

# Rate of Return Assumptions for Minnesota's Public Pension Plans

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before the Minnesota Legislative Commission on Pensions and Retirement

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I appreciate the opportunity to speak to you today about rate of return assumption for Minnesota's public pension plans, an issue of importance to all Minnesotans.

Let me start by noting that, while I am a public finance economist, I am not an expert on public pensions. I am neither an actuary nor an accountant. I am also not a stock market forecaster. Fortunately, you have access to experts in all those areas, so I don't think it would be helpful for me to use my time today to wade into their territory. What I think *might* be helpful is for me to (1) present some data related to U.S. economic growth and (2) summarize the consensus among economists who have written about public pension rate of return assumptions.

The expected rate of return assumption is typically used to compare the present-day value of pension assets to future pension obligations. First, the rate is used to project the future returns on pension fund assets. That is, it is an estimate of how much the fund's investments will earn in future years. Second, the rate is used to adjust future pension *liabilities* to present-day value. Because money paid today is worth more than money in the future, converting future payments into present value requires reducing—or *discounting*—those values. In addition, discounting all pension obligations to present value provides consistent comparisons of benefit payments that don't necessarily occur at the same time.

Let me talk first about forming an expectation of future fund performance. As I said, I am not a stock market forecaster, nor am I an expert on the allocation of assets within Minnesota's pension portfolios. Nevertheless, it is fair to assume that,

other things held equal, the future performance of the economy will influence the expected rate of return. While the economy is currently experiencing modest growth, we know that changes in the economy have combined to form what we call the new normal. You've heard about the aging of the population and the related slowing of workforce growth as Baby Boomers retire. I've added a third challenge: the economic risks arising from persistent federal budget deficits. These factors combined lead us to expect a more uncertain future with modest expectations for economic growth. The adage that past performance does not guarantee future results is as true now as ever.

This slide shows the annual percentage change in U.S. real GDP, going back to 1985 and forward to 2040 using IHS Global Insight's Long-Term Trend Forecast. It shows that U.S. real GDP growth is expected to average just 2.5 percent per year over the next 30 years, well below the 3.1 percent 20-year average prior to the Great Recession.

Significant increases in inflation could lead to larger nominal returns on debt held by pension funds. However, this chart--also using the Global Insight's Long-Term Trend Forecast--shows that inflation (here defined as the change in the consumer price index) is expected to average 2.0 percent annually over the next 30 years, or the longer run steady state rate of inflation determined by the Federal Reserve. This is somewhat less than the 3.0 percent average between 1982 and 2012.

Finally, federal budget deficits<sup>1</sup>—depicted here as the annual federal deficit as a percentage of GDP—are projected to increase due to added pressures from an

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<sup>1</sup> Includes Social Security, Medicare, Medicaid.

aging population and rising health care costs. Rising federal debt could have serious negative consequences on longer-term economic growth<sup>2</sup>.

No one can predict the future, and long-term economic forecasts come with all kinds of caveats. Nevertheless, looking forward, we do not see a reason to dispense with caution regarding raising the rate of return assumption.

Let me turn now to the second role of the rate of return assumption: converting future pension obligations to present value for reporting purposes. This slide describes two leading approaches. You are all familiar with the first one—discounting future benefits based on the expected return on pension plans' assets. As explained in detail in the Commission staff memo for this meeting, this is what Minnesota does now, and it is consistent with GASB's guidelines prior to the recent recommendations under GASB 67&68 (which recommend a blended rate).

The idea behind the second approach is that a *certain* payment is worth more than an *uncertain* one. If you are certain that you will have to make a particular payment on a future date, then its *present* value is not much different from its future value. Therefore, you need to discount it by a lower-risk rate to bring it into present-day terms. If there's a chance you might not have to make that payment, you should discount it more, lowering its present value. The more certain you are that the payment will have to be made—in the case of pension payments, the more *guaranteed* they are—the lower the rate of discount should be.

This approach, which the nonpartisan Congressional Budget Office calls a “fair value” method, reflects the standard financial and economic theory that streams of

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<sup>2</sup> In short run, deficit is dropping due to fiscal constraints (sequester, expiration of tax cuts). GI: Deficits drop below 1.0 trillion after fiscal year 2012, get smaller through 2016, but then they start to grow again. Large and rising debt → higher interest rates, higher payments on debt, crowding out private sector investment, lower capital, lower growth. Could also, however, lead to higher returns on debt owned by pension funds.

payments should be discounted at a rate that reflects their risk. In the case of state pension funds, the “risk” is the level of certainty as to whether the payments will need to be made.

A May 2011 Congressional Budget Office report contrasted the two approaches this way: “By using the expected rate of return on assets as the discount rate for converting future benefit payments into today’s dollars, the GASB approach essentially assumes that those returns are as certain as benefit payments. By contrast, [the alternative (fair-value) approach] views the returns on assets as *more uncertain* than the benefit payments...” or at least, accounts for the different risks associated with investment returns and benefits payments. The implication is that public pension obligations, which carry strong guarantees, should be discounted at a rate that reflects the very low risk that they will not be honored.

Among economists who study public pensions, there is little disagreement about this basic idea. However, a variety of institutions and authors have weighed in on which *specific* rate should be used to convert pension liabilities to present value for reporting purposes. In this chart we present a range of those rates. In each case, we present comparable rates based on the authors’ descriptions, going back to 1960 and forward 30 years, converging to what IHS Global Insight believes to be the long-term equilibrium rate along a full employment growth path.

The red line represents Minnesota’s Investment Return Assumption, consistent with pre-GASB 67&68 guidance.<sup>3</sup> It is steady at 8.5 percent, drops to 8.0 percent for the five-year period we are in now. For 2017 and beyond, we show both the 8.0 and 8.5 percent rates. Next, the pale-dotted line that levels out at 6.7 percent is the taxable yield on Aaa municipal bonds and represents a concept similar to what the

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<sup>3</sup> Source: Munnell, Alicia and others. “The Funding of State and Local Pensions: 2012:2016” Center for Retirement Research at Boston College, July 2013.

Congressional Budget Office (CBO) prescribes for a “fair-value” approach for discounting pension liabilities.<sup>4</sup> The darker dotted line below that, leveling out at 6.0 percent, is the yield on high-grade corporate bonds, and depicts a rate similar to that used in Moody’s Investors’ Service’s new methodology for analyzing and comparing state and local government pension liabilities. It also reflects standards set by the Financial Accounting Standards Board (FASB) for private sector defined benefit plans.<sup>5</sup> Finally, the dark solid line, ending at 4.3 percent, is the yield on 10-year Treasury bonds, and depicts the “Riskless Rate” approach recommended by some experts.<sup>6</sup>

Let me be clear about two things regarding this chart:

1. The economists’--or fair-value--approach separates the expected rate of return on assets from the rate used to calculate the present value of pension plan liabilities. The rates in the chart are all the latter. They do *not* imply that fund assets are expected to earn only these rates of return.
2. While current levels of the low-risk rates lie below the assumed 8.5 percent line, that has not always been the case. As Alicia Munnell, director of the Center for Retirement Research at Boston College points out, the issue with choosing a discount rate “...is not whether liabilities should be larger or smaller, but whether they are measured correctly.”<sup>7</sup>

While there is a consensus among economists that the discount rate on future pension payments should reflect the riskiness of those obligations, there is not

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<sup>4</sup> Source: Congressional Budget Office (CBO). [“The Underfunding of State and Local Pension Plans”](#) May 2011.

<sup>5</sup> Source: Moody’s. [“Adjustments to US State and Local Government Reported Pension Data”](#) July, 2012; Novy-Marx, Robert, and Joshua Rauh. [“Public Pension Promises: How Big Are They And What Are They Worth”](#) Journal of Finance, 2011: 1211-1249.

<sup>6</sup> Source: Pew Center on the States. [“The Widening Gap: The Great recession’s Impact on State Pension and Retiree Healthcare Costs”](#) April, 2011.

<sup>7</sup> Munnell (2012).

necessarily agreement about how to implement such reporting. For example, discussion continues on the degree of riskiness of public pension obligations (which varies by a state's institutional arrangements). Even if the degree of riskiness was well-understood, I've just illustrated that there is disagreement about which market rate—if any—mimics a particular fund's riskiness. Authors also disagree about whether a single rate should be used or a series of rates that match the term of specific payments (that is, an entire yield curve). Because market rates of return change over time, the fair value approach implies that the investment return assumption would also have to change. But, the Commission staff memo for this meeting lists a number of reasons why such frequent changes in the rate assumption are undesirable (section b).

It's important that this research and the accompanying discussion continue, because getting the discount rate wrong has consequences. As you know from the Commission staff memo for this meeting, (and I paraphrase from section c) "...the goal is to ensure that the generation of...taxpayers that were served by...public employees appropriately fund the...benefits accrued by those employees...without shifting costs to future generations of taxpayers." A rate that is too high will *understate* liabilities, and all other things equal, will push costs to the future. On the other hand, a rate that is *too low* (that is, it assumes a greater degree of certainty than actually exists), will overstate liabilities, imposing unnecessary costs today.

The commission has a very large number of factors to balance in making decisions regarding the sustainability of Minnesota's public pensions. Today I have introduced only two of them, which are summarized in the final slide. First, uncertainty about near-term economic performance suggests caution about raising the assumed investment rate of return. Second, a common view in economics and finance suggests a "Fair Value" approach to calculating the present value of lower

risk pension obligations. I hope the commission finds this useful. I am happy to take any questions.

## Questions & Answers

Q: Over time, Minnesota's funds have earned a higher rate of return than the low rates you present in your graph. Does the recommendation to discount future obligations at a lower rate imply that pension funds are expected to only *earn* such a low rate or return?

A: No. The economist's (fair-value) approach separates the question of how much a fund will earn (based on its asset allocation and the performance of the markets) from the riskiness of the pension payments that the state is obligated to pay retirees.

From Novy-Marx&Rauh (2009): "...pension fund accounting rules...focus on an *expected* value of the investment strategy for a pension fund while ignoring the largely *certain* nature of the pension benefits that have already been earned by past years of work. Government accounting rules for public pension plans improperly link the asset and liability sides of the plans' balance sheets."

Munnell: "...the discount rate should reflect the riskiness of the benefits, irrespective of how the benefits are funded."

Q: Does discounting liabilities by a low-risk rate imply that pension funds should only be invested in low-risk assets?

A: Again, the management of the fund is separate from the question of discounting. So, choosing a low-risk discount rate would not necessarily imply a different allocation of assets in the funds. However, many authors warn that the current practice encourages funds to over-invest in risky assets. Risk-adjusted discounting might lead fund managers to choose a lower-risk portfolio.

Q: You say that the old GASB 25<sup>8</sup> guidance—that states should discount future liabilities by the expected rate of return on their assets—is wrong. GASB has issued new guidelines (GASB 67&68) recommending a blended discount rate. Are the new GASB guidelines wrong?

A: From Munnell, et. Al. July 2013: "GASB's rationale for the combined rate of return is that, while the expected rate of return is appropriate for discounting benefits backed by assets, benefits not covered by assets fall to the sponsoring government and therefore should be discounted by interest the interest rate for high-yield, tax-exempt, 20-year general obligation bonds. The argument, of course, is at odds with the economist's view that the discount rate should reflect the riskiness of the benefits, irrespective of how the benefits are funded."

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<sup>8</sup> GASB 25: the discount rate "should be based on as estimated long-term investment yield for the plan with consideration given to the nature and mix of current and expected plan investments."

Q: Isn't the riskiness of the future stream of pensions benefits roughly the same as the risk of the state defaulting on their GO bonds? Wouldn't that be a good choice for discounting pension liabilities? What would that rate be for Minnesota?

A: Minnesota's current rate on GO bonds is X%. Grossing that up to obtain a taxable yield at an estimated effective tax rate of .25 yields a rate of Y%, which is z percentage points lower than the long-term taxable yield of 6.7% that appears on our graph.

Q: Are all the economists proposing risk-reflecting discount rates—which would decrease the funded ratio of the funds—simply out to get rid of defined benefit public plans.

A: No. For example, Alicia Munnell, director of the Center for Retirement Research at Boston College, points out that (1) public pensions are not "too generous" in the sense that total compensation is comparable between the public and private sectors; (2) states get what they pay for, and cutting compensation for public employees can lead to an inability to attract productive workers; (3) just because private sector pensions are inadequate, doesn't mean the public sector should engage in a race to the bottom of pension benefits. From Munnell book, p. "But the goal should not be to bring public sector workers down to the inadequate standards of the private sector; instead it should be to enhance the retirement system for private workers."

Q: What are the advantages of using a risk-reflecting discount rate?

A: Munnell (book): "The message that emerges is that adopting a riskless rate for reporting purposes has clear advantages: it reflects the guaranteed nature of public sector benefits, would increase the credibility of public sector accounting with private sector analysts, and could well forestall unwise benefit increases when the stock market soars."

Q: Does the fair value proposal necessarily imply larger present value of liabilities and lower funded rates?

A: Munnell (book): "Interestingly, in the early 1980s, the riskless rate exceeded the expected return on assets, so pension liabilities would actually have been smaller than reported. And if inflation should take off, the liabilities of states and localities would once again appear miniscule. Thus the issue is not whether liabilities should be larger or smaller, but whether they are measured correctly."

Q: Many institutions and authors (including Moody's) use current (or recent) interest rates to discount future pension liabilities, do you recommend using a current (or recent) interest rate or a long run equilibrium rate such as Global Insight's forecast?

A. Current interest rates reflect expectations about future inflation as well as the level of risk that needs to be taken into consideration. Federal Reserve, however, is currently artificially holding rates down (by targeting the federal funds rate, the rate at which

banks lend money to one another overnight, as well as through long-term bond-buying). In other words, interest rates are not being priced by market forces.

As the economy improves and the Fed begins to step back from these policies, interest rates are likely to rise over the longer term.

Current rate represent a snapshot in time, whereas the long-run equilibrium rate represents a transition to a long-range full employment growth path.

Q: What are some of the issues with implementing a risk-reflecting discount rate?

1. Reporting a risk-reflecting present value of pension obligations requires determining the degree of pension payments' guarantee, which varies with a state's institutional arrangements. Some studies, such as Brown and Wilcox (2009), explore ways to evaluate the degree of guarantee.
2. Even if the degree of guarantee is well-understood, there is discussion about which market rate—if any—mimics a particular fund's riskiness. This is the primary reason for the range of rates you see in our chart: some observers think the yield on 10-yr Treasury bonds has a risk profile that most closely mimics state pension funds'; others think it's the yield on high-grade corporate debt, and so on. Further, some researchers are exploring ways to adjust market rates—for example by grossing up tax-exempt municipal bond rates to obtain taxable yields or to adjust for degrees of liquidity—to make them more applicable.<sup>9</sup>
3. Most authors apply a single discount rate to future obligations; others, such as Joshua Rauh and Robert Novy-Marx in a recent paper, apply rates that match the term of specific payments.
4. Finally, authors also vary in how the risk-reflecting present value of obligations should be used—they agree that it should be *reported*, but differ in whether it should determine pension fund contributions.<sup>1011</sup>

Question – Why do we discount pension benefits?

Answer – The reason for discounting the future benefit payments is so that they can be compared current value of the fund.

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<sup>9</sup> Where state pension benefits are not are not tax-exempt for beneficiaries, the appropriate discount rate would also reflect a taxable yield.

<sup>10</sup> Munnell (book): “...Academic models suggest that the calculation should use the riskless rate. But contributing based on the riskless rate and investing in equities produces ever-growing funding levels and declining contributions for each successive generation...Calculating contributions based on the expected rate of return is probably the least bad option and does not conflict with using the riskless rate for reporting purposes.”

<sup>11</sup> Also, the studies we looked at vary not only in the proposed discount rate, but sometimes also in the way pension obligations themselves should be calculated, making direct comparison across their results difficult.

Question -Why do we want to make that comparison?

Answer- You want to know if you are over or underfunded.

Question – Why do we care about that?

Answer – If you are underfunded it may be necessary to raise contributions to the fund or if possible reduce benefits. At some point in the distant future the fund will not be able to make benefit payments.

Question – Why are you suggesting using the risk free rate, what does that tell me?

Answer - In an ideal world, by discounting benefits at the risk free rate and comparing them to the current value of the fund it tells you the unfunded liability of fund. That amount is the amount you would need to add to the fund today and invest at the risk free rate to be certain that you would be able to make the benefit payments in the future. In other words in the ideal world you would be certain you could pay the benefits that you may be legally obligated to pay.

Question – How does that differ from discounting at the “expected rate of return”?

Answer – The expected rate of return is just that “expected” but not guaranteed rate of return. If you use that rate, compute the unfunded liability, and put into the fund an amount to cover the unfunded liability, you would not be certain of earning enough to make the benefit payment because you may earn less than the expected rate of return. In fact there is a 50% chance you would earn less.

Question – You said in an ideal world, what does that mean?

Answer- The world is not ideal, the risk free rate assumes that we can find securities that have consecutive maturities that match the roughly 80 years, the life span of the all the beneficiaries. Such securities do not exist. In the absence of that it assumes that the security we are investing in, say the ten year treasury, will earn a constant return in the future so that maturing bonds can be invested at the same rate.

Question – In your presentation you suggested municipal bond rates for the purposes of discounting; those are not risk free why would you use those rates?

Answer - There is some risk of states defaulting so you would discount at that “risk adjusted rate”. To see why this makes sense consider it from the standpoint of an investor in pension benefits. (Believe it or not there are now advertisements on the internet that offer to purchase pensioner’s benefits for a lump sum.) Ask yourself the question if an investor had the option of paying a lump sum for the benefits of 3 pensioners who are identical in all demographic respects and receive identical monthly pensions except one is a federal pension, one is a state of Minnesota pension and the

other is a city of Detroit pension which one would he be willing to pay the most for? The investor would be willing to pay more for the federal pension since there is almost zero chance of default because in an extreme case the federal government in conjunction with the Fed could create money. The investor would be willing to pay more for a state of Minnesota pension than for a city of Detroit pension. Clearly the state of Minnesota has less chance of default than the city of Detroit. Put differently the investor would discount the Detroit pension the most and the Federal pension the least.

Question – Regarding the risk free rate, would it change each year?

Answer - It probably would change each year as interest rates change, because interest rates change each year. However, the question the rate answers is “at this point in time, given the current risk free rate what is the value in today’s dollars of the unfunded liability?”

Question- Is it not likely that we would find an unfunded liability in the tens of billions given that rate?

Answer: Yes, based on the little I know about the MN pension plans that sounds right.

Question: Is it not useless, since there is no way the state could come up with tens of billions in one year?

Answer – I am not an actuary, but it is my understanding that actuaries develop schedules to amortize unfunded liabilities. So the actuaries could presumably develop a schedule of required additional contributions to amortize the unfunded liability or a number of years, assuming the fund were able to invest at the risk free rate.

Question – Does GI forecast stock market returns and if so what are they forecasting?

Answer – They do forecast the S&P500. However, it is one of thousands of variables they forecast—they have never advertised it as their strong point. Having said that they I think they are forecasting a dividend yield of about 2% over the next couple decades and an increase in the index of 4% roughly resulting in a total return of 6%.

Question – Does use of the “risk free” or risk adjusted rate result in 3 possible measures of unfunded liability. The old GASB, the new GASB and the “risk free rate”.

Answer – Yes. However I don’t know which one will be published in the financial or actuarial report; I presume it would be “New GASB”