Statement to the Actuarial Standards Board

Comments with regard to

Alternative Liability Measures and Contribution/Cost Allocation

Procedures for Public Sector Plans

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Background and Introduction

My professional background is as a Resident Scholar at the American Enterprise Institute, where I conduct research on Social Security, retirement, state and local pensions and public sector compensation. Prior to joining AEI I was the principal deputy commissioner of the Social Security Administration and the SSA's deputy commissioner for policy, in which position I was involved with assembling the annual Social Security Trustees Report. I have written extensively on public sector pension issues and in 2013-2014 I was the co-vice chair of the Society of Actuaries Blue Ribbon Panel on Public Pension Funding. The opinions expressed here are my own.

My comments are addressed to measures of liabilities and contributions, in particular how actuarial measurement techniques impart information regarding the potential costs facing public plan sponsors.

Current actuarial methods for public plans, in which a present value liability is calculated by discounting annual benefit liabilities using the expected return on plan assets, produce a limited liability measure that does not accurately describe the true liability borne by the plan sponsor. Simply put, the expected-return approach describes the cost of funding a series of annual benefit payments under a single set of investment return outcomes which has a less than 50% chance of occurring.

As discussed below, however, discounting benefit liabilities using a risk-adjusted interest rate provides the cost of funding benefit payments under the full range of outcomes, without regard to how a pension plan chooses to invest. Thus, it provides a fuller and more comprehensive view of pension liabilities that is consistent with how all manner of liabilities are priced in financial markets around the world.

This fuller measure of public plan liabilities also provides a better view of the risks borne by taxpayers, present and future, in funding a guaranteed benefit using a risky portfolio of investments. This risk is expressed through the volatility of annual required contributions, which both can destabilize government budgets and lead to significant intergenerational inequities in how pension costs are allocated.

Public plan actuaries currently provide stakeholders with little information regarding how differing levels of investment risk affect filter through into contribution volatility. Instead, using the expected-return discount methods described above, actuaries provide information solely on the expected level of average plan contributions. That may have been appropriate in the 1950s, when practically all public pension assets were in bonds or cash. This approach is not appropriate today, when the typical public plan holds about three-quarters of its investments in stocks, alternatives, real estate or other risky assets. Projections of the average contribution rate, in the absence of guidance regarding the volatility of contribution rates, may lead plan sponsors to take more investment risk than they desire or able to bear. The resulting contribution volatility can lead to contribution requirements in certain years that plan sponsors are unable or unwilling to meet.

At a bare minimum, pension actuaries should provide stakeholders with information on plan liabilities measured using a discount rate commensurate with the risk of those liabilities, as recommended by the Society of Actuaries Blue Ribbon Panel on Public Pension Funding, on which I was privileged to serve. Such a figure, as discussed below, is the fullest measure of the liabilities borne by plan sponsors and, ultimately, by taxpayers. Ideally, such a measure would be the most prominent figure used to describe the pension obligations taken on by the plan sponsor.

A pension liability isn't measured like any other liability. But it should be.

What is termed a liability under public pension actuarial practice differs fundamentally from the legal or economic concept of a liability. A public pension "liability" is the present value of contributions that, if invested at some steady rate of return, would be sufficient to meet benefit payments as they come due. This figure might be termed a "pension liability" or an "actuarial present value," but it is not a *true* liability.

The reason is that, when a pension sponsor promises employees some future stream of benefits, it is not buying into the contribution rate that, at some steady rate of investment return, would fund those benefits. Rather, the plan sponsor is making a no-matter-what, come-what-may pledge to bear whatever contribution is necessary to pay those benefits, on time and in full, regardless of the returns the plan's investments might generate. That is, the plan is liable for the benefits not in one set of circumstances – in which the plan's investments generate, say, 7.7% returns, year-in and year-out – but in *every* set of circumstances, including those in which long-term investment returns may be far below projected levels. *That* is a liability, and current actuarial practices come – to be frank – nowhere near to describing its full value.

The full cost borne by plan sponsors – and thus by taxpayers, present and future – is the combination of the upfront contribution as calculated under current pension actuarial practices *and* the contingent liability on future taxpayers to increase contributions as and when necessary to ensure that benefits are paid. Future taxpayers are – unwittingly and perhaps unwillingly – obliged to furnish what is referred to as an "implicit put option." A put option is a financial product that acts as an insurance policy against a given asset falling short of a given value at a given time. The issuer of the put option will "top up" any investment that fails to achieve a stated "strike price." The price of the put option is a function of the agreed-upon strike price to be guaranteed, the risk of the underlying investment, and the riskless rate of return available in the market.

An example using options illustrates the cost of "truly fully funding" a given liability – that is, of ensuring that the future benefit can be paid with certainty while also maintaining intergenerational equity, such that neither current nor future generations of taxpayers are over- or under-charged. For simplicity, imagine that a pension plan owes a single lump sum payment of $1 million in 15 years' time. The plan assumes a 7.7% return on investment, meaning that a lump sum contribution of about $315,000 today would make the plan "fully funded" in standard actuarial terms.

In reality, though, there's a less than 50% chance that a $315,000 investment today in a typical pension portfolio will end up reaching $1 million 15 years from now. So a liability that is called "fully funded" is really less than "50-50 funded," so to speak. To protect against a potential shortfall, the plan could purchase a put option that would make up any difference between the fund's actual value and its goal of $1 million. That put option, which cost about $386,000, would ensure that the full $1 million benefit could be paid without returning to future taxpayers for a bailout.[1] Thus, benefits are truly fully funded and future generations are protected.

Of course, there is also the chance that the plan's investments would end up being worth *more* than $1 million. In that case, intergenerational equity would be violated in the other direction, in the sense that

[1] The cost of the put option is calculated using the Black-Scholes formula, assuming a riskless return of 2.4% and a standard deviation of investment returns of 12%.

today's taxpayers would overpay and tomorrow's taxpayers would reap the benefits. To address this, the plan could sell a "call option" that would give away any fund surplus over $1 million. The sale of the call option, which would reap about $3,800, would reduce costs to current taxpayers while ensuring that future taxpayers don't reap a bonus.

Thus, the total present value liability for that future $1 million payment is: the upfront contribution of $315,000 plus the $315,000 put option minus the $3,800 call option, for a total of $697,676. This figure is precisely the same as if that future $1 million liability had been discounted at a riskless rate of return.[2] The fact that options aren't actually being purchased does not change the meaning of this thought experiment. Prices of options in the market reflect the costs that market participants place on bearing risk, and thus are good approximations of the welfare costs to the public of the contingent liabilities placed on them by today's pension policies.

Moreover, this example makes clear that valuing a liability using a riskless discount rate does not assume that the plan invests only in riskless assets, as many in the pension community assume. So long as we accurately value the contingent liabilities placed on future taxpayers to make good should the returns on risky investments fall short, the plan can invest in whatever it chooses but the liability remains the same.

What differs is how costs are allocated between current and future generations. An aggressive funding strategy, in which smaller contributions are made in riskier but higher-returning investments, reduces costs to current generations but increases the value of contingent liabilities placed on future generations. A less aggressive investment strategy, based upon larger contributions in less risky asset, does the opposite.

As the Congressional Budget Office put it, discounting pension liabilities using a risk-appropriate interest rate reflects "the cost of the risk to taxpayers that the rate of return on risky pension assets may not meet expectations."[3] It strikes me as negligent for plan sponsors not to be made aware of the cost of that risk.

Pension sponsors want stable contributions. But pension actuarial practices encourage contribution volatility.

The risk to taxpayers noted above plays out in terms of required contributions that may be well above (or well below) those projected using a steady rate of return. This contribution volatility is extremely important. The Academy of Actuaries calls "contribution stability and predictability" one of the "three primary objectives" of pension funding policy.[4] Moreover, public plans' failure to make required contributions – nearly six-in-ten plans did not receive their full ARC in Fiscal Year 2013 – is a direct result of rapidly rising ARCs, which in turn derive from the risk of pensions' investments.

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[2] If accrued pension liabilities were not truly riskless, it would be appropriate to discount these liabilities using yields on a higher-risk asset. For instance, the National Income and Product Accounts published by the federal government value public pension liabilities using yields on corporate bonds. The point is that the discount rate should match the risk of the liability, not the asset used to fund the liability.

[3] Congressional Budget Office. "The Underfunding of State and Local Pension Plans." May 2011.

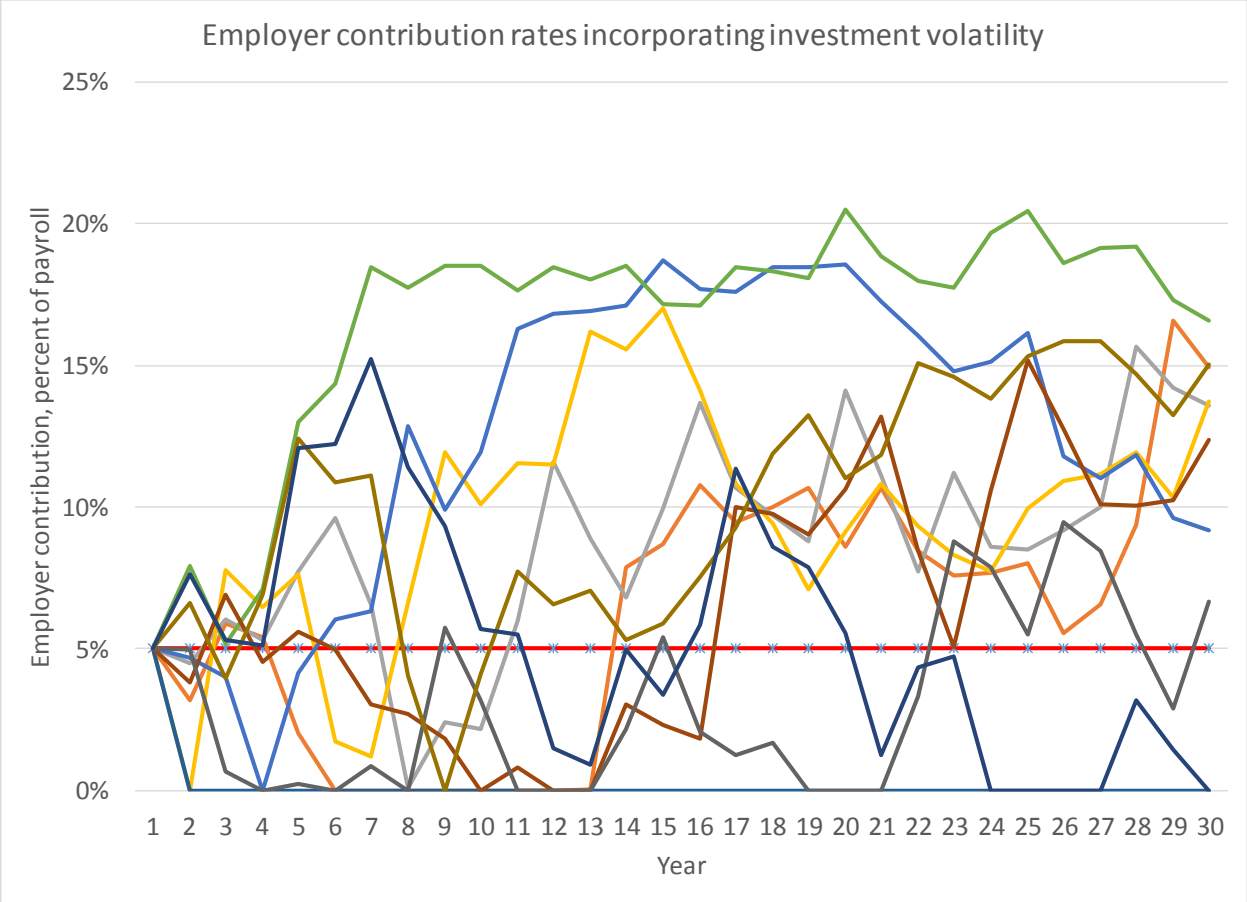
[4] American Academy of Actuaries. "Objectives and Principles for Funding Public Sector Pension Plans." February 2014.

Thus, it is important that actuarial standards and methods first, provide information regarding contribution stability, and second, do not unwittingly encourage plan sponsors to adopt policies that work contrary to contribution stability.

Public plans use a variety of methods – such as investment return smoothing and long amortization periods – to reduce the volatility of contributions from year to year. Even using these methods, however, annual employer contributions can vary significantly over time. When contributions grow too high relative to the sponsor's expectations or resources, it is more likely the sponsor will fail to make the full contribution and the plan will become increasingly underfunded.

Figure 1 illustrates contribution volatility, drawing on a recent study that I authored in the *Journal of Retirement*.[5] It begins with a plan that is 100% funded with a total normal cost of 11% of wages, an employee contribution of 6%, and a steady-state employer contribution rate of 5% of wages. The plan's assumed investment return is 7.7% and the standard deviation of annual returns is 12%. The plan smooths investment returns over five years and amortizes unfunded liabilities over 25 years.

Figure 1.



[5] Biggs, Andrew G. "The Public Pension Quadrilemma: The Intersection of Investment Risk and Contribution Risk." *The Journal of Retirement 2.1* (2014): 115-127.

The red line running horizontally across Figure 1 illustrates the projected 5% contribution rate that plan sponsors would be told about by their actuaries and which would be disclosed in plan reports. This contribution rate is calculated based upon the assumption of constant investment returns over time. The other lines represent a small sample of the many *actual* contribution rates that could be required of the government sponsoring the plan. These can vary significantly, both from year to year and over longer periods. In some instances, the plan receives high returns and can go for extended periods without any employer contribution. In other years, required contributions can rise to three or four times their expected levels. But note that none of them even remotely resembles the steady contribution rate that would be the principal information provided to plan stakeholders using current actuarial methods.

I developed the model used in the *Journal of Retirement* article based on interactions with pension actuaries and trustees that left me with the perception that plan stakeholders receive little or no information regarding how the plan's investment choices will affect the volatility of contributions from year to year. That is to say, pension sponsors appear to have little real understanding of the level of contribution risk they have accepted.

The lack of such information makes shortcomings in existing pension actuarial practices more glaring. A pension's choice of investment portfolio reflects the inherent trade-off between return and risk – in the pension context, between low contributions and stable contributions. A plan that takes greater investment risk will tend to have lower average contributions, but the volatility of contributions will be greater from year to year. This is perhaps the most important choice facing plan sponsors, but most are effectively "flying blind."

In the absence of actuarial analysis of contribution volatility, plan sponsors are left with the perception that greater investment risk leads to lower contributions, without regard to whether that risk could render required contributions unaffordable in any given year. Pension sponsors are unable to adequately balance risk and return because they are provided with little or no information regarding risk. When public pensions take investment risk that is far out of balance with the risk of the benefits they offer, pensions put their own financial health, the budgetary stability of their sponsors, and the broader economy of their state or locality at risk.

Measuring plan liabilities using a risk-appropriate discount rate reduces incentives to take excessive risk because the headline liability figure is not reduced when a plan adopts a riskier investment portfolio.

However, public plan actuaries also should broaden the analytical toolkit to increase focus on the interaction of investment risk and contribution volatility. Social Security's actuaries and the economists at the Congressional Budget Office already conduct detailed stochastic simulations of the Social Security program, for which – because it does not invest in risky assets – uncertainty is a much less important factor. A model like the one discussed above is not difficult to construct. If done for a stylized plan, it can be set up in a day. But even for a stylized plan, it provides pension stakeholders with far more information regarding risk-return trade-offs than they currently receive.