertheless optimistic; fees on individual accounts are higher and individual investors need a cushion in case they live longer than average or retire during a bear market. The upper \$7.9 trillion estimate is based on Treasury yields. The retirement income deficit is a conservative measure because it does not include the youngest and oldest households and it assumes that households will continue to work, save, and accrue retirement benefits until retirement at age 65, when retirees will draw down every penny of savings, including home equity.

In other words, the critics have it backwards. If anyone should avoid counting on higher returns for stocks, it is individual investors, not public pension funds. Public pension funds pool the savings of workers who retire at different times and have decades to make up any shortfalls that might arise. In contrast, individual investors need to worry about cumulative returns, which (contrary to popular belief) diverge over time (Samuelson 1963 and 1969). For individual investors, this can lead to widely varying outcomes depending on the year of retirement (Burtless 2008).

The principle of intergenerational equity says that current taxpayers should generally pay the full cost of public services, including the present value of future pension benefits accrued by public employees. But taxpayers this year are by and large the same people as taxpayers next year or even five years hence. They may reasonably prefer to accept some volatility rather than adopt very conservative funding practices that would greatly increase pension costs over time, especially since taxes paid and services received are not precisely matched within generations either. It has even been argued that taxpayers may prefer to underfund pensions, since most taxpayers are borrowers and their borrowing costs are higher than the expected return on pension fund assets (that is, they are better off paying higher taxes in the future than borrowing more to pay taxes now, since the interest on public debt is lower than the interest on credit card debt

or home mortgages) (Bohn 2010). Though this is not likely to win converts in the policy arena, it is a valid argument against going in the opposite direction and overfunding pensions.

Adopting a biased estimate of pension fund returns would violate the principle of intergenerational equity because it would make current taxpayers, on average, pay more than their fair share of pension costs. Such a sacrifice would not necessarily help younger generations, either, since it would likely force cuts in public services like schools and health clinics that disproportionately benefit children.

Although their proposed solution is wrongheaded, the critics have zeroed in on a complex theoretical problem: There is no ideal way to compare pension assets and liabilities across time, since their characteristics differ and since no single measure can capture both risk and expected returns. This is why economists and actuaries use stochastic modeling and other methods to estimate the likelihood of shortfalls.

A reasoned debate

There should be a healthy debate about appropriate asset allocations and other pension fund practices. But the burden of proof should be on pension fund critics to demonstrate that there is a significant risk that future taxpayers will inherit large unfunded pension liabilities because pension funds have exaggerated expected returns or minimized expected risks. In fact, public pensions appear to be prudent investors, periodically rebalancing their investment portfolios and raising required contributions rather than taking on more risk when funding ratios decline (Weller and Wenger 2008).

In the real world, the question of how much risk pension funds should assume depends not so much on whether projected liabilities are uncertain or on the very small risk of insolvency, but rather on the political implications of volatile funding ratios. Difficult as it is to imagine in the current context, fund managers prefer to avoid both low *and high* funding ratios since the latter may tempt elected officials to neglect required contributions. If pension critics were truly concerned about pension underfunding, they would address this political problem rather than attempting to make pension funds appear grossly underfunded when they are not.

Different discount rates may be used for different analytical purposes (Khorasane 2004). The expected rate of return on fund assets should be used for determining appropriate funding levels and contribution rates. However, when assessing a state's overall finances, it may be appropriate to use a state's borrowing costs to discount accrued pension liabilities in order to prevent states from burnishing their balance sheets by borrowing to make pension payments and then projecting a higher rate of return on pension assets (Munnell et al. 2010a).

These subtleties are lost in the current debate, however. Pension fund critics advocate using a discount rate far below the expected return on fund assets for actuarial valuations, which would give a very misleading picture of fund finances. It would also introduce volatility to these valuations that has little or no bearing on the actual volatility of investment returns.

The critics do not claim that state and local governments are exaggerating the expected return on stocks and other assets, since they accept similar projections in other contexts. Nor do they propose a low-yield discount rate as a way to provide a margin for prudence, since this would beg the question of why volatile Treasury yields should be used rather than a conservative measure of expected returns. Rather, they ignore expected returns altogether and focus narrowly on the supposed risklessness of pension obligations. By arguing that pension investors should be saddled with a low rate of return because they have specific future obligations to meet, they are making a virtue of the empty promises inherent in 401(k)s and other retirement vehicles that offer no security to participants. In their eyes, the fewer protections a retirement system provides, the rosier the projections that can be made in its favor, with no consideration given to the actual risk of coming up short nor who is best able to shoulder this risk.

Unfortunately, this is not just an academic debate. Adopting a risk-free discount rate for actuarial valuations would double pension contributions at a time when states can ill afford it and would lend support to those who would scrap pensions in favor of 401(k) plans, which are in far worse shape.

Endnotes

1. These figures do not include capital spending, which would reduce the share devoted to pensions even lower.

References

- Baker, Dean. 1997. "Saving Social Security with Stocks: The Promises Don't Add Up." Economic Policy Institute/Twentieth Century Fund Study.
- Baker, Dean. 2011a. "The Origins and Severity of the Public Pension Crisis." Center for Economic and Policy Research.
- Baker, Dean. 2011b. "Returns on Public Pensions: What Rates Should We Assume?" Blog posting. Center for Economic and Policy Research.
- Barro, Josh and Stuart Buck. 2010. "Underfunded Teacher Pension Plans: It's Worse than You Think." *Civic Report*, Manhattan Institute for Policy Research, April.
- Biggs, Andrew. 2002. "The Stock Market and Social Security Reform." Cato Institute, cato.org.
- Biggs, Andrew. 2010a. "The Market Value of Public-Sector Pension Deficits," AEI Retirement Policy Outlook series, American Enterprise Institute.
- Biggs, Andrew. 2010b. "Government Employees: Still Overpaid," *The American*, Oct. 23.
- Bohn, Henning. 2010. "Should Public Retirement Plans be Fully Funded?" National Bureau of Economic Research, Working Paper 16409.
- Brown, Jeffrey R., Kevin A. Hassett and Kent Smetters. 2006. "Top Ten Myths of Social Security Reform." Center for Retirement Research at Boston College.
- Brown, Jeffrey R. and David W. Wilcox. 2009. "Discounting State and Local Pension Liabilities." *American Economic Review: Papers & Proceedings 2009*, vol. 99, no. 2, pp. 538-542.
- Brainard, Keith. 2011. "The Role of Public Employee Pensions in Contributing to State Insolvency and the Possibility of a State Bankruptcy Chapter." Testimony before the Subcommittee on Courts, Commercial and Administrative Law, Committee on Judiciary, U.S. House of Representatives.
- Burtless, Gary. 2008. "Stock Market Fluctuations and Retiree Incomes: An Update." Brookings Institution, Technical Paper.
- Burtless, Gary and Eric Toder. 2010. "The Shrinking Tax Preference for Pension Savings: An Analysis of Income Tax Changes, 1985-2007." Tax Policy Center of the Urban Institute and Brookings Institution.
- Callan Associates. 2010. "Investment Return Assumptions for Public Funds: the Historical Record."
- Congressional Budget Office (CBO). 2007. "How CBO Projects the Real Rate of Interest on 10-Year Treasury Notes."
- de Rugy, Veronique. 2011. "The Truth About the State Pension Crisis; Separating Economic Myth from Economic Fact." Reason.com.
- Diamond, Peter A. 2000. "What Stock Market Returns to Expect for the Future?" *Social Security Bulletin*, vol. 63, no. 2.
- Government Accounting Standards Board (GASB). 1994. "GASB Statement No. 25: Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans."
- GASB. 2010. "Preliminary Views on Improving the Effectiveness of the GASB's Pension Standards."
- Gruber, Jonathan. 2004. *Public Finance and Public Policy*. New York: MacMillan.
- Khorasane, Zaki. 2004. "What Discount Rate Should be used to Valued Defined Benefit Pension Liabilities?" Pensions Institute Discussion Paper.

- Lav, Iris J. 2011. "Proposed Public Employee Pension Reporting Requirements Are Unnecessary." Center on Budget and Policy Priorities.
- Lav, Iris J. and Elizabeth McNichol. 2011. "Misunderstandings Regarding State Debt, Pensions, and Retiree Health Costs Create Unnecessary Alarm." Center on Budget and Policy Priorities.
- Munnell, Alicia H., Thad Calabrese, Ashby Monk, and Jean-Pierre Aubry. 2010a. "Pension Obligation Bonds: Financial Crisis Exposes Risks." Boston College Center for Retirement Research.
- Munnell, Alicia H., Jean-Pierre Aubry and Laura Quinby. 2010b. "The Funding of State and Local Pensions: 2009-2013." Boston College Center for Retirement Research, Issue in Brief #10.
- Munnell, Alicia H., Jean-Pierre Aubry and Laura Quinby. 2010c. "The Impact of Public Pensions on State and Local Budgets." Boston College Center for Retirement Research, Issue in Brief #13.
- Norcross, Eileen. 2010. "Getting an Accurate Picture of State Pension Liabilities." George Mason University, Mercatus on Policy paper.
- Novy-Marx, Robert and Joshua D. Rauh. 2009. "The Liabilities and Risks of State-Sponsored Pension Plans." *The Journal of Economic Perspectives*, vol. 23, no. 4, Fall 2009, pp. 191-210(20).
- Novy-Marx, Robert and Joshua D. Rauh. 2010. "Policy Options for State Pension Systems and Their Impact on Plan Liabilities." National Bureau of Economic Research, Working Paper 16453.
- Picur, Ronald D. and Lance J. Weiss. 2011. "Addressing Media Misconceptions about Public-Sector Pensions and Bankruptcy." *Government Finance Review*. February.
- Retirement USA. 2010. "The Retirement Income Deficit." <http://www.retirement-usa.org/retirement-income-deficit-0>
- Rosen, Harvey S. 1999. *Public Finance*. Boston: McGraw Hill.
- Samuelson, Paul A. 1963. "Risk and Uncertainty: A Fallacy of Large Numbers." *Scientia*, April-May.
- Samuelson, Paul, 1969, "Lifetime Portfolio Selection by Dynamic Stochastic Programming." *Review of Economics and Statistics*, vol. 51, pp. 239-246.
- Stiglitz, Joseph E. 1988. *Economics of the Public Sector*. New York: W.W. Norton & Company.
- Weller, Christian E. and Jeffrey Wenger. 2008. "In It for the Long Haul: the Investment Behavior of Public Pensions." National Institute on Retirement Security.
- Wilcox, David W. 2009. "Comment on 'Reducing the Risk of Investment-Based Social Security Reform,'" in Jeffrey Brown, Jeffrey Liebman, and David A. Wise, editors, *Social Security Policy in a Changing Environment*, University of Chicago Press.