Article from

In the Public Interest

January 2016
Issue 12

Understanding the Valuation of Public Pension Liabilities

Expected Cost versus Market Price

By Paul Angelo

This article first appeared on www.aei.org. *It is reprinted here with permission of the American Enterprise Institute. The views expressed in this article are solely those of the author. The Society of Actuaries takes no position on the views of the author.*

With US state and local economies in slow recovery, workforce costs—including pensions and other benefits—remain front-page news. Taxpayers and public officials want to know the size of their financial obligations to employees and retirees for retirement benefits to assess how much it will cost—today and in the future—to meet those obligations.

Determining these obligations should be straightforward because governmental accounting standards and professional actuarial standards outline accepted methods for measuring pension liabilities. In particular, current practice measures pension obligations using long-term assumptions and methods, including an expected rate of return on plan assets. But alternative measures of pension liabilities are increasingly reported in the press. One measure might peg the size of the liability as two or even three times the size of the liability measures currently in use. As a result, a great deal of confusion and controversy has resulted over which measure is "correct."

The controversy around measuring pension liabilities centers on a familiar subject for sponsors of public pension plans: the applicability of what is called the "market value of liabilities" (MVL) to public-sector pension obligations.[1] This paper explores the conceptual differences between two competing measures of liabilities: current practice versus the market-based measure. It also examines which measurement is most useful for public-sector decision makers. Finally, it reviews some of the issues that have yet to be resolved regarding measuring these pension obligations.

BACKGROUND: CURRENT PRACTICE VERSUS MARKET-BASED MEASUREMENT

Current practice for measuring the pension liabilities of public-sector pension plans provides information to plan stakeholders and decision makers about how much it will cost over time to satisfy the financial obligations to participants. This is accomplished by calculating what is called an actuarial accrued liability (AAL), which is based on both current information and reasonable expectations of future events.[2] The AAL measure is based on long-term methods and assumptions. It not only takes into account the service and pay earned by employees, but also anticipates future service and pay raises, which will increase the plan's obligations. Current practice also incorporates information about the future investment earnings of the plan's assets when selecting what is called the "discount rate."[3] In determining the AAL, the discount rate used to calculate public-sector pension liabilities is the long-term expected investment return on the plan's investment portfolio.

The MVL approach differs from the AAL approach in important ways, especially when it comes to the discount rate. MVL measurements ignore expected investment earnings, and instead use current market rates of interest on relatively secure fixed-income instruments (for example, US Department of the Treasury rates or high-grade corporate bond rates). As discussed in the next section, the theory behind the MVL measure is that because public-sector pension benefits are fairly certain to be paid, they should be valued the same way that the market prices securities that have a similarly low "default risk." This would indicate the use of the lowest current market interest rates, which are often called "risk free" rates. Note that "risk free" does not mean such rates are free of investment risk, but rather that they are the rates implicit in the market pricing of securities that, like public pensions, have low default risk.

There are other important differences between the AAL and the MVL. For instance, the MVL uses a much narrower definition of future benefits to calculate a plan's liabilities, one that assumes that pay and service are frozen at current levels.[4] However, our discussion will focus on the current controversy surrounding the discount rate: when measuring public pension liabilities and costs, should future benefit payments be discounted by using the expected long-term return on plan assets or by using current market interest rates?

TWO APPROACHES, TWO FUNDAMENTALLY DIFFERENT CONCEPTS

The MVL method differs from the current AAL approach at the most basic and conceptual level. The AAL and MVL are measurements that are designed to answer fundamentally different questions. Consequently, the usefulness of the information they impart depends on the needs and purposes of any given user.

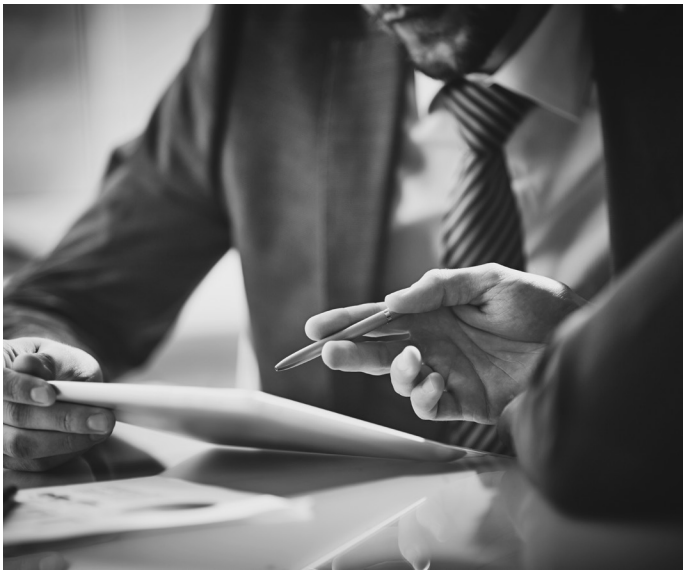
The AAL provides information about expected actual costs to the employer and, ultimately, to the taxpayer; it is the best estimate of what it will cost to provide pension benefits today and into the future. This is why benefit obligations are discounted using the long-term expected return on plan assets. Since investment earnings reduce the net cost to the employer, an estimate of future investment earnings is appropriate in a measurement whose primary purpose is to inform stakeholders about current and future costs.[5]

The MVL, on the other hand, is not directly concerned with the question of funding. It is a measurement designed to estimate the theoretical market price of a plan's obligations. There are a couple of "what-if" scenarios that illustrate the meaning of this market price. For example, the MVL may be viewed as a "replacement value," meaning the price the market would charge if all plan participants wanted to replicate their accrued pension benefits by purchasing fixed-income securities that would provide the same stream of income.

Another way to view the MVL is as a "settlement value," which is what the market would charge if the employer were able to terminate the plan and transfer its benefit obligations to a third party.[6] Under either of these scenarios, liabilities should be valued independently of the long-term expected return on assets, since the question being asked is: what is the market's "going price" today if the benefits are to be provided by fixed-income market instruments rather than long-term invested assets?[7] Consequently, the MVL discounts benefit obligations by using current returns on fixed-income instruments instead of using the rate that plan assets are expected to earn.

The discount rate is one of the most significant factors in measuring any long-term obligation. A lower discount rate will produce a larger measure of the obligation, and vice versa. Given the importance of the discount rate in valuing long-term obligations, these two approaches to discounting—using long-term expected returns versus current market bond rates—will result in very different measures of a plan's liabilities. In today's low-interest-rate environment, an MVL measure will produce a liability that is substantially greater than the current expected return method would produce. Under alternative macroeconomic conditions (such as the high-interest-rate environment of the early 1980s), the MVL would result in a much smaller liability than the AAL.[8]

However, policymakers, trustees, and plan stakeholders are less concerned with broad conceptual differences and more concerned with the practical question of which measure is most useful for their purposes. The informational value of either measurement depends on what the users really want to know. Indeed, in its recent revisions to the governing Actuarial Standard of Practice (ASOP), the Actuarial Standards Board (ASB) stated



clearly: "the actuary should consider the purpose of the measurement as a primary factor in selecting a discount rate." This focus on the purpose of the measurement is found throughout the revised ASOPs that apply to both the measurement of pension obligations and the selection of discount rates.[9]

FINDING PURPOSE AND MEANING IN LIABILITY MEASUREMENTS

To the extent that funding costs are the overriding practical concern facing stakeholders of public-sector plans, it is easy to see how the AAL measurement provides viable information that can be used for hands-on decision making. Decision makers must be concerned not only with the here and now, but also with anticipating future developments. Because the AAL qualitatively and quantitatively incorporates more information than MVL measurements—information about future increases in the plan's benefit obligations (by incorporating future service and salary increases) and about expected long-term earnings on plan assets—it more accurately measures the likely financial burden of the plan on an employer. As a result, the AAL provides useful information to an employer seeking to understand how the plan fits in with the employer's overall financial position, or to trustees seeking to ensure the long-term viability of the plan.

There are few similar, practical applications in the public sector for MVL measurements, which were developed to address specific financial and policy concerns that are faced by corporations sponsoring defined benefit plans. As noted in the previous section, one interpretation of the MVL measure approximates the market replacement value of benefits earned to date by plan participants. This is inconsistent with the basic reason why pension plans are established: to provide employers with a more efficient, cost-effective means of delivering retirement benefits

than simply having individual employees obtain those benefits at fixed-income market rates. Although calculating this market replacement value of benefits might make for an interesting illustration of the economic efficiency of pension plans, it has limited relevance for trustees or employers looking for information on a plan's current and long-term prospects.

Another interpretation of the MVL—as a measure of a plan's settlement value or "termination liability"—may be useful in the context of single-employer corporate pension plans, where federal law specifically permits an employer to terminate a pension plan and provides an explicit regulatory protocol for doing so. Corporate employers that decide to terminate their pensions must either pay an insurance company to issue annuities to pay plan participants or hand over control of the plan and its assets to the federal Pension Benefit Guaranty Corporation, which values pension liabilities in a way that mirrors annuity pricing.

This is why MVL measurements that are used in the private sector are often designed to approximate settlement values for the pension benefits. A corporation's creditors or a potential merger or acquisition partner will be interested in the net termination value (market price) of the firm's pension obligations. None of this is generally relevant to public-sector plans, which are governed by state and local laws and statutes that do not contemplate termination.[10] For discussions about the likely cost of a public-sector plan for a sponsoring employer or the long-term financial health of the plan, MVL estimates will be inaccurate at best and misleading at worst, because these measurements explicitly exclude information about funding costs.

RECENT DEVELOPMENTS: THE GASB AND ASB

This discussion might raise the question: if current practice is so useful, why did both the Governmental Accounting Standards Board (GASB) and the ASB decide to review it? The answer is that, like any standards, those governing the calculation of pension liabilities are, and should be, subject to periodic review to ensure that they are meeting the needs of stakeholders. It is significant that the GASB and the ASB have reaffirmed the basic conceptual framework underlying the AAL and the appropriateness of using the expected rate of return to discount pension liabilities for both accounting expense and funding cost. However, these reviews have raised some important questions, and the answers may have an impact on public plans.

One of the critical questions concerns how to reconcile the AAL measurements with the actual contribution behavior of a plan's sponsor. The AAL anticipates long-term investment returns on plan assets. However, the liability and cost estimates will only be accurate if the plan sponsor is actually funding the plan in accordance with the actuarially determined needs of the plan. To the extent that an employer fails to fund the actuarially required contributions, the plan will fail to achieve the investment earnings it expected. Consequently, the AAL, as traditionally calculated, may be underestimating long-term plan costs. (For information on whether investment earnings assumptions are too high, see the sidebar "Selecting an Expected Investment Return.")

Decision makers and stakeholders certainly need reliable information on the consequences that flow from a failure to appropriately fund a plan. In its revised accounting standards, the GASB determined that liabilities should continue to be calculated using the expected return on plan assets for plans that are being properly funded on an actuarial basis. However, for those not being funded in accordance with the actuarially determined needs of the plan, GASB determined that liabilities should be discounted using a "blended rate."

Under the GASB's approach, only benefits that are projected to be funded from plan assets are discounted using the expected return on plan assets, while any remaining benefits are discounted using a current bond index rate.[11] This provides an explicit measure of the cost of long-term underfunding by denying the use of the long-term earnings rate for future unfunded benefit payments. Note that in contrast, because MVL measures are divorced from the concept of funding, they offer no information on the incremental cost of a failure to fund future benefits.

As for the actuarial standards (ASOPs), as noted earlier the ASB has issued revised standards both for measuring pension obligations and for selecting discount rates. Unlike the GASB's accounting and financial reporting standards for public plans, pension ASOPs apply to all actuarial measurements related to pensions and are therefore much wider in scope. That is why rather than attempting to specify particular measurements, the revised pension ASOPs require that, "[w]hen measuring pension obligations and determining periodic costs or actuarially determined contributions, the actuary should reflect the purpose of the measurement."[12]

Under this guidance, just as the GASB has determined that expected earnings is the appropriate discount rate for the purpose of measuring accounting cost (in other words, expense), expected earnings is also the appropriate discount rate for the purpose of measuring funding cost (in other words, contributions). This is evident in the following excerpt from GASB Statement 68, which applies equally well to both accounting and funding cost:

> "The amounts that are projected to be provided by pension plan investment earnings represent a reduction in the employer's expected sacrifice of resources to satisfy the obligation for pensions. Therefore, if the potentially significant effect of pension plan investment earnings is not considered in the measurement of the pension lia-

Selecting an Expected Investment Return

Aside from the issue of market-based discount rates, there is also an active discussion on editorial pages and in board meetings as to whether the current long-term expected earnings assumptions used by public plans are too high. This is a valid topic for discussion. Indeed, trustees and their actuaries routinely review investment earnings assumptions. They may periodically revisit and change their earnings assumptions, either because of changes in asset allocation or changed future market expectations. This is entirely appropriate.

Unfortunately, this discussion has a tendency to get muddled with the MVL debate, because some commentators who champion the use of the MVL for public plans also claim that it justifies a more conservative, and therefore more appropriate, long-term earnings rate.

The MVL debate has no bearing on the selection of the long-term expected earnings rate because the MVL measure is not based on future returns on a plan's invested assets. It explicitly avoids forward-looking assumptions about the expected return on a plan's assets, since these are not relevant to determining the market replacement value, nor would they be relevant in the context of a plan termination.

Another proposed use for MVL measures, and particularly the market-based discount rate, is to illustrate the downside risk associated with using a long-term earnings-based discount rate. Even here, the MVL terminology can be misleading. The market-based discount rate is commonly referred to as the "risk-free" rate, even though using such a discount rate would not preclude future investment losses relative to that assumption.*

A more meaningful illustration of investment risk is to show results under alternative investment return scenarios, perhaps with the expected probabilities associated with the different outcomes.

While discussions of appropriate long-term earnings assumptions and their associated risks should be encouraged, they should not be influenced by arguments based on liability measures that are unrelated to expected investment earnings.

* In fact, the term "risk-free" rate does not refer to investment risk at all. Rather, it is the rate that the market would use to price a cash flow that is sure to be paid, and thus free of default risk.

> bility, the Board believes that amounts recognized by the employer, including the employer's cost of services associated with pensions as they are earned, potentially would be misstated."[13]

Under the revised ASOPs, there may be purposes for which a market-based MVL measure would be appropriate. These might include settlement values for withdrawing employers (as discussed earlier) or values for use in market-based financial economic models.[14] Nonetheless, the expected earnings-based AAL is most consistent with the purpose of measuring the current costs and accrued liabilities for an ongoing public pension plan.

CONCLUSION

Liability measurements must be useful and relevant to inform stakeholders. The AAL imparts information about the issues that are most important to decision makers: the expected costs associated with funding promised benefits. The MVL measures are far less useful for public-sector plans because they are not designed to answer the critical questions facing policymakers, employers, and trustees related to the expected cost of current and future benefit obligations.

In many cases, actions to resolve the difficult issues facing public-sector pension plans in the present fiscal environment will have to include implementing appropriate funding policies and disciplines, as well as developing sustainable benefit designs. Those policies and plan designs should be evaluated using measures consistent with the purpose of the measurement—determining the resources needed to fund the pension obligation—and not on a theoretical market price of that obligation. ■

NOTES

This paper is based on The Segal Company's June 2011 Public Sector Letter. See The Segal Company, "Actual Cost vs. Market Price: Does Market Valuation of Pension Liabilities Fit the Public Sector?," June 2011, *www.segalco.com/publications/publicsectorletters/june2011.pdf.*

ENDNOTES

1 For an introduction to the MVL approach to valuing pension liabilities, see The Segal Company, "Market Value Liability and Public Pension Plans: A Continuing Controversy," January 2009, *www.segalco.com/publications/publicsectorletters/jan2009.pdf.*

2 The AAL is the liability for all service to date. A pension valuation also determines a "normal cost" for active members, which is the cost for the next year of service. For active members, the AAL is the current value of the normal costs for past years of service. For inactive members, the AAL is simply the present value of their future benefits.

3 Any current measure of a pension plan's liability is essentially a calculation, in current dollars, of some portion of the value of future benefit payments. In recognition of the time value of money, future benefit payments must be "discounted" to arrive at a value today.

[4] For a detailed description of these differences, see The Segal Company, "Market Value Liability and Public Pension Plans."

[5] Note that this applies not only to funding cost (contributions) but also to accounting cost (expense). In its recently released revised accounting standards for pensions (Statements 67 and 68), the Governmental Accounting Standards Board states that, when setting the discount rate for financial reporting, "the amounts that are projected to be provided by pension plan investment earnings represent a reduction in the employer's expected sacrifice of resources to satisfy the obligation for pensions. Therefore, if the potentially significant effect of pension plan investment earnings is not considered in the measurement of the pension liability, the board believes that amounts recognized by the employer, including the employer's cost of services associated with pensions as they are earned, would potentially be misstated." See Governmental Accounting Standards Board, "Statement No. 68: Accounting and Financial Reporting for Pensions," June 2012, paragraph 228.

[6] In practice, to terminate a plan, the employer would have to buy annuities. Because of margins, profit, and other factors, actual annuity prices would generally be higher than the theoretical MVL discussed here.

[7] As noted earlier, the fixed-income instruments used here should have the same generally low default risk as is associated with public pension obligations.

[8] This discussion only considers the effect of the different discount rates. If measured using the same discount rate, the MVL will generally be less than the AAL because the MVL does not reflect future service and salary increases.

[9] Note that in the revised edition of ASOP No. 4, what we are calling the "MVL" is described as a "market-consistent present value." See Actuarial Standards Board, "Actuarial Standard of Practice No. 4 (Revised Edition): Measuring Pension Obligations and Determining Pension Plan Costs or Contributions," December 2013, www.actuarialstandardsboard.org/pdf/exposure/asop4_2nd_exposure%20draft_dec_2012.pdf; and Actuarial Standards Board, "Actuarial Standard of Practice No. 27 (Revised Edition): Selection of Economic Assumptions for Measuring Pension Obligations," September 2013, *www.actuarialstandardsboard.org/pdf/exposure/ASOP_No27_second%20exposure_2011.pdf.*

[10] There may be some limited contexts in which the MVL could impart useful information to public-sector plan stakeholders and decision makers. For instance, in cases where one employer wishes to withdraw entirely from a plan that covers multiple employers, the plan may calculate the value of that employer's termination obligation to the plan using an MVL-type approach. Similarly, trustees of some plans may decide that an MVL approach is the correct one to use in determining purchases of service credit, since, in effect, the participant is purchasing future benefits that would otherwise need to be purchased in the market. However, these are the exceptions to the general situation of an ongoing public-sector pension plan.

[11] Note that the new GASB standards are sometimes misinterpreted to require that the blending of the expected return and bond index rate is based on the current funded status of the plan. This is incorrect. As described earlier, the blending of these two rates depends on whether projected benefits will be covered by projected assets, including future contributions to fund those benefits. For that reason, the inclusion of the bond index rate in the discount rate depends more on having future contributions based on an actuarially sufficient funding policy and less on the current relationship between plan assets and liabilities.

[12] Actuarial Standards Board, "Actuarial Standard of Practice No. 4 (Revised Edition)"; and Actuarial Standards Board, "Actuarial Standard of Practice No. 27 (Revised Edition)."

[13] Governmental Accounting Standards Board, "Statement No. 68," paragraph 228.

[14] Another purpose often suggested for MVL measures is to illustrate the downside risk associated with using an expected earnings-based discount rate. This is discussed in the sidebar "Selecting an Expected Earnings Assumption."

AUTHOR'S NOTE:

This article was prepared in May 2013 for a forum sponsored by the American Enterprise Institute. At that time, revisions to ASOPs 4 and 27 were both at the "Second Exposure Draft" stage; the final Revised Editions were released in December and September 2013, respectively. This article has been updated to refer to those Revised Editions of the ASOPs and to reflect their final texts wherever they differed slightly from the quotes taken from the Exposure Drafts.

The appropriate roles of "level cost" models versus "market pricing" models[1] in valuing public pension obligations and liabilities continue to generate debate and discussion. As discussed in the article, ASOPs 4 and 27 provide the key insight that the type of model used should reflect the purpose of the measurement. However, these ASOPs (and ASOP 27, in particular) also contain what I think is a new—or at least a clarifying—insight on the relationship between type and purpose of measurement, particularly when it comes to market pricing measures.

Generally, there is a clear distinction between the type and the purpose of a pension measurement. If the purpose of the measurement is funding, corporate plans generally use market pricing types of measures (e.g., the OBRA '87 "current liability" and the PPA '06 "target liability"), while public sector plans generally use level cost types of measures. The same is true if the purpose of the measurement is financial reporting. For purposes of defeasance or settlement, generally both corporate and public plans use a market pricing type of measure, either based on a theoretical market value or from an actual market transaction.

However, when ASOP 27 (in Section 3.9) lists possible purposes to consider when selecting a discount rate, it includes "market-consistent measurement" as one of the possible purposes of measurement. In effect, this means that the underlying justification for wanting a market pricing type of measure may simply be that it is the value that is most consistent with a market-based financial economic model. Perhaps the framework of ASOP 27 will allow for a clearer identification of this purpose, whatever other purposes may be proposed to justify the disclosure of a market pricing type of measure for public pension obligations.

ENDNOTES

[1] "Level cost" models use assumed expected return discount rates and (most often) level cost actuarial cost methods. "Market pricing" models use observed market return discount rates and accrued benefit actuarial cost methods. The article uses "expected cost" in its title only because it focuses on the discount rate aspect of this type of model.

– Paul Angelo ■

Paul Angelo, FSA, EA, FCA, MAAA, is a senior vice president and actuary for Segal Consulting. He can be contacted at pangelo@segalco.com.