

Ohio Retirement Study Council

ISSUE BRIEF

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Measuring Pension Liabilities

What is a discount rate and how does it relate to state retirement system liabilities?

Discount Rate

Pension funds measure liabilities (future benefit obligations) using a “discount rate” that is based on assumed investment returns of fund assets. The idea is that the present value of those future benefit obligations is less in today’s dollars due to anticipated investment returns that will be made prior to those obligations coming due. The Ohio systems have discount rates based on the systems’ assumed rates of investment return, ranging from 6.9%-7.5%. When a retirement system increases or decreases their assumed rate of return, it can have a substantial impact on liabilities.

For example, say I have an obligation due in one year for \$1.08. Assuming I can earn 8% in one year, the amount I need saved *today* to pay that expense in *one year* is \$1.00. My discount rate is 8%. But if my discount rate were only 2%, I would need almost \$1.06 today to pay the same obligation in one year. The higher your discount rate the less money (less liability) you need in the present to pay for some future obligation. The lower your discount rate, the more money you need in the present to pay for the same obligation. When we consider the power of compound interest, even small variations in a discount rate can generate very different liability figures. The chart below demonstrates the various liabilities today for a payment in 15 years modified by discount rates.

Liability Today	Discount Rate	Payment in 15 Years
\$555	4%	\$1000
\$481	5%	
\$417	6%	
\$362	7%	
\$315	8%	

Based on the systems’ current 6.9%-7.5% assumed investment returns, the combined unfunded liabilities of the systems is roughly \$53 billion as of the most recent reporting period (2021). But, there are some that believe the systems should use a “no risk” discount rate pegged in some way to U.S. Treasury yields. If you were to take the current 10- or 30-year treasury yield of roughly 4.5% and require the systems to use it as a discount rate, the liability figure would be much higher.

This is in fact what many studies did in the 2010s, when treasury yields were closer to 2.5%. Using this type of analysis would, according to a 2016 Mercatus Center study, result in unfunded liabilities of \$262 billion.¹ Likewise, when a retirement system adjusts their discount rate, it can have a sudden change in unfunded liabilities.

ORSC staff uses the respective system's assumed rate of return as the discount rate as this rate provides more pertinent information related to the cost of the benefit and the plan for funding those benefits. The following sections discuss why this is the case.

The Argument for Assumed Rate of Return: What will this actually cost me?

The *assumed rate of return* method discounts future liabilities based on expected investment returns.

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As mentioned earlier, for Ohio this ranges from 6.9%-7.5% which results in a substantial reduction in liabilities. However, if appropriately set, the assumed rate of return model seeks to reflect the closest *actual cost* in today's dollars of future pension benefits. The vast majority of liabilities are paid through investment income (up to 70%) rather than contributions from employers and employees.

Therefore, it is highly likely that investment returns will constitute the majority of assets used to pay future benefit obligations. To not appropriately include this actual reduction in the cost of future benefits would be asking for more funds from today's employees and employers than are actually needed to pay that benefit.

The key in the above paragraph is “if appropriately set.” An unrealistic assumed rate of return would artificially and temporarily reduce the cost of future benefits and would require increased contributions, or decreased benefits, in the future, and it would not have properly answered the question of “What will this cost me?” One way to mediate this problem is by frequently reviewing economic forecasts and past returns to create an appropriate rate. Ohio's systems do this through a statutory requirement to review all assumptions, including investment return assumptions, on a 5-year basis.² Additionally, each retirement system conducts an independent actuarial valuation attesting to the funding status of the system annually, as required by law.

The Argument for “No-risk” Rates: What is the market value of this benefit?

The *market value of liabilities* (MVL) approach uses rates that are much closer to risk free securities. This approach is not interested in the funding of benefits but is instead concerned with a theoretical market price of the plan's obligations which is itself a function of the riskiness of non-payment. Conceptually, this is a more difficult method to express than the assumed rate of return method but is grounded in finance and economics.

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Pension benefits aren't traded on the open market, so how do we give them a market price? A fundamental aspect of finance is that the value of future cash flows must be valued at the riskiness of the payments. The premise of the MVL approach is that pension benefits are "bond-like" in that they are promises to make specific payments at a future date. Because benefits are almost sure to be paid, whatever the open market pays for a risk free security, such as treasury bonds, should be used in valuing the present day value of the benefit. That is, the discount rate should match the current rates for risk free securities on the open market.³

According to MVL proponents, liabilities of a plan are *completely independent of asset allocation and market returns*. The MVL approach is less concerned with *funding* but instead is focused on the market value of benefits *today* irrespective of theoretical market returns. Valuing a plan's liabilities based on hypothetical future investment returns is completely illogical from the MVL point of view—taking investment risk does not raise or lower today's liabilities.⁴ To MVL proponents, pension funds are mispricing their benefits to outside parties; the market would price pension benefits much differently than those benefits are reported by pension funds. The asymmetrical pricing between what the market would price pension benefits and how pension funds price them is illogical from a finance point of view.

The MVL method could, therefore, be used by a potential creditor of the fund to gain a market-consistent measurement of obligations.

Some MVL proponents admit that, though grounded in rules of modern finance and economics, this method is a more theoretical valuing of liability based on "what ifs."⁵ "What if" the pension fund terminated? What is the settlement value on termination? "What if" all participants went to the market and asked it to replicate their accrued pension benefits by purchasing fixed-income securities that would provide the same stream of income? Nevertheless, they suggest that they are pricing the liabilities as they would price *any other liability* that was on the open market.

Very Different Questions

The spirited debate between these positions was so great that the United States Government Accountability Office stepped in to issue their own report based on various expert opinions.⁶ That report didn't endorse either position but simply noted that each method was addressing a different question. "What will this cost me today?" and "What is the market value of this future benefit?" are not the same question. One is a question of cost while the other might be considered an expression of lender risk.

If you want to know how much a benefit in the future will cost you today, the assumed rate of return will provide the best estimate and give you the best guidance on necessary steps to realize that cost estimate. On the other hand, if you want a measurement of liabilities that is consistent with market prices, the MVL is superior. A pension fund and its oversight body would be more interested in understanding required costs for budgeting purposes, while a potential lender to the pension fund sponsor would be more interested in the consistent market measurement of those liabilities.

While the MVL approach can provide supplementary information, such as evaluating potential risk (i.e., liabilities if the plans do not meet their assumed rate of return), estimating a market value of future cash flows is not at all the same as estimating the future costs of paying for them. A retirement plan isn't terminating. It's not settling its account on the open market. Pension benefits aren't a bank loan

and they aren't a bond. An outside creditor may find value in a discount rate that is consistent with other lending measurements, but those measurements have almost no importance to whomever is funding the plan. Pension plans invest funds to pay benefits; ignoring this is to ignore the entire point of a pension plan: *to provide a cost-effective means of delivering retirement benefits over and above what employees would receive in the market if they invested in no risk securities.*

Practical Consequences of Each Method

There are potential problems with each approach. Pension funds may appear far more well-funded using the assumed rate of return method, encouraging either contribution rate holidays or enhanced benefits. This actually happened in Ohio. Before the market downturn after September 11, 2001, Ohio's

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systems were close to being 100% funded. As a result, an increase in the COLA from CPI to a flat 3% was supported.⁷ But 100% does not mean the fund could pay all future benefits today. 100% means *100% funded in today's dollars, if all assumptions are met.* After the market downturn, the pension funds found themselves with a liability that was paid for in nonexistent future dollars. The "surplus" being used for a benefit expansion had never existed.

Another consequence of the assumed rate of return method is an incentive to take on risk. This is the exact opposite approach you want when your goal is to guarantee an eventual benefit payment. A higher assumed rate of return reduces present day liabilities, and therefore, present day costs. This reduction in present day costs encouraged pension funds across the country in the 2000s to increase their assumed rate of returns and also the funding risk of not making those returns.⁸ But this risk is not shared equally across generations. Should the systems not make their return, they will effectively have shifted costs from the current generation to future generations. Even worse, if this increased risk results in some tail-end negative result (i.e., the 2008 financial crisis), it would partially defund the system of assets. The assumed rate of return can, therefore, encourage risk while at the same time masking that risk.

But the MVL approach likewise has problems. Primary among them is budgeting. The MVL is not focused on how you fund a plan and, therefore, provides no assistance in determining an accurate contribution to a plan. If the systems did in fact purchase a risk free security, such as a 30-year treasury bond, it would be logical to use some blended 30-year return on those bonds in determining the discount rate and necessary present day costs to employees and employers. But since the systems do not do so, using that rate to determine present day costs would not provide an accurate cost figure. Indeed, a modest change in treasury rates could dramatically alter the MVL method liability figure without any real relationship to the funding strategies of the pension funds. The dramatic rise of rates in 2022, when treasury rates rose from 1.5% to 4.25% in less than a year, would result in extreme year-by-year budgeting swings in contribution rates from employees and employers.

There is also a very practical problem for the MVL approach that is unique to Ohio. The MVL assumption, that the payments are virtually guaranteed, is simply incorrect in the case of Ohio's systems. The evidence for this claim is quite simple. In 2011, billions of dollars of liability for the systems disappeared through plan design changes in S.B. 340, 341, 342, 343, and 345. Until pension benefits are granted, they can change in Ohio. For Ohio, then, future liabilities are not "fixed." Were

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Ohio to use the MVL method, the market would have to determine a rate greater than a risk free rate. It would be difficult to find a comparable product on the open market. What is a comparable security that has guaranteed payments except that those payments will change as necessary?

Final considerations

ORSC staff's purpose is to provide practical, useful, and accurate information to the ORSC and general public. For these reasons, staff uses the assumed rate of return when reporting liability on our annual summary sheets and when providing information to outside parties. The ORSC staff perspective is that the assumed rate of return method provides the best estimation of eventual costs today that are necessary to fund a benefit in the future and, therefore, provides the best budgeting of necessary contributions. We believe this information, whether current contributions will cover plan liabilities over time, provides the best actionable information to determine if contribution rates or liabilities (plan benefits) need to be altered. We find this to be more useful information than a theoretical settlement value of the funds. This approach is consistent with other funds nationwide.

¹ Mercatus Center, George Mason University, "Ranking the States by Fiscal Condition, 2016 Edition" (June 2016), available online at http://mercatus.org/sites/default/files/Norcross-Fiscal-Rankings-2-v3_1.pdf

² R.C. 145.22, 742.14, 3307.51, 3309.21, and 5505.12.

³ A much more detailed finance perspective of the MVL approach is available through a draft paper coauthored by the American Association of Actuaries and Society of Actuaries. The Joint AAA/SOA Pension Finance Task Force, "Financial Economics Principles Applied to Public Pension Plans (Draft paper, 2016), 11. (Author's note: Joint Task Force was disbanded in August 2016).

⁴ Donald J. Boyd and Peter J. Kiernan, "The Blinken Report: Strengthening the Security of Public Sector Defined Benefit Plans" (The Nelson A. Rockefeller Institute of Government, 2014), 3. Available online at http://www.rockinst.org/pdf/government_finance/2014-01-Blinken_Report_One.pdf

⁵ Paul Angelo, "Understanding the Valuation of Public Pension Liabilities: Expected Cost vs Market Price (American Enterprise Institute, 2013). Available online at: https://www.aei.org/wp-content/uploads/2014/09/-understanding-the-valuation-of-public-pension-liabilities-expected-cost-versus-market-price_144422774379.pdf

⁶ GAO, Pension Plan Valuation: Views on Using Multiple Measures to Offer a More Complete Picture (September 2014). Available online at <http://www.gao.gov/assets/670/666287.pdf>

⁷ H.B. 157 of the 124th General Assembly.

⁸ GAO, "State and Local Government Pension Plans: Governance Practices and Long-term Investment Strategies Have Evolved Gradually as Plans Take On Increased Investment Risk" (August 24, 2010). Available online at <http://www.gao.gov/assets/310/308867.pdf>

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