

# **The Future of Public Employee Retirement Systems**

EDITED BY

Olivia S. Mitchell and Gary Anderson

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**Part I**  
**Costs and Benefits of Public Employee  
Retirement Systems**



## Chapter 2

# **Estimating State and Local Government Pension and Retiree Health Care Liabilities**

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*Stephen T. McElhaney*

Recently concern has been raised about public sector unfunded retiree liabilities. Some observers declare a looming crisis in public pension and retiree health-care funding (Pew 2007). Others charge that this crisis is even worse than it might appear, because public sector retirement system liabilities are not computed using appropriate assumptions and methods (Ennis 2007; Gold and Latter 2009). Here we do not resolve the question of whether such a crisis exists. But because public debate relies, at least in part, on the numbers being published in public financial reports, it is important to review the basis of these calculations as a measure of their credibility. This chapter examines the principles under which the calculations of unfunded liability are derived. Our attention focuses on general actuarial principles as set forth in Actuarial Standards of Practice; accounting principles for retiree benefit plans in the private sector; accounting principles for retiree benefit plans in the public sector; comments regarding the differences between private- and public-sector financial reporting; and estimates of the overall magnitude of public sector retiree liabilities.

### **Measurement issues**

The primary guidance given to actuaries with respect to measuring retirement-related liabilities, both in the public and private sectors, is provided by the Actuarial Standards Board (ASB) in its Actuarial Standard of Practice (ASOP) No. 4, entitled *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions* (ASB 2007). Within the scope of ASOP No. 4, paragraph 1.2.a is the measurement of pension obligations, including ‘determinations of funded status, assessments of solvency upon plan termination, and measurements for use in cost or contribution determinations’ (ASB 2007). Section 2.1 of that circular defines the term ‘Actuarial Accrued Liability,’ which is used almost universally for communicating funded status of public sector retirement programs. A plan’s Actuarial Accrued Liability (AAL) is dependent upon the particular actuarial cost

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method and is defined as the ‘portion of the actuarial present value of projected benefits . . . not provided for by future normal costs’ (ASB 2007).

Section 3.11 of ASOP No. 4 gives guidance with respect to selection of an actuarial cost method. Actuarial cost methods are generally chosen to be consistent with the funding objectives of the pension fund and/or the sponsoring organization. Specific actuarial cost methods include the Entry Age Normal Method, the Projected Unit Credit Method, the Traditional Unit Credit Method, Frozen Initial Liability Method, the Attained Age Normal Method, and the Aggregate Method as well as variations of these methods. Of these methods, only the Entry Age Normal Method, the Projected Unit Credit Method, and the Traditional Unit Credit Method directly calculate an Actuarial Accrued Liability at each actuarial valuation date. For the Frozen Initial Liability Method and the Attained Age Normal Method, an Actuarial Accrued Liability is calculated at one particular actuarial valuation date and not updated at future dates except as to amortize such liability to the extent funded by contributions to the plan. The Aggregate Method does not determine any Accrued Liability, and plans that use the Aggregate Method therefore can give the illusion of being 100 percent funded at all times. The methods that determine Actuarial Accrued Liability at each valuation date are sometimes called ‘immediate gain methods,’ while the methods that do not directly determine Actuarial Accrued Liability at each valuation date are sometimes called ‘spread gain methods.’

ASOP No. 4 provides very broad guidance with respect to selection of a specific actuarial cost method. Each of the specific methods listed in the earlier paragraph would probably meet the very broad guidelines of ASOP No. 4 for almost any public sector retirement program. The circular does not provide guidance with respect to actuarial assumptions except to refer to ASOP No. 27—*Selection of Economic Assumptions for Measuring Pension Obligations* (ASB 2005a), and ASOP No. 35—*Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations* (ASB 2005b).

The first of these, ASOP No. 27, is especially important in assessing governmental retiree liabilities, since it provides guidance with respect to selection of the discount rate used for valuing liabilities. In most instances, the selection of discount rate has more influence on the magnitude of the calculated liability than any other single assumption. Under this document, the discount rate should be selected based upon the expected long-term investment return, unless the specific purpose of the measurement should be based upon a different assumption. ASOP No. 27 suggests that the actuary’s determination of the investment return assumption should consider factors which include the plan’s investment policy, investment volatility, manager performance, and cash flow timing. In addition, ASOP No. 27 states that the determination of economic assumptions includes development of a best-estimate range, rather than a single result, and that

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the actuary should select the assumptions from within this range. For an investment return assumption where the investment policy includes potentially volatile assets such as equities, such a best-estimate range may span 200 basis points or more. Two actuaries analyzing the same data could reach substantially different conclusions with respect to choice of an investment return assumption, resulting in substantially different measurements of plan funded status.

ASOP No. 35 provides guidance with respect to demographic assumptions such as turnover, retirement, disability, and mortality. While selection of unreasonable demographic assumptions can have a material effect on the magnitude of actuarial liabilities, for purposes of this chapter, it has been assumed that such assumptions have been selected reasonably with appropriate reference to the experience of the plan. (This comment also applies to other economic actuarial assumptions covered by ASOP No. 27 such as future salary growth and inflation.)

A different document, ASOP No. 6—*Measuring Retiree Group Obligations* (ASB 2001), provides guidance with respect to selection of assumptions which are unique to non-pension benefits such as retiree health care and retiree life insurance. For retiree health care, these assumptions include assumed rate of health-care claims and future trend rates. As with ASOP No. 35, it is assumed that such assumptions are selected reasonably.

To summarize, Actuarial Standards Board practices on measurement issues with respect to unfunded retirement liabilities are quite broad. Different funds and different actuaries can and do reach different conclusions regarding the magnitude of unfunded liabilities for retirement programs that are essentially very similar.

### Private sector measurement

For private sector organizations in the United States, measurement of retirement liabilities is covered primarily by three accounting standards issued by the Financial Accounting Standards Board (FASB):

- Financial Accounting Standard (FAS) No. 87: *Employers' Accounting for Pensions* (FASB 1985)
- Financial Accounting Standard (FAS) No. 106: *Employers' Accounting for Postretirement Benefits Other Than Pensions* (FASB 2004)
- Financial Accounting Standard (FAS) No. 158: *Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans—an amendment of FASB Statements No. 87, 88, 106, and 132(R)* (FASB 2006)

The standards to measure liabilities are described in FAS No. 87 and FAS No. 106, while FAS No. 158 covers how such liabilities should be disclosed in

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financial statements. Among other requirements, FAS No. 87 and FAS No. 106 set the specific requirements with respect to selection of the actuarial cost method and the discount rate. The actuarial cost method used is the Projected Unit Credit Method for all plans. Further, the discount rate should reflect the rates at which the obligations could be effectively settled. FAS No. 87, paragraph 44 suggests that this rate could be based upon current market rates of 'high-quality fixed-income investments currently available' (FASB 1985).

The suggestion to use current market rates for fixed-income investments anticipates a liability determination which is independent of the plan's expected return on investments. Implicit in this requirement is that such assumption would be modified to current rates at each measurement of the liability. As a rule, this type of measurement is known as a market value liability. Discount rates using this approach will almost always be lower than discount rates based upon the plan's long-term investment return, and therefore the actuarial liability calculated using a current market fixed-income rate will generally be higher than an actuarial liability using an investment return assumption.

### **Public sector measurement**

For state and local public-sector organizations in the United States, measurement of retiree liabilities is covered by two accounting standards issued by the Governmental Accounting Standards Board (GASB):

- Governmental Accounting Standards Board Statement No. 27: *Accounting for Pensions by State and Local Governmental Employers* (GASB 1994)
- Governmental Accounting Standards Board Statement No. 45: *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions* (GASB 2004)

In contrast to the FASB requirements described earlier, these two statements provide guidance with respect to selection of actuarial cost method and discount rate. Any of the actuarial cost methods described for general measurement purposes under ASOP No. 4 may be selected.

This flexibility may be desirable from the standpoint of long-term planning since the best fit of any cost method depends upon both the plan structure and the financial requirements of the sponsoring organization. However, this flexibility also makes it difficult to compare the funded status of different organizations. Also, as has been noted previously, some actuarial cost methods do not recalculate the actuarial accrued liability at each actuarial valuation date, so that the reported funded status of various retirement programs may not be fully comparative to the extent such



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comparability would be desirable. And finally the discount rate is based upon each entity's estimated long-term yield on investments.

For pension benefits under GASB No. 27, the discount rate is to be the estimated long-term investment yield for the plan. For other post-employment benefits (OPEB) under GASB No. 45 paragraph 13c, the discount rate is to be the 'estimated long-term investment yield on the investments that are expected to be used to finance the payment of benefits.' The different language used in GASB No. 45 reflects the fact that most pension benefits are funded within pension trust funds, whereas most other post-employment benefits, including retiree health care, have historically been paid for directly from current budgets on a pay-as-you-go basis. For a plan operating in a pay-as-you-go environment, the long-term investment return would be based upon returns on an employer's general assets, which are usually invested in very short-term fixed-income instruments. This rate might actually be lower than the market bond rate derived for purposes of FAS No. 87 or FAS No. 106. For OPEB that are fully funded through a trust, the discount rate would be selected using the same principles as for funded pension trust. For OPEB that are partially funded by a trust and partially funded by employer assets, the discount rate is selected by blending the appropriate fully funded and pay-as-you-go discount rates.

A result of the GASB discount rate requirements is that disclosed liabilities for a particular OPEB plan will vary substantially, depending upon whether the plan is funded or unfunded. Such a difference is expected to cause many public sector plan sponsors to consider pre-funding of OPEB obligations. It should be noted that pre-funding of OPEB obligations is not common in the private sector due to two primary differences with respect to funding between public and private sector employers:

- For private sector employers, the choice of discount rate under FAS No. 106 is the same whether the plan is funded or unfunded.
- Most pre-funding instruments for private sector employers are not very tax effective. Tax issues are not an issue for public sector employers who are not subject to federal income tax.

The choice of discount rate is usually left to the plan sponsor. For public retirement systems, the final decision is typically made by the retirement board with input from the actuary. As with the flexibility in choosing the actuarial cost method, this practice in adopting a discount rate causes issues in having comparability of results among different retirement systems. Two systems with very similar asset allocation and investment policies may choose different discount rates for reasons that may be unique to the system or board. Also, there has been a tendency not to update the discount rate due to the effect such a change would have on the reported

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amount of unfunded Actuarial Accrued Liability. In some instances, systems have changed to more aggressive investment policies in order to justify the current discount rate, which means that the assumptions drive the asset allocation policy instead of the other way around.

### Comments regarding measurement differences

GASB's approach to the discount rate for public plans has been criticized on two fronts. First, the flexibility in selecting the discount rate based on expected investment returns results in a wide range of such discount rates, making it difficult to compare funding levels across various public organizations. Second, there is a growing movement advocating that any determination of retiree liabilities should be market-related, perhaps following FAS No. 87 and FAS No. 106. This position was taken by Ennis (2007) who stated that allowing a plan sponsor to contribute less because the fund has increased its risk causes public pension plans to appear cheaper than would be dictated by proper economics. The author argues for using a settlement rate similar to that used by private sector organizations that disclose under FAS Nos. 87 and 106.

In addition, some members of the actuarial profession have advocated that public-sector organizations should disclose retiree liabilities using a market value approach independent of expected returns on plan assets (Ruloff 2007; Gold and Latter 2009). The argument is that the market value of liabilities is the only way to capture the intrinsic value of promised benefits, so that reporting under any other methodology would mislead as to benefits promised.

In 2006, GASB issued a white paper entitled *Why Governmental Accounting and Financial Reporting Is—And Should Be—Different* (GASB 2006). Here the organization stated that governments are accountable for resource use in ways that differ from business enterprises. This is due in part to business revenues being a 'voluntary exchange between any willing buyer and seller' whereas the revenue for government entities results from an 'involuntary payment of taxes.' Therefore, the article contends, governmental accounting should address the need for 'public accountability information by helping stakeholders assess how public resources are acquired and used, whether current resources were sufficient to meet current service costs or whether some costs were shifted to future taxpayers and whether the government's ability to provide services deteriorated from the previous year' (GASB 2006: 1–2).

With respect to pension and other post-employment liabilities, GASB (2006:13) argued that the accounting approach adopted for GASB Nos. 27 and 45 'explicitly harmonizes accounting with the actuarial funding

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characteristics of public pension plans' (apparently meaning compliance with the ASOPs described earlier in this chapter) and that the approach 'was based on research studies conducted with financial statement users at the time the pension standards were being developed.' Also, GASB noted that the approach makes it possible to charge 'each period a level percentage of normal costs' which in turn 'equitably spreads the burden of an ongoing benefit program among different generations of taxpayers.'

At present, there remain substantial differences in how retiree liabilities are reported for public and private organizations. In practice, the wide range of acceptable practices and assumptions leads to problems of comparability from one public organization to another.

### **Magnitude of public sector liabilities**

A number of recent studies have sought to document the value of pension and retiree health care liabilities in the public sector. In 2007, the Pew Center on the States issued a report covering public sector retirement benefits promised by state governments (Pew 2007). This report estimated total state pension liabilities of \$2.35 trillion, of which \$1.99 trillion was funded, leaving a total unfunded liability of \$361 billion. For OPEB, the total liability was estimated at \$381 billion, of which \$11 billion was funded, leaving an unfunded liability of \$370 billion. Therefore, the states' unfunded liability for both pensions and OPEB was estimated as \$731 billion.

This liability excludes promises made by local governmental entities and most public school teachers. Local governmental liabilities are somewhat difficult to estimate since there is no central filing and compilation of financial disclosures. Spiotto (2006) estimated that pension liabilities of state and local governments could approach \$700 billion to \$1 trillion over the next 10 years. Obviously this figure is a very rough estimate, and it probably places the states' share of the total unfunded liability at between one-third to one-half of the total for all state and local governmental organizations.

The OPEB liability has not yet been disclosed in annual financial statements of most government units, and the first such disclosures occurred in 2008. One estimate quoted in *The New York Times* valued the total OPEB liability at \$1 trillion (Freudenheim and Walsh 2005) This estimate will likely turn out to be on the low side. More recently, Credit Suisse issued a report entitled *You Dropped a Bomb on Me, GASB*. In this report, OPEB liabilities for all US state and local governments were estimated at \$1.5 trillion (Zion and Varshney 2007). These figures are based upon the current requirements reported under GASB Nos. 27 and 45. Accordingly, the lack of uniformity in how individual liabilities are derived is substantial.

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Further, while most governmental plans use either Entry Age Normal or Projected Unit Credit, there are many systems that use a method that does not re-determine actuarial accrued liability at each valuation date. For some of these, it may have been years since a determination has been made. It also is not yet known which methods will be used for disclosure of OPEB liabilities, although it is presumed that the great majority of the calculations will use either Entry Age Normal or Projected Unit Credit. Another consideration is that the discount rate is based upon a reasonable range for the projected rate of investment return. Thus plans with similar asset allocation and investment policies may have selected substantially different investment return assumptions. For many public sector retirement systems the choice of discount rate is made by the system board of trustees, so the actuary is required merely to state that the rate is reasonable, rather than representing his best estimate. Even a difference of 0.5 percent in the discount rate can lead to large differences in the Actuarial Accrued Liability. Finally, for OPEB, it is not known how many of the plans will fully fund benefits through trust funds. The number could substantially change the overall actuarial liability since selection of discount rate depends on the funding approach. Adding the liabilities for funded pension plans to unfunded OPEB plans means adding liabilities determined with an average discount rate of 8 percent to liabilities determined using discount rates in the 4 percent to 5 percent range, creating an 'apples and oranges' situation.

### **Potential changes for public sector measurements**

If the public sector were to adopt a market-value approach to measuring retiree liabilities similar to the private sector, liabilities would surely change substantially (see Gold and Latter [2009]). Pension liabilities would certainly increase, but OPEB liabilities might decrease. The overall financial effect is difficult to measure, but for pension benefits, the reported unfunded liabilities for some organizations could potentially double or triple. GASB apparently has believed up to this point in time that the current methodology provides the most relevant information to users of public sector financial statements. But efforts can be made to make the current disclosures more meaningful, particularly by making changes in the selection of actuarial cost method and selection of the investment return assumption.

For actuarial cost methods, the choices could be limited to those methods that directly determine an actuarial accrued liability at each valuation date. This would restrict choice of actuarial cost method to Entry Age Normal, Projected Unit Credit, or Traditional Unit Credit. Some of the

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unfunded liabilities currently being reported under spread gain methods may be misleading users as to the actual funded status of the plans.

The choice of the investment return assumption is too important to be manipulated in order to obtain a desired result. For private sector calculations under the Employee Retirement Income Security Act (ERISA) prior to 2008, the choice of the investment return assumption (as well as other actuarial assumptions) had to be certified annually by the plan's actuary as being his or her best estimate. (Note that starting in 2008, funding rules under ERISA have been changed to calculate liabilities in a manner similar to the FASB market value approach.) It is logical that calculations for financial disclosure of public sector retirement benefits should likewise be based upon the actuary's best estimate. In many instances the assumptions adopted by a retirement system board will be identical to the actuary's best estimate, but in those instances where the actuary's recommendation is not adopted by the board, the public and users of financial statement information should understand the effects of such a decision. This requirement would also place more discipline on retirement system boards if they elect to disregard the actuary's recommendation.

### Conclusion

The magnitude of unfunded liabilities by state and local governments in the United States has great importance to taxpayers, bond holders, and public employees. Consequently, the measurements of these liabilities should be performed in a manner which provides the most useful information possible to these groups. Determining the parameters for these measurements will present challenges in the years ahead to those who create the standards.

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