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# THE PENSION FORUM

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Authors should submit their papers in Word format to the editor of *The Pension Forum* at *apeterson@soa.org*. Text should be left-justified and in 12-point font. Formatting should be kept to a minimum. Headings and subheadings should follow the style of the current *Pension Forum* (e.g., headings are typed upper and lower case). All papers will include a byline (name and professional designations) to give you full credit for your effort. The Pension Section Communications Team will make the final determination as to which papers are suitable for publication. Information concerning the make-up of this committee can be found at *http://www.soa.org/professional-interests/section-committees/pension-committees/pen-sect-com-team.aspx*.

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# Editor's Introduction

By Martin McCaulay

This issue of *The Pension Forum* is on communicating risk in public pension plans. It includes three papers, discussions of the papers, and responses from the authors. The first paper is the SOA research report from June 2014, "Report on Communicating the Financial Health of Public Pension Plans" by George A. (Sandy) Mackenzie. The research report shows two sample concise but comprehensive and focused reports to communicate the financial health and prospects of public plans. The two reports strike a balance between narrative and quantitative indicators of a plan's financial health.

The second paper is "Model Legislation for Better Public Plan Governance (vs. Risk Disclosure)" by Thomas Lowman, from April 2015. While increased disclosure will improve the communication of risk in public plans, a proposed better solution is creating model legislation for public plans to follow that encourages better governance to help boards of trustees and elected officials make better decisions. The paper focuses on the need for and scope of model legislation and the related risks model legislation can address.

The third paper is "Presenting Market Value Liabilities for Public Employee Retirement Systems" by Robert North. Until his retirement in late 2014, Mr. North was the chief actuary for the New York City Retirement System, a position he held for 24 years. In that capacity he chose to disclose market-value-related liability as part of his annual actuarial valuation reports. This paper describes some of the theory behind market value liabilities, his rationale and methodology for providing this disclosure and compares this with other standard public pension disclosures required under the Government Accounting Standards Board (GASB) requirements.

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# Report on Communicating the Financial Health of Public Pension Plans

By George A. (Sandy) Mackenzie

## Introduction

The pension systems of states and municipalities are much in the news, particularly those with large funding imbalances. It is increasingly common to read reports that the traditional pension plan, which dominates the landscape of state and local governments, will be replaced by some sort of hybrid plan. The more technical but still very important issue of the choice of discount rate is also receiving a great deal of attention. What does not receive much attention, despite the role it may be playing in the current difficulties of public pension plans, is the uncertain state of communication of their financial position and future prospects.

A great deal of information is available on public pension plans; in particular, the comprehensive annual financial reports (CAFRs) and actuarial reports contain a wealth of information. However, that information is typically not presented in a user-friendly way. Summary documents vary in quality and typically do not give a comprehensive picture of a plan's financial operations or its basic structure.

The Society of Actuaries Social Insurance and Public Finance Section (SIPF) commissioned a research project in July 2012 entitled *Communicating the Financial Health of Public Pension Plans*. The project's premise was that communications were not what they should be and needed to be greatly improved. Doing so could materially improve the chances of a successful resolution of current financial problems and reduce the chances of a relapse.

This report presents the results of the work undertaken in response to the SIPF's request. The premise of this work is that there is a need for a concise but still comprehensive and focused report on the financial health and prospects of state and municipal plans to give stakeholders the overview they need to come to informed opinions about the need for changes to the structure of these plans. The report needs to strike a balance between narrative and quantitative indicators of a plan's financial health.

The proposed report can be updated annually, or even more frequently, and can be a part of a plan's actuarial control cycle. Updates to the proposed report can reflect the results of the control cycle. For example, a divergence between demographic and financial projections and outturns could increase the perceived need for structural reforms. Similarly, the what-if exercises undertaken as part of the cycle could shed light on a plan's vulnerability to financial shocks.

**THE PLAN REPORTS**

This introduction continues with a description of and commentary on prototypical reports on two pension systems: one on a state system whose identity has been disguised by calling it the Adams PERS, and the other on a state system similarly disguised as the Jackson PERS. Each has an accompanying "dashboard," which presents key quantitative indicators and a summary of the structure of benefits and actuarial assumptions. The two state systems were chosen to illustrate how developments in plans in quite different financial positions can be treated. The reports are described and contrasted further below.

The goal of the plan reports is to give interested readers a clear overview of the state of a plan's finances and its benefits. They are intended to serve as examples to the plan management staff who would be called upon to prepare reports for their own pension systems. Having been prepared by an outsider, they are limited in some respects. An outsider cannot commission simulations on the impact of changes in actuarial or economic assumptions, for example, although these may have been reported in the CAFR or elsewhere. Without a simulation model of a plan, it is very difficult to gauge the impact of measures taken to improve the plan's finances. Nonetheless, the proposed report can still serve as an expository model for plan "insiders." The reader should note that sentences in square brackets represent the researcher's conjectures, and are intended to stand in for what would be more solidly based analyses by drafters from plan management.

The two sample reports are organized in a similar way, although they have not been written using a template. The fact that they are narratives illustrated by tables and charts rather than simply a compilation of data might lead readers to overlook the substantial similarities in form between them. The organization by section of each report is almost identical; each report begins with an introduction, which is followed by sections on benefit determination, contributions, investments, and funding. Each has a short conclusion. Both reports emphasize the subjects of benefits and plan financing, offer explanations for recent financing trends, and generally avoid going into detail. The tables and boxes that illustrate the reports' observations are also substantially similar. Finally, the two reports are more or less equal in length.

There are differences between the two sample reports as well. The report on the Adams PERS has a brief discussion of the impact of lower interest rates on funding. That discussion is lacking in the Jackson report because the necessary data were not readily available, which might reflect the possibility that the issue is not seen to be of the same importance for the Jackson PERS as it is for the Adams PERS. The treatments of cost-of-living adjustments (COLAs) and recent changes to the COLA mechanism differ because in the Jackson PERS current retirees were completely unaffected by the changes, which was definitely not the case with the Adams PERS. In addition, the recent changes to the COLA in the Adams PERS are harder to explain because of the way they differ in their impact on differing age groups.

Having emphasized the similarities of the two sample reports, it needs to be clear that there is no intention of using them to force the experience of different plans into a straitjacket. Despite the similar organization of the two sample reports, plan management could simply choose to emphasize some issues more and others less, to write at greater length, or to be even more concise. The hope is that these reports will be short enough not to discourage interested stakeholders from reading them, and that they will have an organization that is sufficiently similar to facilitate comparisons across them.

**THE TWO SAMPLE REPORTS COMPARED AND CONTRASTED**

A comparison of the two sample reports makes clear that the Jackson PERS is in much better shape financially than the Adams PERS. The discussion of benefits determination points to one possible reason for this: the pensions paid by the Adams PERS start earlier and pay more for the same work history. For example, an Adams PERS plan member with 30 years of service is entitled to a pension of 75 percent of final salary that starts at age 50, although it should be remembered that most Adams PERS members are not covered by Social Security. A member of the Jackson PERS regular class (which contains most Jackson PERS members) with 30 years of service would have a replacement ratio of 49 percent. The impact on plan finances of this difference is offset to a considerable extent, but not completely by the higher combined employer-employee contributions that finance the Adams PERS. The report's analysis of the huge increase in actual over projected Unfunded Actuarial Accrued Liability (UAAL) in the Adams PERS makes clear the major role of a shortfall in income from investments. The Adams report also notes that employer contributions have tended in recent years to fall below the annual required contribution (ARC); in the case of the Jackson PERS the employer's performance has been more consistent.

Both plans have taken measures in recent years to improve their financing. This was particularly important in Adams's case since its funding ratio had dropped to 60 percent by 2011. There appears to have been less urgency in Jackson's case, and the package was designed to have a more gradual effect. The change to the COLA has little effect on members nearing retirement, but the reduction in the effective adjustment for inflation increases with the number of years a member is from retirement. The reform package spares retirees and older workers, which was not the case with the Adams PERS.

Had these sample reports been prepared by plan management, they could have been part of the control cycle and might also have included projections of future performance and more analysis of the reasons for any deviation in actual unfunded liabilities from their actuarial projections. Particularly useful would be a quantitative analysis of the impact of changes to the plan that both states have recently implemented.

**THE DASHBOARDS**

In contrast with the narrative reports, the dashboard asks for exactly the same information from each plan. Most of the requested information is purely quantitative and is requested for both very recent dates and the more distant past. The dashboard asks for

qualitative information on actuarial assumptions and methods and benefits, since a purely quantitative approach in these areas is not feasible.

The dashboards are composed of 11 panels: demographic indicators, investment policy, investment returns, funding indicators and ratios, plan maturity indicators, plan sensitivity indicators, sponsor indicators and related indicators, and two additional panels for actuarial methods and assumptions and benefits. Almost all of the information they display came from various CAFRs, mostly those for plan years 1997, 2002, 2007, and 2012, since the dashboard was designed to present information at five-year intervals.

Because this is an entirely voluntary exercise, plan management will be free not to supply any information it chooses not to supply, but will also be invited to supply additional information if it wishes. The dashboard's usefulness will not stand or fall on the absence of a few series. The indicators in each section have been chosen to provide a comprehensive picture of the plan's basic demographic and financial structure and financial position. Some of them are more important than others, and a plan's management might wish to provide alternative indicators. The hope is that a detailed request for data like this one will achieve a basic uniformity in the information that different plans will supply. The current version of the dashboard makes a very ambitious data request, and it may well be that experience with it will result in a reduction in the amount of data requested, and perhaps some change in the relative importance of the different panels.

**THE TWO DASHBOARDS COMPARED AND CONTRASTED**

By comparing the two sets of panels, it is clear that it was easier to find information for some panels than for others. Information on demographic indicators, plan maturity indicators, and the qualitative indicators was relatively easy to come by. Information on funding was less easy to find, apart from such standard indicators as Actuarial Accrued Liability (AAL) and Actuarial Valuation of Assets (AVA), and the funding ratio derived therefrom. The fact that published sources were not enough to fill in every cell in the dashboard's tables is not, of course, a sign that plan management might not be able to provide the missing information.

Each of the dashboards had gaps in data that are not shared by the other. Specifically, there being no publicly available CAFR for the Adams PERS for 1997, most of the time series data lack the observation for 1997. However, the results of a "what-if" scenario, specifically, the impact on UAAL of a 1 percent change in interest rates, was available for the Adams PERS but not for the Jackson PERS.

**CONCLUDING OBSERVATIONS**

The sample reports on the pension systems of state and local government employees of Adams and Jackson are most definitely not carved in stone. Although the basic goal is the production of a summary report, the two examples here are in a sense merely work in progress. They are intended to stimulate a dialogue that will make them more useful to both plan management and the broader community of stakeholders in public pension plans. It might be that the report and dashboards the plan managements would like to

prepare are quite different from these prototypes. In the judgment of the researcher and the project oversight group recruited to oversee this research effort, however, the project will have been worthwhile to the extent that it leads to a better and broader understanding of the finances of public pension plans.

**ACKNOWLEDGMENTS**
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- Robert Shapiro
- Andrew Peterson, SOA Staff Fellow
- Steven Siegel, SOA Research Actuary
- Barbara Scott, SOA Research Administrator

## A Guide to the Data Requested for the Proposed Dashboard

The dashboards proposed in this report ask for a substantial amount of data. Nearly all of that data is undoubtedly compiled by a plan for its own purposes. Most of the data requested should look familiar. This guide will explain those terms that may not be familiar as well as the rationale for the particular combinations of data included in this prototypical dashboard.

Eleven panels are found in the dashboard, and each (except for "Related Indicators") is discussed in what follows. To give a sense of the evolution of the indicators of pension finances, data are requested for the most recent year for which they are available, and for 5, 10, and 15 years earlier, or for 1997, 2002, 2007, and 2012, which the dashboards use as the most recent year. It is understood that compiling the data for what may seem like a distant year can be difficult, but the more complete these time series are, the more useful the indicators will be.

**DEMOGRAPHIC INDICATORS**
The demographic indicators include the basic drivers of pension expenditure: the number of members in payment status, which would be mainly the retired, and the average pension. Also included are the average age and monthly benefit of currently retiring members, because any trend in benefits will eventually be reflected in total pension expenditures. In addition to data on pensions and pensioners, the dashboard asks for the number, average salary, age, and average years of service of active members, because the evolution of these indicators sheds light on the future behavior of pension expenditure.

**ASSET ALLOCATION**
The breakdown of plan assets is a standard breakdown, but it should be noted that "Global Equities" includes both U.S. as well as non-U.S. equities. The category "Other" is meant to be a catchall, or residual category. It would include cash and any assets that should not be classified as global equities (i.e., U.S. and foreign) fixed interest assets, real estate, and alternative investments.

Frequency of investment policy review: If policy reviews are not regular—for example, every three years—then their frequency should be described as occasional.

**INVESTMENT RETURNS**
The data on benchmark returns are relevant for plans that gauge their investment performance with reference to a benchmark (such as a weighted average of returns on various asset class indexes).

The 10-year average annual return is calculated by taking the geometric average of the annual returns for the last 10 years.

**FUNDING INDICATORS AND RATIOS**
In addition to such standard indicators as the actuarial values of assets and liabilities, the dashboard asks for the market value of assets, entry age actuarial accrued liability (EAAL), GASB67 actuarial accrued liability (i.e., the total pension liability as computed under GASB67 based on a blended discount rate), and the market value of accrued benefit obligations (MVABO) or some market-consistent measure of the value of benefits earned to date, discounted using a U.S. Treasury yield curve. The hope is that these additional indicators will provide a more rounded picture of a plan's funded status. They are used to calculate additional funding ratios, which are reported in the funding ratios panel. All of the ratios are derived from data from the funding indicators panel, except for AVA/Benefits paid.

**PLAN MATURITY INDICATORS**
As a plan matures, it would normally be the case that the ratio of both liabilities and assets to payroll would increase. The more mature a plan is, the less the financing role played by member contributions and the greater the role played by returns to earnings on assets. The indicators are a gauge of the extent to which a plan is dependent on investment returns to finance its obligations.

**PLAN SENSITIVITY INDICATORS**
This panel asks for a series of indicators that have a bearing on or indicate how sensitive a plan's financial position would be to changes in key variables. In particular, the two indicators of the impact of a change in the discount rate are relevant if the discount rates of public sector plans come to be related to the rate at which the plan sponsor can borrow. The recent GASB statements require that those liabilities that are not expected to be fully funded by plan assets and future contributions must be discounted using

yields consistent with those of an index of AA-rated or, preferably, an index of tax-exempt general obligation municipal bonds.

**SPONSOR INDICATORS**
These indicators are to be used to gauge the burden that plan sponsorship poses for the sponsoring state or municipality's finances. The calculation of the third indicator requires data on the budgetary expenditure of the state or municipality sponsoring the plan. One possible data source is the National Association of State Budget Officers' (NASBO) State Expenditure Report, which was used to fill in the prototypical dashboard. Of course, the state treasury could also supply a figure.

**ACTUARIAL METHODS AND ASSUMPTIONS**
The requested indicators are those that would typically be included in the actuary's annual report. They are not a complete set.

**BENEFITS**
It may be difficult to describe both eligibility conditions and the determination of benefits in a compact space. For example, if a plan has a large number of membership "tiers," where membership in a tier depends on the year in which a member's service began, and where age and service requirements become more onerous or accrual rates become progressively less generous as the year of membership increases, a complete tier-by-tier summary will probably not be feasible. What might be done instead is to contrast the way benefits are determined for the most recent and the oldest plan members. A description of the COLA, if any, can pose similar difficulties and might be handled in the same way

## A Prototypical Report on Public Employee Retiree System of Adams[1]

**OVERVIEW**
The Public Employees' Retiree System (PERS), which provides pensions and other benefits to state and local government employees of Adams, dates from 1931 and predates Social Security by four years. The historical priority of PERS explains why even today 71 percent of state and local employees are not covered by Social Security.[2] Depending on their personal circumstances, those plan members who are covered by Social Security may have their Social Security benefit reduced, as explained below.

PERS is divided into five divisions, excluding two health funds, with the state employees division and the schools division accounting for most members (see Table 1).

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[1] The main sources for this report are recent Comprehensive Annual Financial Reports (CAFRs) and notably the CAFR for 2012. Other sources are cited in the text or in footnotes.

[2] Adams is one of eight states with less than 50 percent coverage by Social Security of its state and local government employees (Congressional Research Service [2011], "Mandatory Coverage of New State and Local Government Employees" [July 25]).

Technically PERS is a cost-sharing multiemployer plan. The system's investments are managed collectively. Although there is some small variation in the way that benefits are determined across divisions, the plans are administered as a unit. Active members numbered close to 200,000 at end-2012.

**TABLE 1**

***Adams PERS: Active Members as of December 31, 2012, by Division***

| | STATE | SCHOOL | LOCAL GOVERNMENT | JUDICIAL | CAPITAL SCHOOLS | TOTAL |
|---|---|---|---|---|---|---|
| Numbers | 54,804 | 115,294 | 12,097 | 329 | 13,911 | 196,435 |
| In percent of total | 27.9 | 58.7 | 6.2 | 0.2 | 7.1 | |

Source: CAFR 2012

In recent years, substantial changes have been made to plan benefits and the rules that determine cost of living increases, particularly for younger plan members or members without many years of service. Changes to PERS's financing sources have also been made, affecting both plan members and employers. As explained below, these changes were prompted by the large funding shortfall that emerged over the past decade. In 2012 the funding ratio was 63 percent.

PERS members are automatically enrolled in a defined benefit plan, with benefits that are described below. When they retire, rather than take a pension based on their accrued benefit, they can elect to withdraw the sum of their contributions plus a match of 100 percent. A lesser match applies when a member withdraws before reaching retirement eligibility. Since January 1, 2006, new members can elect to join a defined contribution (DC) plan rather than the traditional plan, and all members have had the option of contributing to a complementary 401(k) plan since 1985, or a 457 plan since July 1, 2007. The DC plan had 4,362 accounts as of end-2012.

**BENEFIT DETERMINATION**

PERS's plan's benefits are determined in the following way. For all plan members, an accrual rate of 2.5 percent of each year of service is applied to a measure of the member's highest average salary as described in Box 1. The cap on increases from one 12-month period to the next imposed to mitigate the problem of spiking at career's end was lowered from 15 percent to 8 percent as of January 1, 2011, for members who were hired on or after January 1, 2007, or were not eligible to retire as of January 1, 2011 (see Box 1 for further explanation).

**BOX 1**

***Adams PERS: Retirement Eligibility Rules and Benefit Determination***

The highest average salary (HAS) is determined as follows. Of a retiring member's four highest 12-month salaries ("years"), the period with the *lowest* salary is designated as the *base*. The remaining three years are then arranged in chronological order. A cap on salary increases applies on increases from the base year to the earliest of the remaining three years, and from that year to the next, and so on. Provided increases in each year are less than the cap, the HAS is simply equal to the average of a member's best three years. However, if one or more of the increases exceeds the cap, the cap is applied. As an example, with the current cap of 8 percent, and assuming that increases were actually 10 percent from one year to the next, year 1 salary would be set equal to the base year increased by 8 percent; year 2 salary would be the adjusted year 1 salary raised by 8 percent; and year 3 salary would be the adjusted year 2 salary raised by 8 percent. If the increases in year 1 and year 2 salary were less than 8 percent, and the increase in year 3 was 12 percent, year 3 salary would be reduced to 108 percent of year 2 for the purposes of the calculation. Year 1 and year 2 salaries would not need to be adjusted. Once the salaries for the three 12-month periods have been calculated, a simple average is taken.

Accrual factor: a uniform 2.5 percent on each year of service.
Vesting requirement: 5 years.
Service requirement eligibility: Combinations of age and service as shown.

***Members hired before July 1, 2005****

| AGE | SERVICE |
|---|---|
| 50 | 30 |
| 55 | Rule of 80 |
| 60 | Rule of 80 |
| 65 | 5 |

***Members hired on or after Jan. 1, 2011***

| AGE | SERVICE |
|---|---|
| 50 | 35 |
| 58 | Rule of 88 |
| 60 | Rule of 88 |
| 65 | 5 |

*With five years of service as of Jan. 1, 2011.

The recent reforms also stiffened the requirements for full and early retirement (see Box 1). For example, a member hired before July 1, 2005, could retire at age 50 with 30 years of service, but a member hired on or after January 1, 2011, requires 35 years of service to retire at that age. Similar changes were made to other combinations of service and age.

The reforms to age and service requirements would reduce PERS's outlays in three ways: employees who wished to take early retirement would have their pensions reduced by more than previously; employees who increased their service to satisfy the new requirements for retirement would draw a pension for fewer years, because of their later start date; and the limits on 12-month salaries used to calculate the highest average salary (HAS) would reduce the pensionable base. (The precise impact of the reforms on PERS's finances is difficult to determine, depending as it does on the reactions of plan members to the new rules, which would not be easy to predict.)

Even with these changes to the plan's terms, PERS's replacement rate is moderately high as the replacement rates of state pensions go. A state employee with 30 years of service can retire with a pension that is 75 percent (2.5 percent annual accrual × 30) of his or her final average salary. Depending on the number of years of participation in Social Security, those members it covers are subject to an offset that reduces their benefit; their PERS benefit is not affected, which means that the combined benefit of members can never be less than the benefit PERS pays.[3]

**COST-OF-LIVING ADJUSTMENTS (COLAS)**

The recent reforms have also reduced the degree to which pensions are indexed. Up to 2010, pensioners, if they were hired on or before January 1, 2007, could receive a fixed increase of 3.5 percent per annum, an increase that exceeded the average annual increase in the Consumer Price Index (CPI) over the previous decade of 2.4 percent. (Those hired after January 1, 2007, received a COLA equal to the lesser of 3 percent and the increase in the consumer price index for urban workers [CPI-W].)

The reforms introduced by Senate Bill 10-001 reduced the cap on the adjustment to 2.0 percent, but its provisions differentiate according to the date of membership and the date of retirement of members. For members as of January 1, 2007, who retired before January 1, 2011, the COLA is fixed at 2 percent, unless PERS experiences a negative return on its investments, in which case the COLA is the lesser of the increase in the CPI-W and 2 percent for the following three years. Somewhat less generous provisions apply to members retiring on or after January 1, 2011, or joining after January 1, 2007. In the latter case, the member must have been receiving benefits for at least 12 months before becoming entitled to a COLA. In addition, the sum of the annual increases paid to a particular division (state, school, etc.) cannot exceed 10 percent of the division's reserve set aside to pay for these cost of living increases. The cap is also adjusted for changes in the funding ratio.[4]

**CONTRIBUTIONS**

Plan members currently contribute 8 percent of their pensionable salary, apart from state troopers, who contribute 10 percent. The general rate was raised temporarily to 10.5 percent in 2010. Employers' contributions, beginning in 2004, have been subject to two series of annual increases. One of these, the Amortization Equalization Disbursement (AED), comes to an end in 2017 (2016 for the School and DPS divisions) when the cumulative increase will be 5 percentage points (4.5 percentage points for the School and DPS divisions, and 2.2 percentage points for local government and judiciary). The other, the Supplementary Amortization Equalization Disbursement (SAED), is being raised by up to 5.5 percentage points, with increases ending in 2017–2018. The SEAD is

[3] The amount of the reduction in the Social Security benefit depends on how long the member has been contributing, and on whether or not the member is receiving a spousal or widow/widower's benefit. The longer the period of participation in Social Security, the less the reduction. Similar provisions affect retirees in other states.

[4] When the funding ratio exceeds 103 percent, the cap may be increased by 0.25 percentage points. When the funding ratio falls below 90 percent, the cap may be decreased by the same amount, but may never fall below 2.0 percent.

to be financed by funds reallocated from budgeted salary increases for plan members to the extent permitted by law. Within fairly narrow limits, as is the case with the COLA, these increases will depend on the funding status of the various divisional plans. Notwithstanding these increases, actual employer contributions have recently fallen short of the annual required contribution. In 2012 the state division's contribution amounted to 14.63 percent of payroll, compared to an Actuarially Required Contribution (ARC) of 16.52 percent.

## INVESTMENT ISSUES

The allocation of PERS's DB plan assets is in line with the conventional pattern, with the share of stocks over 50 percent, and fixed income securities about 25 percent. Actual asset allocations are expected to conform to a target allocation, or more precisely to fall within a targeted range (see Table 2), and plan-determined limits apply to the shares in total assets of the major classes. The performance of each major asset class is benchmarked against a standard index or composite of indexes.

**TABLE 2**

***Adams PERS: Asset Allocation as of Dec. 31, 2012***

| ASSET CLASS | TARGET ALLOCATION | ACTUAL ALLOCATION | PERMISSIBLE RANGE |
|---|---|---|---|
| Global equity[1] | 56 | 57 | 50–62 |
| Fixed income | 25 | 23 | 22–28 |
| Real estate | 7 | 8 | 4–10 |
| Alternative investments | 7 | 9 | 4–10 |
| Opportunity Fund[2] | 5 | 3 | 0–8 |
| Cash | 0 | 1 | . . . |

[1] Includes U.S. equity.
[2] Commodities and timber.
Source: CAFR 2012

The 2012 CAFR, in its summary of the plan's investment policy, stresses that strategic asset allocation has more bearing than any other factor in long-term investment performance and asset volatility; that investment strategy must be long-term, given the long-term nature of plan assets; that asset allocation strategy should be reviewed periodically; that investments must be prudently diversified; and that active management can be expected to increase net returns. The plan employs about 50 investment brokers and advisers. Total commissions amounted to less than 0.1 percent of assets, although this figure does not include fees paid to advisors. Total investment expenses paid to external managers amounted to 0.3 percent of assets at market value in 2012.

The investment performance of PERS plan assets has been more or less in line with its benchmarks in recent years (see Table 3). Its performance has exceeded that of the median public sector plan. Like other public sector plans, PERS suffered large losses in the Great Recession.

**TABLE 3**

***Adams PERS: Investment Results (Average annual rates of return)***

| | 2012 | 3-YEAR | 5-YEAR | 10-YEAR |
|---|---|---|---|---|
| Total PERS portfolio | 12.9 | 9.4 | 2.6 | 8.4 |
| Total policy benchmark | 13.4 | 9.5 | 2.8 | . . . |
| Median Public Fund Universe | 13.0 | 8.7 | 2.6 | 7.2 |

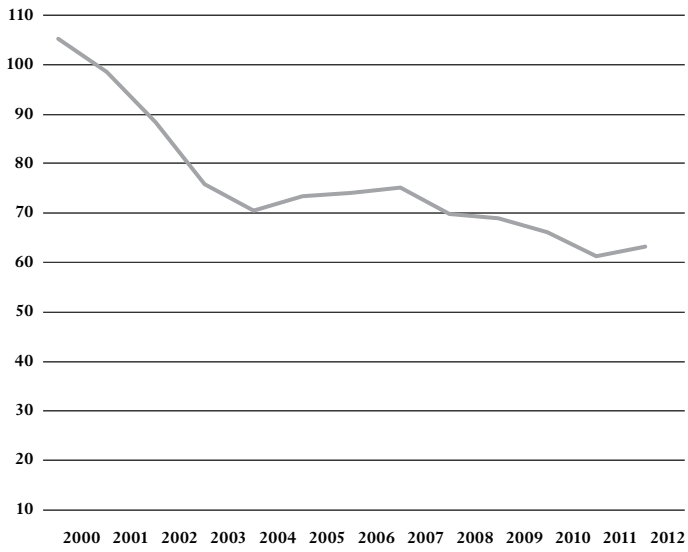
Source: CAFR 2012.

## FUNDING

The current low funding ratio, which emerged in the course of the previous decade, is the result of a combination of influences. In 2000 PERS was marginally overfunded. The funding ratio declined quite markedly in the next few years, reaching 70.6 percent in 2004, in large part because of the bursting of the high-tech bubble, which helped cause a substantial investment loss. A disappointing investment performance was not the only influence at work (see Figure 1). Experience losses with early retirements and a reduction in the rate of discount from 8.75 to 8.50 percent also contributed.

**FIGURE 1**

***Adams PERS: Funding Ratio (percent)***




In the middle years of the decade, further declines were forestalled by the strong recovery of financial markets. However, investment income in the closing years of the decade was below what was assumed, and in addition a second reduction in the discount rate caused a substantial increase in plan liabilities. Shortfalls in employer contributions

from the actuarially required contribution and the growth in the UAAL projected to occur even if there had been no shortfall also weighed in. Consequently, the UAAL increased substantially despite the positive impact on plan liabilities caused by the changes to the COLA and to the age and service provisions described above (see Table 4). Higher than projected investment earnings helped the funding ratio achieve a marginal gain in 2012. However, the average annual rate of return for the period highlighted by Table 4 was 5.2 percent, below the assumed rate of return.

**TABLE 4**

***Adams PERS: Analysis of Changes in UAAL, 2000–2012***

| | 2000–2004 | 2005–2007 | 2008–2012 | 2000–2012 |
|---|---|---|---|---|
| Changes in UAAL age and service | (13,612) | (229) | (9,668) | (23,509) |
| Retirements | (1,931) | (150) | (117) | (2,198) |
| Investment income | (6,812) | 1,605 | (10,474) | (15,681) |
| Purchase of noncovered service | (1,457) | (73) | – | (1,530) |
| Actuarial assumption changes | (1,554) | 1534 | (4,164) | (4,183) |
| Contribution deficiency | (720) | (1,419) | (1,442) | (3,580) |
| Expected change in UAAL | 114 | (1,221) | (2,862) | (3,970) |
| Effect of changes in plan provisions | – | – | 9,005 | 9,005 |
| Other influences | (1,252) | (506) | 388 | (1,370) |

Source: CAFRs for 2004, 2007, and 2012.

In addition to analyzing the reasons for the discrepancy between the actuarial projections of the UAAL and the outturn, it can be useful to look directly at the behavior of plan assets and liabilities. In a purely statistical sense, the decline in PERS's funding ratio can be attributed to the weak growth of assets and a rapid increase in liabilities. Between 2002 and 2012, plan assets increased from $30.6 billion to $39.1 billion, or by 2.5 percent per annum. Plan liabilities, however, increased from $34.6 billion to $61.8 billion, or by 6.0 percent per annum.

It is useful to divide a plan's liabilities into two parts: the liabilities associated with accrued benefits of the current workforce, and the liabilities entailed by the obligation to pay pensions to retirees. For a given rate of return, the basic influences on the first type of liability would be active member numbers and average salaries. The main influences on the latter type would be the number of retirees, the average pension they received, and (over a long period of time) their longevity. In Adams's case, all of these influences have been at play. The number of retirees rose from 60,548 at end-2002 to 98,139 at end-2012, or by 4.9 percent per annum, and the ratio of retirees to active members increased from 35 to 50 percent (see Table 5). The average monthly pension increased from $1,997 to $3,020, or by 4.2 percent per annum.

**TABLE 5**

***Adams PERS: Active and Retired Members, 2002 and 2005–2012***

| | ACTIVE MEMBERS | RETIRED MEMBERS | RATIO OF RETIRED TO ACTIVE (PERCENT) |
|---|---|---|---|
| 2002 | 172,761 | 60,548 | 35.0 |
| 2005 | 180,630 | 69,416 | 38.4 |
| 2006 | 182,404 | 72,737 | 39.9 |
| 2007 | 186,842 | 75,915 | 40.6 |
| 2008 | 190,684 | 78,955 | 41.4 |
| 2009 | 190,206 | 81,717 | 43.0 |
| 2010 | 201,095 | 91,412 | 45.5 |
| 2011 | 199,741 | 94,451 | 47.3 |
| 2012 | 196,435 | 98,139 | 50.0 |

Source: CAFR, various issues.

Because the longevity of retirees is not likely to have varied much over this 10-year period, and the average age of new retirees did not change, the evolution of benefits paid (average pension × number of retirees) would give a good idea of how plan liabilities related to retirees were behaving.

The rapid growth in average pensions also reflects in part the generous post-retirement COLA that was in place through 2005. The increase over time in the average salaries of government workers would also have boosted pensions by increasing the highest average salary of each successive cohort of retirees. Over the past decade, the growth in the workforce and in average salaries has been moderate.

**IMPLICATIONS OF A CHANGE IN THE DISCOUNT RATE**

The question of the appropriate discount rate for public sector plans has been much debated. [PERS is of the view that the current discount rate of 8 percent is and remains appropriate for a public plan.] Nonetheless, the possibility that discount rates might become more market-related cannot be dismissed. The recent changes to the calculation of liabilities recommended by GASB would require that those liabilities of a public plan that are not covered by its assets be discounted at the rate at which the state or local government sponsoring the plan can borrow funds. Liabilities matched by assets would continue to be discounted by a rate derived from the expected return on assets.

PERS's actuaries undertook an exercise to determine the impact of lower discount rates on liabilities and the funding ratio (see Table 6). A lower discount rate could increase plan liabilities substantially, requiring in turn a burdensome increase in the ARC. [The actuaries have also calculated the funding ratio using the new procedure proposed by GASB. It lowers the funding ratio by about the same amount as a reduction in a uniform discount rate to 6.5 percent.]

**TABLE 6**

***Adams PERS: Estimated Funding Ratios at Various Discount Rates***

| Discount rate | 6.5 | 7.5 | 8.0 | 8.5 |
|---|---|---|---|---|
| Funding ratio (percent) | 53.3 | 59.8 | 63.2 | 66.7 |

Source: CAFR 2012.

**CONCLUDING OBSERVATIONS**

In the past few years, PERS has taken substantial steps to put its finances on a sounder footing. Provided that the economic and financial environment unfolds more or less as PERS's actuaries have projected, the plan's funding ratio should improve steadily, if gradually. Nonetheless, in light of the inevitable uncertainty of the economic and financial environment, it may be necessary to take additional measures, especially given the long period needed to achieve full funding under current contribution schedules.

## Adams

***Demographic Indicators***

| | 1997 | 2002 | 2007 | 2012 |
|---|---|---|---|---|
| Number of active members | 152,457 | 172,761 | 186,842 | 196,435 |
| Number of former employees vested but not retired | NA | 10,921 | 14,779 | 20,698 |
| Number of inactive members not vested | NA | 89,002 | 133,425 | 178,913 |
| Number of members in payment status | NA | 60,548 | 75,915 | 98,139 |
| Average monthly salary of active members | $2,302 | $2,788 | $2,928 | $3,087 |
| Average age of active members | NA | NA | NA | NA |
| Average years of service of active members | NA | NA | NA | NA |
| Average monthly benefit of inactive members in payment status | $1,533 | $1,997 | $2,658 | $3,020 |
| Average age of current retiring members in year of retirement | N/A | N/A | N/A | 60 |
| Average monthly benefit of current retiring members | $1,510 | $2,646 | $2,845 | $2,633 |
| Average age of all inactive members in payment status | 69.5 | 68.0 | 68.9 | 70.0 |
| Plan year starting month | January | | | |

*Investment Policy: Asset Allocation (as of Dec. 31, 2012)*

| | ACTUAL | TARGET | DIFFERENCE |
|---|---|---|---|
| Global equities | 56.5 | 56.0 | 0.5 |
| Fixed interest | 23.3 | 25.0 | –1.7 |
| Real estate | 8.1 | 7.0 | 1.1 |
| Alternative investments | 8.7 | 7.0 | 1.7 |
| Other | 3.4 | 5.0 | –1.6 |

| | |
|---|---|
| Frequency of investment policy review | NA |

*Investment Returns (percent)*

| | 1997 | 2002 | 2012 |
|---|---|---|---|
| Annual rate of return (percent) | NA | –11.8 | 12.9 |
| Benchmark rate of return (percent) | NA | NA | 13.4 |
| Ten-year annualized return | NA | 8.3 | 8.4 |

*Funding Indicators (in millions except where otherwise noted)*

| | 1997 | 2002 | 2007 | 2012 |
|---|---|---|---|---|
| Actuarial valuation of assets (AVA) | $19,776 | $30,554 | $39,415 | $39,079 |
| Assets at market valuation (MVA) | NA | $23,604 | $41,373 | $39,794 |
| Actuarial accrued liabilities (AAL) | $21,494 | $34,595 | $52,459 | $61,791 |
| Unfunded AAL (UAAL) | $1,718 | $4,041 | $13,044 | $22,712 |
| Entry age actuarial accrued liability (EAAL) | NA | NA | NA | NA |
| GASB67 actuarial accrued liability | NA | NA | NA | NA |
| Market value ABO (MVABO) | NA | NA | NA | NA |
| Employee contributions paid during the year | $317 | $433 | $699 | $640 |
| Employer contributions paid during the year | $421 | $336 | $754 | $1,015 |
| Actuarially required contributions (ARC) for the year | $423 | $338 | $1,048 | $1,174 |
| ARC deficiency (if actual employer contribution exceeds ARC) | $2 | $2 | $294 | $159 |
| Market value of benefits earned during the year (Change in MVABO) | N/A | N/A | N/A | N/A |

***Funding Ratios***

| | 1997 | 2002 | 2007 | 2012 |
|---|---|---|---|---|
| AVA/AAL | 0.92 | 0.88 | 0.75 | 0.63 |
| MVA/AAL | NA | 0.68 | 0.79 | 0.64 |
| MVA/EAAL | NA | NA | NA | NA |
| MVA/MVABO | NA | NA | NA | NA |
| AVA/Benefits paid | 4.7 | 5.3 | 6.0 | 5.4 |

***Plan Maturity Indicators***

| | 1997 | 2002 | 2007 | 2012 |
|---|---|---|---|---|
| Ratio of plan assets to payroll of active members | 4.7 | 5.3 | 6.0 | 5.4 |
| Ratio of plan liabilities to payroll of active members | 5.1 | 6.0 | 8.0 | 8.5 |
| Ratio of contributions minus benefits paid to assets (percent) | –0.25 | –1.97 | –2.36 | –4.74 |

***Plan Sensitivity Indicators***

| | EOY 2012 |
|---|---|
| Duration of total liabilities at funding assumptions | NA |
| Duration of MVABO liabilities at market assumptions | NA |
| Percentage increase in AAL from 1½ pc pt decline in funding discount rate | 18.7 |
| Increase in UAAL from 1 pc pt decline in funding discount rate (millions) | $11,554 |

***Sponsor Indicators***

| | 1997 | 2002 | 2007 | 2012 |
|---|---|---|---|---|
| Ratio of employer contributions to the plan to total annual budget expenditures | 0.05 | 0.03 | 0.03 | 0.04 |
| Ratio of UAAL to payroll of active members | 0.41 | 0.70 | 1.99 | 3.12 |
| Ratio of ARC to total annual budget expenditures | 0.05 | 0.03 | 0.04 | 0.04 |
| Ratio of ARC to payroll of active members | 0.10 | 0.06 | 0.16 | 0.16 |

***Related Indicators***

| | |
|---|---|
| Coverage of Social Security (percent) | 29 percent |

***Actuarial Methods and Assumptions***

| | |
|---|---|
| Actuarial cost method | Entry age normal cost |
| Amortization method | Level percentage; 30-year open |
| Actuarial asset valuation method | Four-year smoothed, market |

| | |
|---|---|
| Discount rate | 8.0 percent |

| | |
|---|---|
| Mortality assumptions | RP 2000 Combined Mortality Table set back one year for males and two years for females |

| | |
|---|---|
| Annual rate of growth of salaries before merit or productivity (also known as general wage increase [GWI], percent) | 4.25 percent |
| Annual rate of growth of salaries, all inclusive (percent) | 4.25 percent to 9.92–11.2 percent, depending on division (Judicial division 4.75–5.75 percent) |
| Annual rate of growth of consumer prices (percent) | 3.5 percent |

***Benefits***

| | |
|---|---|
| Conditions for normal retirement and Conditions for early retirement | For members hired before July 1, 2005, normal retirement may be taken at age 50 with 30 years of service; a rule of 80 applies at age 55 and 60, and a service requirement of 5 years at age 65. Subsequent hires are subject to more stringent rules; after July 1, 2011, hires must work 35 years at age 50, and are subject to a rule of 88 at higher ages. Early retirement requires a minimum age of 60 with 15 years of service. |

| | |
|---|---|
| Calculation of average final salary | A simple average of the three highest paying years, but with a cap of 8 percent on increases from one year to the next. |

| | |
|---|---|
| Replacement rate with 30 years of service: | |
| At normal retirement age | A uniform accrual rate of 2.5 percent applies; so the replacement rate with 30 years service is 75 percent. |
| At early retirement age | A 60-year-old with 15 years of service would have a replacement rate of 33.8 percent, instead of 50 percent with 20 years. |
| Cost-of-living adjustment | A cap of 2 percent applies to all members, which is subject to changes in the funding ratio. For members hired before Jan. 1, 2007, who retired before Jan. 1, 2011, the COLA is 2 percent unless PERS suffers a loss on its investments, in which case the COLA is the lesser of 2 percent and CPI-W for the three following years. Somewhat less generous conditions apply to more recent hires. |

| | |
|---|---|
| Vesting requirement | Five years |

## A Prototypical Report on the Jackson Public Employees Retirement System[5]

### OVERVIEW

The Jackson Public Employees Retirement System (Jackson PERS) is a multiemployer cost-sharing retirement system. It covers virtually all state and local government employees, both full-time and part-time, as well as the staff of universities and community colleges. As a unified system, it dates from 1970. Most of its members are at the nonstate level, where teachers make up a large share of the membership. All Jackson PERS members are required to have coverage under Social Security. The system has nine classes of membership, but only two, the regular class, which covers most state and local employees and the special risk class (mainly police and fire personnel), are significant numerically (see Table 1), and the discussion that follows focuses on them.

**TABLE 1**

***Jackson PERS: Active Members by Class as of June 30, 2012 (Percentage of total in parentheses)***

| TOTAL | REGULAR | SPECIAL RISK | OTHER |
|---|---|---|---|
| 623,011 | 535,467 | 70,005 | 17,539 |
| (100.0) | (85.9) | (11.2) | (2.8) |

Source: Jackson PERS Annual Report 2011–2012.

The Jackson PERS consists of a traditional defined benefit pension, known as the Jackson Retirement System Pension Plan (which is hereafter referred to as the "DB plan"), and a defined contribution plan, known as the Jackson Retirement System Investment Plan (hereafter the "DC plan"). The DB plan, which provides pensions for regular retirement, disability, and survivorship long predates the DC plan, which was established in 2000 and implemented in 2002. The DC is open to most members of the Jackson PERS, who may elect to join it rather than the DB plan. In this respect, the DC plan differs from the DC plans that most state plans have established, which are usually complementary to the DB plan or open only to new members. The traditional plan remains the more popular of the two, with 517,756 active members compared to 105,255 active members in the DC plan as of June 30, 2012. In its first five years of operation, membership in the DC plan rose to 81,654. Growth in the last five years has been more measured, averaging 5.2 percent per year. The growth slowdown probably reflects the abatement of the latent demand of DB plan members to belong instead to a DC plan, as well as the demoralizing effect of the financial market crash in 2008–2009. Because of its recent origin, the DC plan has very few retirees. That plan offers its members a broad choice of investments, ranging from money market/bond funds to growth stocks. [There is no default investment; new members choose the fund or funds in which their

[5] The main sources for this report are recent Comprehensive Annual Financial Reports (CAFRs) and notably the CAFR for 2012. Other sources are cited in the text or in footnotes.

contributions will be invested when they join the plan.] The DC plan also provides disability benefits. The DC plan offers better coverage of the risks of retirement and disability than do many DC plans in the private sector.

The DB plan was more than fully funded for most of the decade leading up to the stock market crash, although like other plans it suffered a large decline in asset values in 2008–2009. Its current funded ratio is 86 percent. The year 2011 saw the first substantial changes to the terms of the DB plan in some time. In the main, these changes affect new members, but current, particularly younger, members are also affected. These changes were made to address the decline in the plan's funded ratio. [Unlike many other public plans, the Jackson PERS is in a position to restore full funding without being obliged to take draconian measures.]

## Eligibility for Retirement and Benefit Determination

**THE PENSION PLAN**

DB plan members become eligible for normal retirement by attaining some combination of age and service. For regular members, normal retirement can be attained at 62 with at least 6 years of service. Six years is the minimum vesting period for members who joined before July 1, 2011, but eligibility may also be attained at higher ages once the vesting requirement is met, or with 30 years of service at any age. For the special risk class, as is common in public plans, the requirements for normal retirement may be satisfied at lower ages and shorter service periods (see Box 1). Members of all classes become eligible for early retirement once vested when they are 20 years or less from their normal retirement eligibility date. However, their pension is reduced by 5 percent for each year their retirement date falls short of their normal retirement date.

**BOX 1**

***Jackson PERS: DB Plan Retirement Eligibility Rules and Benefit Determination***

*Requirements for normal retirement (if enrolled before July 1, 2011)*
- Regular class
- Age 62 if vested (having six years of service), age 63+ if vesting requirement is met
- Any age with 30 years of service

*Special risk class*[1]
- Age 55 with six years of special risk service
- Age 56+ if vesting requirement is met
- Any age with 25 years of special risk service and 30 years of any service

*Benefit determination*
For members enrolled before July 1, 2011, AFC is calculated as the average of the five best years. The pension is calculated by multiplying the AFC by the number of years of service and the applicable value earned, which varies by class, as shown below:

| REGULAR CLASS | VALUE EARNED (PERCENTAGE) |
|---|---|
| 30 years of service at age 62 or less | 1.60 |
| 31 years of service or age 63 | 1.63 |
| 32 years of service or age 64 | 1.65 |
| 33 years of service or age 65 | 1.68 |

| SPECIAL RISK CLASS | VALUE EARNED (PERCENTAGE) |
|---|---|
| Service after October 1974 | 3.00 |

These rules imply that a member of the special risk retiring in 2013 with 25 years of service would have a replacement ratio of 75 percent (3 × 25). A member of the regular class aged 63 with 30 years of experience would have a replacement ratio of 48.9 percent (1.63 × 30).

[1] Special rules apply for members with military service.
Source: Jackson PERS Annual Report 2011–2012.

Benefits are determined by applying the percentage the plan stipulates to the number of years worked, and then multiplying that product by average final compensation (AFC), which for current members is an average of the five best years (see Box 1 for the applicable percentages and examples). Taking account of the Social Security retirement benefit, a regular class employee who has worked for 30 years with a final average salary of $50,000 could have a replacement rate of about 80 percent. Replacement rates for members of the special risk class can be even higher. The combined replacement rate of Social Security and the Jackson PERS pension declines as income increases because Social Security's replacement rate declines noticeably as income increases. The AFC, being an average of five years, is not particularly susceptible to the problem of spiking—amassing unusually high overtime hours in the last year of work to produce an artificial bulge in final compensation.

One additional option is available for plan members who, although eligible for retirement wish to continue working: the Deferred Retirement Option Program (DROP). DROP participants have the benefits that accrue to them while they continue working deposited in a trust fund, where those who joined the program before July 1, 2011, have been earning interest at the rate of 6.5 percent per year and also receiving an annual cost-of-living adjustment (COLA). The interest rate earned by DROP participants joining the program on or after July 1, 2011, was lowered to 1.3 percent, although the COLA continues to apply. Consequently, DROP participants continue to earn a return that is positive in real terms on their foregone pension benefits. As of June 30, 2012, the plan had 40,556 members, or about 80 percent of the number of active members in the DB plan aged 60 or over. The reduction in the real rate of return on foregone pension benefits may, however, make DROP less attractive to potential participants in the program.

Several important changes were made effective July 1, 2011, to the conditions for normal retirement and to the determination of average final compensation; both apply only to new members. Specifically, for members enrolled after July 1, 2011, the vesting period is increased to eight years, and AFC is calculated based on the eight highest, and not the five highest, annual salaries. Normal retirement for the special risk class will begin at age 60 or at any age with 30 years of service, and at age 65 or any age with 33 years of service for all other classes.

**THE INVESTMENT PLAN**

The DC plan provides its members with several options at the distribution stage in addition to a lump sum withdrawal. Given the nature of the plan, no benefit is guaranteed. Money may be left in the plan until the member reaches the age of 70½, after which distributions are required (because of the IRS minimum required distribution rule). The plan also offers a choice of several types of annuities, or a program of phased withdrawals. This range of options is not often found in private sector plans. In addition, the balance in the plan may be rolled over into another qualified retirement plan.

**COST-OF-LIVING ADJUSTMENTS**

Since 1987 the Jackson PERS has applied an annual COLA equal to a flat 3 percent. Because inflation has on average fallen short of 3 percent since 1987, the automatic 3 percent annual increase would have increased pensions in real terms, assuming that the CPI was an accurate measure of the increase in the cost of living of retired plan members. The COLA formula was altered significantly in 2011. Although there is no change in the applicable COLA for current retirees, the COLA for future retirees (current active members) will apply only to that part of their benefit earned before 2011 and will be eliminated for new members.

**CONTRIBUTIONS**

The Jackson PERS was for many years a noncontributory system: no contributions were required of plan members. Employer contribution rates vary substantially across plans, with the contribution rate for the special risk class being the highest at 14.1 percent (see

Table 2). The substantially higher rate is needed to finance that plan's higher accrual rates and earlier retirement ages. Starting in July 1, 2011, however, members of all classes were required to contribute 3 percent of their salary. [There are no plans to rescind this increase.]

**TABLE 2**

***Employer Contribution Rate by Class (Percentage of Salary)***

| CLASS | RATE |
|---|---|
| Regular | 4.91 |
| Special risk | 14.10 |
| Others excluding DROP | 6.04–11.69 |
| DROP | 4.42 |

Source: Jackson PERS Annual Report 2011–2012.

## INVESTMENT ISSUES

The FRA's investment strategy places great weight, as other public pension plans do, on diversification. It sets a target for the shares of the major asset classes as well as a range around which the actual values of these classes are allowed to vary. The plan's asset allocation is similar to that of other public sector plans. Equities and fixed interest investments currently make up about 85 percent of the total, and real estate, strategic investments, and cash the rest. The current asset allocation is close to its target (see Table 3). The target is changed from time to time following a review of asset allocation in light of changing market and economic conditions. The last such review was conducted in March 2012.[6] The Jackson PERS employs external managers for all asset classes. The "all-in" cost of the Jackson PERS in 2011–2012 was 0.3 percent of assets under management, or about $400 million.

**TABLE 3**

***Jackson PERS: Asset Allocation***

| ASSET CLASS | ALLOCATION | TARGET ALLOCATION | PERMISSIBLE RANGE |
|---|---|---|---|
| Global equity | 57 | 56 | 50–62 |
| Fixed income | 26 | 26 | 22–28 |
| Real estate | 8 | 7 | 4–10 |
| Private equity | 5 | 4 | 4–10 |
| Strategic investments | 4 | 6 | 0–8 |
| Cash | 1 | 1 | . . . |

Source: Jackson PERS Annual Report 2011–12, and Investment Report 2012.

[6] For this review, a major benefits consulting firm prepared an analysis of the Jackson PERS pension plan's current and projected liabilities and its asset allocation policies.

Investment performance is monitored in two ways: by comparing the performance of each asset class against a benchmark, and by comparing aggregate returns against the plan's long-term targets. On the whole, the plan's recent performance has been favorable whether gauged against the market or its own target (see Table 4). Like nearly all other private and public sector pension plans, the Jackson PERS plan suffered large losses in 2008–2009, when the value of assets at market prices declined by 22 percent.

**TABLE 4**

***Jackson PERS Investment Results Compared with Benchmark and Policy Objective (Average Annual Rates of Return)***

| | LATEST YEAR | 3-YEAR | 5- YEAR | 10- YEAR | 15- YEAR | 20-YEAR | 30-YEAR |
|---|---|---|---|---|---|---|---|
| Jackson PERS | 0.3 | 11.8 | 1.6 | 6.4 | 6.1 | 8.1 | 10.3 |
| Benchmark | –0.5 | 10.5 | 1.2 | 6.1 | 5.7 | . . . | . . . |
| Long-term objective | . . . | . . . | . . . | 7.1 | 7.0 | 7.0 | 7.4 |

Source: Jackson PERS Investment Report 2012.

## FUNDING

The Jackson PERS follows the standard actuarial practices of other state pension plans. Its current discount rate is 7.75 percent, and the cost of additional service is calculated using the entry age normal method. In valuing plan assets, however, it relies on the use of corridors: specifically, actuarially valued assets cannot be less than 80 percent of assets at market value, or more than 120 percent. Within that range, the actuarial value of assets is determined by smoothing market values over five years. As of June 2012, the actuarial value of assets was within 4 percent of their market-determined value.

The Jackson DB plan was in surplus for the 10 years ending in 2008. Nonetheless, a trend to decline was evident during that period, and in 2009 the funding ratio fell to 87.1 percent. It has declined only slightly since then (see Table 5), and it remains above the average of funding ratios of the plans that report to the Public Funding Survey.

Over 2002–2012, plan assets actuarially valued have grown at the annual rate of 2.6 percent, slightly higher than the prevailing rate of inflation, in spite of the collapse of the stock market in 2008–2009. Liabilities, however, have grown by 5.5 percent per year. A number of influences have contributed to this growth, but the main one has been the very rapid growth in the number of annuitants, offset somewhat by the sluggish growth of the active membership—largely the result of members opting out of the DB plan into the DC plan—which would tend to reduce the accrued benefits earned by the current workforce.

**TABLE 5**

***Jackson PERS: Pension Plan Assets, Liabilities and Funding, 2001–2012 (Millions of Dollars Except for Assets at Market Value, Billions)***

| YEAR | ACTUARIAL VALUE | ASSETS AAL | MARKET VALUE | UNFUNDED AAL | FUNDED RATIO (PERCENT) |
|---|---|---|---|---|---|
| 2001 | 95,517 | 98.2 | 80,993 | (14,524) | 117.9 |
| 2002 | 99,405 | 89.5 | 86,469 | (12,936) | 115.0 |
| 2003 | 101,906 | 90.4 | 89,251 | (12,655) | 114.2 |
| 2005 | 106,707 | 102.4 | 95,185 | (11,522) | 112.1 |
| 2004 | 111,539 | 109.9 | 103,925 | (7,614) | 107.3 |
| 2006 | 117,159 | 118.4 | 110,977 | (6,182) | 105.6 |
| 2007 | 125,584 | 136.3 | 118,870 | (6,714) | 105.6 |
| 2008 | 130,720 | 126.9 | 124,087 | (6,633) | 105.3 |
| 2009 | 118,764 | 99.6 | 136,375 | 17,611 | 87.1 |
| 2010 | 120,929 | 109.3 | 139,652 | 18,723 | 86.6 |
| 2011 | 126,078 | 128.5 | 145,034 | 18,956 | 86.9 |

Source: Jackson PERS Annual Report 2010–2012.

The number of annuitants grew at an average annual rate of 5.2 percent over this period, at a fairly steady pace from year to year, and is not showing any signs of letting up (see Table 6). The growth in annuitant numbers did not reflect any substantial increase in the numbers of members taking early retirement, and there was no trend in the average age at retirement, which over the past 10 years has fluctuated in the range of 59–60 years. One change in the plan terms, the reduction in the vesting requirement to six years in 2001, could have increased the number of members leaving their jobs with a claim on a future benefit. [The main influence, however, has been the bulge in the number of state and local government employees that took place in the 1970s and early 1980s, and its impact on the growth in the number of annuitants 25–30 years later. The pattern of robust growth of active members followed by a tapering off is typical of a maturing plan or a plan where the growth of active membership has slowed after growing rapidly for a time.]

**TABLE 6**

***Jackson PERS: Active Members and Annuitants, 2000–2012***

| | ACTIVE MEMBERS | ANNUITANTS | RATIO (PERCENT) |
|---|---|---|---|
| 2000 | 598,511 | 203,264 | 34.0 |
| 2001 | 612,391 | 215,265 | 35.2 |
| 2002 | 611,455 | 228,386 | 37.4 |
| 2003 | 620,164 | 237,062 | 38.2 |
| 2004 | 633,642 | 255,088 | 40.3 |
| 2005 | 648,379 | 270,022 | 41.6 |
| 2006 | 664,819 | 283,748 | 42.7 |
| 2007 | 680,302 | 296,325 | 43.6 |
| 2008 | 683,811 | 307,505 | 45.0 |
| 2009 | 668,416 | 322,523 | 48.3 |
| 2010 | 655,367 | 337,914 | 51.6 |
| 2011 | 643,746 | 364,781 | 56.7 |
| 2012 | 623,011 | 375,238 | 60.2 |

Source: Jackson PERS Annual Report; various dates.

The rapid increase in annuitants was not associated with substantial experience losses. [However, the moderate degree of underfunding that has prevailed since 2009 is partly the result of shortfalls in employer contributions to cover the UAAL, in turn the result of competing demands on government budgets entailed by slumping revenues in the wake of the Great Recession and the collapse of the local housing market.]

## CONCLUDING OBSERVATIONS

The changes to the DB plan in 2011 will not have an enormous impact on the plan's cash flow year by year. They will, however, substantially reduce the cost of funding additional service of both current and prospective plan members. The average cost of living adjustment will decline over the next 30–35 years as less and less of an active member's future pension will benefit from a cost of living increase. The more stringent rules for eligibility for retirement will also reduce future liabilities. [Barring large experience losses, the plan should be close to fully funded by the end of the current decade.]

## Jackson

*Demographic Indicators*

| | 1997 | 2002 | 2007 | 2012 |
|---|---|---|---|---|
| Number of active members | 589,791 | 611,455 | 680,302 | 623,011 |
| Number of former employees vested but not retired | 35,576 | 56,635 | 82,324 | 104,355 |
| Number of inactive members not vested | NA | NA | NA | NA |
| Number of members in payment status | 157,530 | 228,386 | 296,325 | 375,238 |
| Average monthly salary of active members | $2,321 | $2,734 | $3,293 | $3,455 |
| Average age of active members | 44.5 | 43.7 | 44.2 | 45.2 |
| Average years of service of active members | 11.0 | 10.6 | 10.5 | 11.4 |
| Average monthly benefit of inactive members in payment status | $851 | $1,067 | $1,304 | $1,552 |
| Average age of current retiring members in year of retirement | 60.6 | 59.6 | 59.5 | 60.6 |
| Average monthly benefit of current retiring members | $1,030 | $750 | $909 | $984 |
| Average age of all inactive members in payment status | NA | NA | NA | NA |
| Plan year starting month | July 1 | | | |

*Investment Policy: Asset Allocation (as of Jan. 31, 2012)*

| | ACTUAL | TARGET | DIFFERENCE |
|---|---|---|---|
| Global equities | 56.5 | 56.0 | 0.5 |
| Fixed interest | 25.5 | 26.0 | –0.5 |
| Real estate | 7.6 | 7.0 | 0.6 |
| Alternative investments | 9.6 | 10.0 | –0.4 |
| Other | 0.8 | 1.0 | –0.2 |
| Frequency of investment policy review | NA | | |

*Investment Returns (percent)*

| | 1997 | 2002 | 2007 | 2012 |
|---|---|---|---|---|
| Annual rate of return (percent) | 21.1 | –8.1 | 18.1 | 0.3 |
| Benchmark rate of return (percent) | NA | NA | NA | –0.5 |
| Ten-year annualized return | NA | 9.8 | 8.5 | 6.4 |

***Funding Indicators (in millions except where otherwise noted)***

| | 1997 | 2002 | 2007 | 2012 |
|---|---|---|---|---|
| Actuarial valuation of assets (AVA) | $56,220 | $99,405 | $125,584 | $127,891 |
| Assets at market valuation (MVA) | $67,082 | $89,529 | $136,280 | $122,700 |
| Actuarial accrued liabilities (AAL) | $61,610 | $86,469 | $118,870 | $148,049 |
| Unfunded AAL (UAAL) | $5,390 | –$12,936 | –$6,714 | $20,158 |
| Entry age actuarial accrued liability (EAAL) | NA | NA | NA | NA |
| GASB67 actuarial accrued liability | NA | NA | NA | NA |
| Market value ABO (MVABO) | NA | NA | NA | NA |
| Employee contributions paid during the year | $25 | $36 | $27 | $806 |
| Employer contributions paid during the year | $3,036 | $1,776 | $3,036 | $1,502 |
| Actuarially required contributions (ARC) for the year | $3,037 | $1,825 | $2,455 | $1,963 |
| ARC deficiency (if actual employer contribution exceeds ARC) | $1 | $49 | –$581 | $461 |
| Market value of benefits earned during the year (Change in MVABO) | NA | NA | NA | NA |

***Funding Ratios***

| | 1997 | 2002 | 2007 | 2012 |
|---|---|---|---|---|
| AVA/AAL | 0.91 | 1.15 | 1.06 | 0.86 |
| MVA/AAL | 1.09 | 1.04 | 1.15 | 0.83 |
| MVA/EAAL | NA | NA | NA | NA |
| MVA/MVABO | NA | NA | NA | NA |
| AVA/Benefits paid | NA | NA | NA | NA |

***Plan Maturity Indicators***

| | 1997 | 2002 | 2007 | 2012 |
|---|---|---|---|---|
| Ratio of plan assets to payroll of active members | 3.4 | 4.5 | 4.8 | 5.2 |
| Ratio of plan liabilities to payroll of active members | 3.8 | 3.9 | 4.5 | 6.0 |
| Ratio of contributions minus benefits paid to assets (percent) | 2.6 | –0.8 | –0.9 | –3.1 |

***Plan Sensitivity Indicators***

| | EOY 2012 |
|---|---|
| Duration of total liabilities at funding assumptions | NA |
| Duration of MVABO liabilities at market assumptions | NA |
| Percentage increase in AAL from 1 pc pt decline in funding discount rate | NA |
| Increase in UAAL from 1 pc pt decline in funding discount rate (millions) | NA |

***Sponsor Indicators***

| | 1997 | 2002 | 2007 | 2012 |
|---|---|---|---|---|
| Ratio of employer contributions to the plan to total annual budget expenditures | 0.08 | 0.04 | 0.05 | 0.02 |
| Ratio of UAAL to payroll of active members | 0.33 | –0.58 | –0.25 | 0.82 |
| Ratio of ARC to total annual budget expenditures | 0.08 | 0.04 | 0.04 | 0.03 |
| Ratio of ARC to payroll of active members | 0.18 | 0.08 | 0.09 | 0.08 |

***Related Indicators***

| | |
|---|---|
| Coverage of Social Security (percent) | Most employees of state and local government are covered |

***Actuarial Methods and Assumptions***

| | |
|---|---|
| Actuarial cost method | Entry age normal |
| Amortization method | Level percentage of pay, open over 30 years |
| Actuarial asset valuation method | Five-year smoothed method |
| Discount rate | 7.75 percent |
| Mortality assumptions | N/A |
| Annual rate of growth of salaries before merit or productivity (also known as general wage increase [GWI], percent) | NA |
| Annual rate of growth of salaries, all inclusive (percent) | 5.85 percent |
| Annual rate of growth of consumer prices (percent) | 3.0 percent |

***Benefits***

| | |
|---|---|
| Conditions for normal retirement | For regular class members: age 62 if vested (six years of service); any age with 30 years of service. For special risk class: age 55 with six years of service; any age with 25 years of special risk service. |
| Conditions for early retirement | A member must be vested and be within 20 years of his or her normal retirement age. |
| Calculation of average final salary | Simple average of five highest years if hired before July 1, 2011, and eight years if hired after that. |

| | |
|---|---|
| Replacement rate with 30 years of service: | |
| At normal retirement age | 48 percent at age 62 |
| At early retirement age | A reduction of 5 percent for each year below the normal retirement age applies. |
| Cost-of-living adjustment | For current retirees, a flat 3 percent. For active members, only that part of the pension earned before July 1, 2011, will enjoy an adjustment, and new members will not have an adjustment. |

| | |
|---|---|
| Vesting requirement | Five years if hired before July 1, 2011; eight years if hired after that. |

*George A. (Sandy) Mackenzie is a Washington-based economist and editor*, Journal of Retirement.

**Comments on**

# "Report on Communicating the Financial Health of Public Pension Plans"

By Daniel Moore

George (Sandy) Mackenzie's paper takes on the important topic of how to best communicate the financial health of public pension plans. The paper presents actual data from two public pension plans, with the names changed to Adams and Jackson, for anonymity. For each plan, the paper presents:

- Information in a dashboard format—a four-page set of standardized charts that facilitates comparison between plans
- Seven pages of written commentary describing basic facts about the plan's structure and history, plus investments, contributions and funded position. Although this section covers topics common to many pension plans, it is not in a standardized layout.

The challenges of communicating the financial health of public pension plans are several:

- The information is technical, and there are two sources of disclosures available—namely, the funding disclosures found in the plan's actuarial valuation report and new accounting disclosures under Governmental Accounting Standards Board Statements No. 67 and 68 (GASB 67 and 68) (covering the plan audit report and the sponsor audit report, respectively).
- Effective communication to a broad audience of stakeholders must strike a balance of providing meaningful information without overwhelming the readers.
- Ideally, the proposed report format could be used either to gather relevant information about a single pension plan or to assess where a pension plan ranks in comparison with other plans.

Possible ways to achieve a somewhat standardized approach to communicating the health of public pension plans include:

- The promulgation of a voluntary standard or exemplar format as a best practice, with the hope that the format, or an evolution of it, will become universally accepted
- Essentially mandatory compliance, as with GASB 67. Even then, there may be variations in how the information is disclosed.
- An independent party taking on the job of compiling the information for various plans in a standard or exemplar format

All of these approaches are compatible with Mackenzie's proposed report format, starting a discussion as to the best way to present information relevant to the health of public pension plans.

The remainder of this review presents an outline of the proposed dashboard layout and a set of suggested tweaks.

## Proposed Dashboard Layout

The Adams and Jackson dashboards are four-page sets of charts showing:

- Demographic indicators—e.g., counts, ages, payroll and benefit rolls
- Investment allocation and policy
- Investment returns—one year, 10 years and benchmark return
- Funding indicators, including actuarial value of assets (AVA), market value of assets (MVA), actuarial accrued liability (AAL), unfunded actuarial accrued liability (UAAL), GASB 67 total pension liability (TPL), employee and sponsor contributions, and actuarially required contributions (ARC)
- Funding ratios
- Plan maturity indicators—mature plans have a lower ratio of active members to retired members
- Plan sensitivity indicators, including the effect of increasing or decreasing the discount rate
- Sponsor indicators, including sponsor contributions and ARC as a percentage of total budget expenditures
- Percentage of members covered by OASDI (Social Security)
- Actuarial methods and assumptions, including the discount rate, mortality assumption, salary increase assumption and inflation
- Benefits, including normal and early retirement eligibility, final average salary, replacement rate with 30 years of service, vesting requirement and cost-of-living adjustment (COLA)

## GASB 67 Disclosures

GASB 67 disclosures have now arrived for fiscal year-ends of June 30, 2014, and later. A list of key disclosure items (some of them new) is found in GASB 67, paragraphs 30 and 31. Some new GASB 67 terminology is explained in the following table:

| GASB 67 TERM | SIMILAR TO TRADITIONAL FUNDING TERM | DIFFERENCES |
|---|---|---|
| Total pension liability (TPL) | Actuarial accrued liability (AAL) | • TPL may use a blended discount rate.<br>• TPL includes the present value of substantively automatic COLAs and other payments. |
| Net pension liability (NPL) | Unfunded actuarial accrued liability (UAAL) | NPL equals TPL minus fiduciary net position, while UAAL equals AAL minus actuarial value of assets (AVA). |
| Fiduciary net position | Market value of assets (MVA) | None |

GASB 67 liability and funded status calculations differ from traditional funding indicators shown in the proposed dashboard:

- For plans that are projected to run out of assets due to an inadequate contribution arrangement, the GASB 67 discount rate is a blend of the traditional expected return on plan assets and a high-quality municipal borrowing rate.
- Some COLAs and supplemental payments (aka 13th checks) that are considered ad hoc for funding purposes may be considered substantively automatic for GASB 67; in this case, the expected value of future payments is included in the TPL, but not in the AAL.

The GASB 67 disclosures relating to how the liabilities are measured are a logical addition to the dashboard because their intended purpose is to provide a truer picture of those liabilities:

- For a plan that must use a blended discount rate, a relevant disclosure item for the dashboard is the projected fund exhaustion date—i.e., the date the pension plan is projected to run out of assets.
- GASB 67, paragraph 30a(5), (to be disclosed in the plan audit report) is a potential source of information about automatic and ad hoc COLAs and supplemental payments that may not be found in the actuarial valuation report.
- Another new GASB 67 disclosure that should be added to the dashboard is the total deferred retirement option program (DROP) balance; for plans that have this option, this balance is reflected in the AAL and the UAAL, but it is not broken out and it is not reflected elsewhere on the dashboard. Like DROPs, BackDROPs are hypothetical accounts in which eligible members are vested. However, in a BackDROP, a mix of monthly pension and hypothetical account balance is elected from an array of such mixes upon retirement. For completeness and consistency, total BackDROP balances should include the estimated accounts which would have been elected if all eligible active members had retired on the valuation date.

## Actuarial Assumptions and Methods

Certain assumptions used in valuing pension plans are vitally important because of the extreme sensitivity of the valuation of the liabilities to those assumptions. This sensitivity is due to the long-term nature of the benefits, which will be paid out over many decades. Also, it is important to understand precisely how the valuation methodology is (or is not) being used. The following issues relate to actuarial assumptions and methods as well as other parts of the proposed dashboard.

**Discount rate:** A spectrum of approaches is in use for valuing pension liabilities, with the public plan practice (i.e., using the expected return on plan assets) at the high end of the spectrum. Therefore, a sensitivity measure is needed—for example, the effects on the AAL if the discount rate is 1 percent higher or 1 percent lower than the discount rate being used. This sensitivity measure is provided in the proposed dashboard and also in the GASB 67 disclosures with respect to the GASB 67 discount rate.

**Mortality tables:** U.S. private sector pensioner mortality improvement is well-documented over the last half-century. The SOA Retirement Plans Experience Committee is currently conducting a public pension plan mortality study. Updating the mortality assumption can increase the AAL by several percentage points or more. Thus, identifying the mortality assumption is critical. However, simply naming the mortality table used is likely to not be meaningful to many users of the dashboard. Mortality expert Christopher Bone recommends that the mortality assumption be illustrated with the life expectancy at ages 40 and 65, for both male and female. Mortality assumptions can be either static or generational. In essence, a generational mortality table associates a static mortality table with each birth year, with the mortality gradually improving with each increasing birth year. If a generational mortality assumption is used, both current life expectancy and life expectancy 25 years hence can be shown.

**Assumed constant future asset return:** A key aspect of the traditional approach to valuing public pension plans is better termed a methodology, but it takes the form of an assumption: namely, using a discount rate that is the expected return on plan assets (assumed to remain constant). One aspect of this methodology is that it cannot be used to accurately measure the value of certain common public pension plan provisions, such as an interest guarantee on a hypothetical account (e.g., a DROP account), or gain-sharing provisions that increase benefits based on favorable experience (such as a high rate of return for a year) but do not decrease benefits for unfavorable experience. The result under the traditional approach is often that such difficult-to-value provisions are assigned a lower liability value than would be obtained using, for example, stochastic modeling. Actuarial Standard of Practice (ASOP) 4, Section 3.5.3, states that an actuary should consider using alternative valuation procedures (such as stochastic modeling) for difficult-to-measure plan provisions, but it does not require their use. Thus, a possible dashboard item (in the benefits section) is a yes/no question on whether the plan has gain-sharing or interest guarantee provisions that are not valued using alternative valuation procedures, as

described in ASOP 4, Section 3.5.3. A yes answer to this question is a qualitative indication that the AAL and UAAL may be understated (but not by how much).

**Actuarially required contribution (ARC) and amortization method:** The ARC should probably be footnoted to explain that it is similar or identical to the GASB 27 ARC (annual required contribution), which will soon no longer be a required disclosure. Despite the name, the actuarially required contribution (ARC) is not absolutely required, but it is the sponsor contribution necessary to meet a certain amortization period (after taking employee contributions into account and assuming that both sponsor and employee contributions will remain a level percentage of payroll in the future). The amortization method for both the Adams and Jackson pension plans is given as "Level percentage; 30-year open." Here, the amortization method is referring to the calculation of the annual required contribution (ARC) and not to the actual amortization of the UAAL via sponsor and employee contributions. Because the term "amortization method" is referring to the ARC contribution benchmark, and not to the contribution itself, it would be better called "ARC amortization method" and included in the funding indicators section with the actuarially required contribution (ARC).

**Automatic vs. ad hoc COLAs:** Ad hoc COLAs require pension board action to be paid, while automatic COLAs are defined in the plan and do not require board action. The distinction for financial health purposes is that the present value of future automatic COLAs is included in the AAL (for both retirees and active employees), whereas, even though future ad hoc COLAs may be paid, their present value is not included in the AAL. The term "ad hoc" and the exclusion of the present value of future COLAs from the AAL often is applied to COLAs defined by a formula that reflects gain sharing, for which routine board approval is made in accordance with the formula. As discussed earlier, under GASB 67 and 68, ad hoc COLAs that are deemed to be substantively automatic must have their frequency and amount of payment estimated, and the present value of such COLAs must be included in the plan's TPL. GASB does not define "substantively automatic"; this determination must rely on the professional judgment of either the plan actuary or the plan auditor.

## Other Comments

The proposed demographic, investment, funding and sponsor indicators include a history shown at five-year intervals, presumably intended to provide a sense of a long history without a large number of columns. However, as illustrated by the contribution history on the Jackson dashboard, there is sometimes a great deal of year-over-year variation, so that information by five-year intervals may not be a reliable representation. For example, a plan sponsor may have issued a pension obligation bond and made a large pension contribution that year. It may be more informative to show the most recent five-year history and include graphs for longer historical series.

A final recommended addition to the dashboard investment allocation section is the disclosure of the beta of the pension asset portfolio. Beta is a well-understood scalar statistic measuring the riskiness of a portfolio—the higher the beta, the riskier the portfolio. Thus, it adds comparative information on asset risk represented by a single number. Also, as fiduciaries, the pension board should have this information available so it would not place a burden upon the plan.

*Daniel Moore, FSA, EA, MAAA, MSPA, is an actuary with Pension Benefit Guaranty Corp. in Washington, D.C.*

**Comments on**

# "Report on Communicating the Financial Health of Public Pension Plans"

By Bill Hallmark

## Summary

George (Sandy) Mackenzie's report was developed in response to the Society of Actuaries (SOA) Social Insurance & Public Finance Section's research project in July 2012 titled *Communicating the Financial Health of Public Pension Plans.* The premise of the project was that significant improvements in the communication of the financial health and future prospects for a public pension plan would improve the chances of fixing current financial problems and reduce the chances of future financial problems. Based on this premise, Mackenzie suggests that plan management should issue a new report based on information from existing reports in the hope that this new collection of already published information will lead to the improved financial health of public pension systems.

Instead of suggesting that plan management should issue a new report containing the same old information, it would seem to be far more effective to focus on the communications actuaries provide and, even more important, to explain how to use that information to assess the current financial health and future prospects of the pension plan.

The proposed report appears intended to communicate to a wide array of "interested readers." This objective is important, as the decision-makers for the plan and the plan sponsors can be held accountable only by an informed citizenry. However, the proposed report falls far short of meeting this objective. The proposal does not explain what the author thinks a healthy or unhealthy plan would look like. There is no discussion of how the information in the report might provide insight into the future prospects for the plan. There are no projections. How is the interested reader supposed to infer anything about the future prospects of the plan without a single projection?

## Report Organization and Dashboard

The proposed report is loosely organized into a narrative with some tables and charts followed by a "dashboard" consisting of 11 different panels. I think of a "dashboard" (like the dashboard of a car) as the first thing you look at, as opposed to the last. A simple dashboard is an important component of a pension communication, particularly for a lay audience. It should be comprised of a few key gauges providing the most

important information and warning lights when something requires further investigation. Instead of a dashboard, the proposed 11 panels remind me more of the controls and gauges in an airplane cockpit, which would be complicated for any lay reader to dissect and understand.

The American Academy of Actuaries' *Issue Brief* (July 2012), "The 80% Pension Funding Standard Myth," identified the following factors that might be considered in assessing the financial health of a pension plan:

- Size of the pension obligation relative to the financial size (as measured by revenue, assets or payroll) of the plan sponsor
- Financial health (as measured by level of debt, cash flow, profit or budget surplus) of the plan sponsor
- Funding or contribution policy and whether contributions actually are made according to the plan's policy
- Investment strategy, including the level of investment volatility risk and the possible effect on contribution levels

In contrast, the proposed report only touches on some of these factors and includes significant extraneous information with no apparent connection to an assessment of the financial health or future prospects of the pension plan.

I was immediately struck by the fact that the "Overview" section contains very little information that is useful for communicating the financial health or future prospects of a public pension plan. For example, how is it relevant to the communication of the financial health or future prospects of the Adams PERS that it predates Social Security by four years? The overview should be dedicated to explaining the key information from the dashboard, how that information could be used, and what conclusions may be drawn. The history of the system may be interesting reading for certain readers, but it detracts from the stated purpose of this report.

In my opinion, the dashboard should include a graph of historical and projected contribution rates and a graph of historical and projected unfunded actuarial accrued liabilities (UAAL) as a percentage of payroll. Ideally, the projections would include at least a couple of alternative economic scenarios (if not a stochastic projection) to communicate the potential risks compared to the baseline projections. The narrative overview would highlight key information in the dashboard and explain its significance.

Alternatively or in addition, the dashboard could include assessments of exceeding certain affordability thresholds, such as a specified contribution level, a UAAL level as a percentage of payroll, or other key metrics.

While some of these are not metrics that are currently common in public pension valuation reports, if we are going to advance practices and improve the communication of the financial health of public pension plans (including future prospects), we need a

more robust discussion of the appropriate metrics and methods of communication instead of just a collection of the currently available information in a new report.

## Contents of Report

The current organization of the report is not one I would recommend. However, to organize my comments, I will address the sections in the order they are presented in the proposed report.

## Benefit Determination

This section of the report appears to provide a relatively thorough explanation of the arcane mechanics of how benefits are calculated for the different tiers in the plan. This information is useful for certain purposes but has no connection to assessing the financial health or future prospects of the plan. The primary piece of information about benefit levels that would be relevant is the normal cost as a percentage of pay, but it isn't included in the disclosures in the proposed report.

Interested readers may want a sense of the benefit levels provided by the plan, but this is an entirely different purpose than communicating the financial health of the plan, and describing the arcane mechanics is probably not the best way to communicate those benefit levels. If the plan's health is deemed poor, an exploration of benefit levels may be useful in devising a strategy to improve the health of the plan, but, again, that is a different purpose.

## Cost-of-Living Adjustments (COLAs)

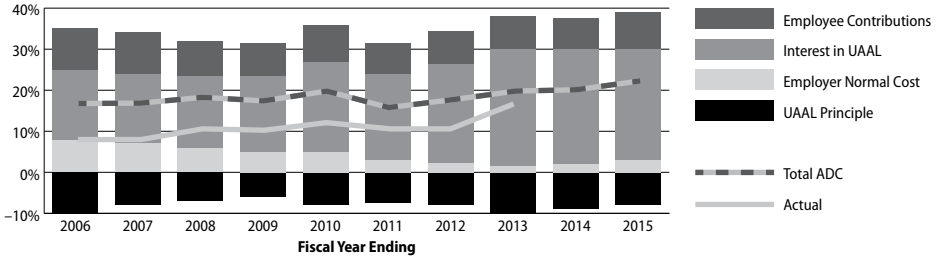
The description of the COLAs also appears to be irrelevant to the purpose of the report. In the case of the Adams PERS, the changes to the COLAs have an impact on the financial health and future prospects of the pension plan, but the critical financial information about the effect of the change is not included.

## Contributions

After two and a half to three pages of what I found to be mostly extraneous information, the proposed report starts to address some important data needed to assess the financial health and future prospects of the plan. However, even this information is not provided in a very useful manner. The Adams PERS report, for example, fails to mention that contribution rates are set in statute by the legislature. It does mention that the contribution amount was insufficient compared to the actuarially required contribution (ARC), but there is no explanation of the basis for the ARC.

This section could really use a graphic such as the following, showing key components of historical actuarially determined contributions (previously known as the ARC) compared to actual contributions for the state division of the Adams PERS:

***Historical Actuarially Determined Contributions (ADC)***




The graphic shows that even if the total ADC had been made, that contribution would not have been sufficient to pay the employer normal cost plus interest on the UAAL. Each of the last 10 years included a negative payment on the UAAL Principle that was exacerbated by the fact that the actual contribution was less than the total ADC. It also shows that while employee contributions have remained constant, benefits have apparently been reduced such that the employer normal cost has decreased from approximately 8 percent of pay to about 2 percent of pay.

Ideally, this graphic could be extended into the future to show if and when the plan expects contributions to exceed normal cost plus interest on the UAAL. A table of supporting numbers could also be provided.

## Investment Issues

This section of the proposed report provides information about the asset allocation and historical returns compared to a policy benchmark and the return for the median public fund. The asset allocation is critical to an assessment of whether or not the plan can achieve its assumed rate of return and what level of investment return volatility it may endure in the future. Critically missing from this section is any discussion of the expected return from the investment portfolio, the expected standard deviation of those returns (or other measure of volatility), and the potential implications of that volatility on the contributions to the plan or the size of the UAAL as a percentage of payroll. Without this information, the interested reader is left to his or her own devices to make these assessments. As is, this section of the proposed report provides information that would be useful only to a professional with the necessary expertise to translate the information into something useful for assessing the financial health or future prospects of the plan.

The comparison of PERS investment returns to the policy benchmark is useful for evaluating the investment managers, but it doesn't provide useful information about the financial health or future prospects of the plan. The inclusion of the comparison to the

return for the median public plan is counterproductive. This comparison encourages a competition for investment return independent of each plan's ability to afford the investment risk and could result in harming the financial health of some pension plans, contrary to the objective of the report.

## Funding

In this section, the proposed report includes a graph of the funding ratio and an explanation of the changes over the last 13 years, including a table of causes of changes in the UAAL. This is important information to assess the degree to which the change in the UAAL was an expected outcome of the contribution policy or was due to contribution shortfalls; unexpected experience, potentially suggesting a revision of assumptions; benefit changes; or assumption changes.

This section also includes a table comparing the number of active members to retired members. This information is also valuable but seems misplaced.

In addition to the funding ratio, it would be useful to include in this section a measure of the size of the UAAL to the payroll of the plan. This information is provided in one of the dashboard panels, but the importance of understanding the size of the liability compared to the size of the sponsor is such that the report should not just focus on funded status without putting it in an appropriate context.

## Implications of a Change in the Discount Rate

The Adams PERS proposed report contains a section on the implications of a change in the discount rate, ostensibly because "the possibility that discount rates might become more market-related cannot be dismissed." The only implication explored is what happens to funded status at various discount rates.

There are good reasons to show the implications of a change in the discount rate, but the reason stated is one of the least important, and the implication on funded status is not the most important implication for the financial health or future prospects of the plan.

The discount rate may be reduced because capital market assumptions change, the plan decides to take less investment risk, or the plan wants to set assumptions with a margin for adverse deviation. All of these factors have contributed to the decline in discount rates in public plans over the last several years. The implications of such a change include changes to the normal cost rate and the actuarial accrued liability (AAL), which cause changes to the UAAL, interest on the UAAL, and amortization payments. The change also may mean less volatility in investment returns or a greater likelihood of achieving the assumed return. All of these implications should be illustrated and discussed.

## Dashboard Panels

The standardization of the panels facilitates comparisons among different plans, and the attempt to capture historical information is useful. However, it would be much more useful if every year in the 15-year history were captured and even better if key information was graphed so that trends could be seen visually. I would also consider embedding each panel in a section of the narrative portion of the report so the narrative could explain how to use the information and provide some color around the trends shown.

There is a lot of different information collected in the dashboard panels, and much of it is not likely to be useful except to the very interested reader who would probably already be able to extract the information from the comprehensive annual financial report (CAFR) or valuation report. Some of the information (e.g., investment policy) is even repeated from the narrative portion of the report.

There are two dashboard panels that disclose four different measures of liability, two different measures of assets, and four different funding ratios. The explanation simply indicates that "[t]he hope is that these additional indicators will provide a more rounded picture of a plan's funded status." Instead of a more rounded picture, the panels are more likely to create a fuzzy and confusing picture unless an explanation of what each measure represents and how it is most appropriately used is also provided.

The purpose of developing an actuarial value of assets (AVA) is to smooth the volatility of contributions. Its use in expressing funding ratios and the UAAL should be confined, in my opinion, to assessments of the contribution strategy. If you are assessing the financial health of the plan, it is better to focus on the market value of assets (MVA).

The four different measures of liability suggested for the dashboard are mostly redundant. The AAL and the entry age actuarial accrued liability (EAAL) will be identical for the vast majority of public plans. Both represent a funding target using the expected return on assets as the discount rate. The EAAL and the total pension liability (TPL) (GASB 67 AAL) will be similar for most plans, with possible differences due to a blended discount rate and projections from an earlier valuation date. It isn't clear what should be concluded from these differences.

The market value ABO (MVABO) represents the theoretical price the market would charge to settle the pension obligation for benefits earned to date. It is based on the traditional unit credit cost method and a discount rate reflecting the yield on a portfolio of default-free bonds with cash flows that match the pension plan.

The MVABO is useful if there is a transaction contemplated involving the pension plan or if the purpose is to assess whether or not the plan has sufficient assets to immediately settle its obligation. While these types of transactions occur frequently with corporate defined benefit plans, they are rare in public defined benefit plans. It is not clear how the interested reader would use this information, and using it to assess the budgeting

strategy for the plan would lead to erroneous conclusions. The focus in assessing the financial health of public plans is on cash flow and whether or not the plan sponsors have the resources needed to meet the pension obligations over time. Consequently, the funding target measures (AAL and EAAL) are the most useful to analyze the health of an ongoing public pension plan.

The inclusion of plan maturity indicators, plan sensitivity indicators and sponsor indicators provides some indication of the risks to the plan. However, some additional thought needs to go into these measures. For the Adams PERS, for example, it is not clear how the ratios to budget expenditures were calculated, given all of the different employers. How is the state budget expenditure for schools separated from each school district's budget expenditure that also includes revenue from the state? Where did the budget expenditure information for the hundreds of local governments in the local government division come from, and how were their revenues from the state separated from their independent revenues?

Also, additional explanation needs to be provided about what the various measures mean or how to use them, and some level of projections should be provided to illustrate the risks to the plan.

Finally, it would be helpful if the report contained links to the full actuarial valuation report, the CAFR and any other published sources from which the information in the proposed report was collected. These links would allow the interested reader to pursue information in greater depth, and, if the proposed report was prepared by an actuary, the links would help the actuary comply with current actuarial standards of practice.

## Conclusion

The proposed report catalogues a lot of information about the pension plan that could be useful for a variety of purposes. If, however, the purpose of this report was to improve the communication of the financial health and future prospects of public pension plans, the effort seems ineffective and misdirected. The report provides no advantage over common practices in the public sector and falls short of current best practices. Instead of creating a new report repeating existing information, we, as actuaries, should focus on enhancing existing reports and presentations with clear and concise presentations of the key information interested readers need to assess the financial health and future prospects of public pension plans. Such communications need to explain how to appropriately use the information and should include projections of future results under multiple scenarios to illustrate potential future risks.

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# Author's Response to Comments by Daniel Moore and Bill Hallmark

By George A. (Sandy) Mackenzie

Daniel Moore's review focuses on the dashboard indicators, but he also makes very useful comments on the difficulties of achieving the report's objective of effective communication. He notes that the standardized approach that the report proposes could be achieved in principle with either a voluntary or a mandatory approach. In addition, the report could be prepared by an independent party. All three options are worth considering, although I suspect that in practice a voluntary approach will be the most feasible.

Moore recommends that the dashboard take account of the Governmental Accounting Standards Board (GASB) disclosures. Among his suggestions is that, when a plan is required to use a blended discount rate, as is the case when its assets are not sufficient to cover 100 percent of its liabilities, the fund's exhaustion date should be added. In addition, because GASB requires that "substantively automatic" cost-of-living adjustments (COLAs) be included in a measure of total plan liabilities, that inclusion should be noted in the dashboard. He also suggests that the term "amortization method" be replaced by "ARC amortization method," since "amortization method" is really referring to the calculation of the annual required contribution (ARC). The dashboard could also state whether gain-sharing or interest guarantee procedures have or have not been valued using alternative valuation procedures.

I think that these recommendations as well as the proposed illustration of the implications of the assumed mortality table and the inclusion of the plan portfolio's beta are well taken. Moore's suggestion that the dashboard include data from each of the previous five years is also worth considering, although it would come at the cost of the loss of more distant data.

Bill Hallmark has written a very critical review of the report. In addition to a large number of comments on the indicators that the report proposes, he faults the report for effectively putting old wine in new bottles. The main conclusion of his critique is that there is no point in a new report that simply recycles old information. The report is said to fail at communicating effectively with interested readers. There are no projections, and the report fails to explain how it would judge the financial health of a plan. In my comments, I will concentrate on these more general criticisms, although I will make a few observations on his comments on particular indicators and the dashboard.

The conclusion that there is no point in a new report, presumably even if the present report were modified in the way that Hallmark suggests in his more detailed comments, is never defended; it is only asserted. I disagree strongly with this view. If public sector

plans do not routinely prepare such reports, then doing so would be a very good idea. The comprehensive annual financial report (CAFR), despite all the information it typically contains, is not an efficient vehicle to convey a concise report on a plan's current financial position and prospects. Accessible information, old or new, is better than inaccessible information.

Hallmark, for some reason, overlooks the discussion in the report of the usefulness of projections. The fact that I was not in a position to commission them does not mean that I considered them to be unimportant. On page 3, the report states that "[h]aving been prepared by an outsider, they are limited in some respects. An outsider cannot commission simulations on the impact of changes in actuarial or economic assumptions, for example . . . Without a simulation model of a plan, it is very difficult to gauge the impact of measures taken to improve the plan's finances." In light of this statement, I was puzzled by Hallmark's repeated criticism that the two reports lacked simulations. It should be obvious that, in the best of all possible worlds, a report would include an analysis of simulations of the impact of changes in underlying assumptions.

I am also puzzled by the claim that the report says nothing about how a plan's finances might be assessed. The contrasting discussion of the financial position of the Adams PERS and the Jackson PERS should make clear the importance the report attached to the asset-to-liability ratio.

The report's choice of indicators was most definitely not meant to be carved in stone. I found many of Hallmark's specific observations on what should have been included and what could be dropped quite helpful. In particular, the dashboard's financial indicators could be pruned, as he suggests, and the expected returns and standard deviation of investments would also be a useful addition. However, they were not available for the two plans that were the object of the report. The graph he includes in his comments would also be a very useful addition. The design of the dashboards and the organization of the two plan reports could be improved.

I was, however, struck by the fact that taking many of Hallmark's observations on board would improve the reports and would strengthen the argument for their usefulness. More generally, I didn't think that taken together Hallmark's specific comments support his contention that a new report was contraindicated. If anything, they simply argue for some changes to the content and organization of the prototypes.

I did not understand why the discussion of benefits was irrelevant to the report's purposes. Low retirement ages, high replacement ratios and automatic 100 percent COLAs would magnify the effect of increased longevity on a plan's finances and would also suggest that there was some scope for reducing their generosity. That most Adams plan members are not covered by Social Security is not a piece of extraneous information; it helps explain why replacement rates are comparatively high. Perhaps because I was on the staff of the International Monetary Fund for many years, the structure of a public plan's benefits would be the first thing I would look at. Surely it is relevant to

Greece's predicament that a full pension with a high replacement rate could be obtained at a very young age.

In sum, Hallmark has provided some good ideas for improving the report, but his rejection of its rationale is unconvincing.

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# Model Legislation for Better Public Plan Governance (vs. Risk Disclosure)

By Thomas Lowman

The Society of Actuaries (SOA) has been looking at ways to communicate the financial health and risks associated with public pension plans. This might be done by requiring actuaries to disclose items such as the ratio of plan assets to member payroll (which is a good simple measure of risk to the plan sponsor that is repeated often in this paper). The SOA's goal of improving the funded status of these plans is a good one. More disclosure will cause change but often not material change and sometimes not the types of change that some stakeholders[1] will want to see. For example, plan members often believe that disclosing liabilities not tied to the funding assumptions is intended to scare politicians into cutting benefits. In any case, dealing with plan health and risk requires more than actuaries disclosing numbers, since the biggest risks relate to governance, even when the material facts are known. A better solution is creating model legislation for plans to follow that encourages better governance. The funding of public pension funds can be improved by the creation of model legislation covering plan governance (i.e., the decisions made by boards of trustees and elected officials). Such a model would include required disclosures. The drafters of model legislation may be too political in their objectives; but in the end, while adopted by politicians, model legislation can be (if properly done) one of the best ways to ensure appropriate public policy guidelines for plan governance.

It is unquestionable that actuaries are asked to explain to stakeholders the health of a pension plan, its risks and the funded status of the plan. To best perform their job, actuaries must disclose more than numbers. They must internalize and express the "biggest risks" to the plan, which, especially in the public sector, often relate to plan governance. Model legislation can go beyond what just the actuary can do for a sometimes reluctant client. The suggestions in this paper for the construction of model legislation cover a wide array of governance issues but are not intended to be an exhaustive list. Only a unified approach identifying all key "risks" to plans will help prevent unnecessary benefit reductions, volatile rate increases or precipitous plan changes. This also requires, among other things, an honest evaluation of the distinction between best practices and minimum actuarial standards and how this distinction factors into writing standards, as is explained later in this paper.

In this paper, the focus is on the need for and scope of model legislation and the related risks model legislation can address. This is done by using examples showing certain types of bad governance (by different parties) that we should try to avoid.

[1] Stakeholders would include taxpayers and plan members. They would not include actuaries (who are service providers) or boards of trustees (who are agents of the stakeholders).

Recent legal debates have focused on whether and to what extent pension benefits can be reduced when the employer has problems obtaining funds to contribute to the plans or would rather spend available funds elsewhere or avoid raising taxes. We need to move on from that debate and focus on how new laws can be used to prevent underfunding and, to a limited extent, guide others when determining what is affordable (separate from a best practices model). This paper is not a legal analysis or an attempt to define what is "reasonable and necessary" to break a contract. The attorneys can still argue over what benefits are and are not protected.

Following are six questions that need to be debated and are covered in this paper. Woven throughout the discussion of these six questions are comments on how model legislation can help.

1. How much should we narrow existing funding practices?
2. Who should determine the assumptions, methods and contribution needs?
3. Is there a difference between normal best practices and minimum acceptable standards? (Maybe minimum acceptable standards should be defined as "best practices in troubled times"?)
4. How much risk is acceptable under a best practices model?
5. Who gets access to information and neutral (balanced) service providers?
6. What are some of the other items to consider in model legislation?

## How Much Should We Narrow Existing Funding Practices?

The Conference of Consulting Actuaries (CCA) published a 2014 white paper going over in detail principles behind the setting of funding methods. The types of choices (and balancing of choices) discussed in the white paper should serve as the guide to answering this question. The CCA may consider or assist in drafting model legislation. If so, the CCA may focus on the actuarial aspects of proposed model legislation, namely the funding methods (covered by the white paper) and assumptions used by plans (not covered by the white paper). But this limited focus is understandable because the role of the actuary is limited. While actuaries have specialized financial knowledge that can assist their clients, they are not the fiduciaries who ultimately decide on funding and plan design. However, here are two reasons why the CCA paper on funding policies is so important:

1. It represents the opinions of many senior public plan actuaries, which makes it more difficult for a plan sponsor who hires an actuary to recommend something outside of preferred practice to defend the unusual recommendation, particularly when the recommendation is identified as "unacceptable" in the CCA white paper (e.g., open negative amortization).

2. It provides a replacement option for the former Governmental Accounting Standards Board Statement No. 27 (GASB 27) annual required contribution (ARC)[2] concept.

For these reasons, the white paper is a good place to start when answering the question of how much to narrow funding practices. However, if the white paper is not integrated with governance rules and combined with good assumptions, the desired results will be limited. Assumptions and methods are often not chosen by actuaries. Many are prescribed by boards or, legislatively, by plan sponsors. While actuarial standards may require the actuary to opine on the appropriateness of assumptions, assumptions are most frequently set by a political process and therefore subject to governance risks, which model legislation can address.

## Who Should Determine the Assumptions, Methods and Contribution Needs?

This is a key area where model legislation can help.

The SOA Blue Ribbon Panel on Public Pension Plan Funding and many others realized that the main problem we face is the failure of employers to fund the ARC. In the private sector world (referred to as the ERISA world in this paper), this is rare (generally only in a bankruptcy situation) because of IRS and Pension Benefit Guaranty Corporation (PBGC) enforcement powers to mandate funding. In the public sector, there is often no way to force proper funding at the state level, and often the states place few or no effective requirements on local governments. The failure to contribute the ARC might be as blatant as not contributing the ARC calculated by the actuary, or it may be more subtly due to manipulation of assumption or method changes. This applies in more than one direction. For example:

1. For years City A failed to lower its discount rate to the level recommended by the plan's actuary. When City A did lower the discount rate (to a rate below what was recommended by the actuary), it failed to contribute more because soon after the assumptions were changed, benefits were cut and valuations (and ARCs) were revised.
2. City B continues to refuse to adopt recommended assumption changes to avoid contribution increases or benefit cuts.
3. State X has rules for what are called fixed-rate plans within that state. The idea is that if the current employer contribution rate cannot cover the normal cost and a 30-year amortization of the unfunded liability, then benefit changes need to be considered. In 201X, the City C plan (within State X) had an amortization period of just under 30 years. However, to accomplish this, the plan had to eliminate mortality improvement projections used in the prior valuation.
4. State Y provided annual ad hoc cost-of-living adjustments (COLAs) and funded them over 15 years. This kept the plan systemically underfunded.

[2] The new GASB term is the actuarially determined contribution (ADC). I use the term ARC, since it is more recognizable.

We must have enforceable rules to prevent these situations. Currently, retirees, employees, trustees and unions may not be able to successfully sue an employer simply for failing to fund a plan properly and may have to wait until contractual benefits are cut before suing the employer. This situation may occur if the courts cannot tell the legislatures how to allocate their budgets due to constitutional separation of powers concepts. Said differently, there needs to be an enforceable law that requires employers to adequately fund public plans. Current taxpayers and labor unions both can be reluctant to push for additional pension funding, since (1) taxpayers want lower taxes, (2) employees may prefer pay increases (particularly younger employees), and (3) there is a sense that, since the employer is responsible for the obligation, it will make good on its promises at some future time from future taxpayers (which may or may not be true). However, someone needs to look out for the future, and model legislation can help.

How can we prevent these situations? Here are three ways model legislation can help:

1. The simple presence of basic guidelines would be an improvement over annually looking for creative ways to justify unsound practices. States should create rules that govern both themselves and their local government plans. While there may be some differences, the basic rules should apply at both the state and local levels. There should be some model state oversight of local plans. Some states already have a set of rules covering state and local plans, but there is no common framework. National guidelines may provide elected officials notice of inappropriate practices and encourage the elected officials to reconsider rules that deviate from model legislation.
2. Rules should place control over hiring actuaries, setting assumptions and methods, and determining the ARC with independent boards of trustees. These functions should be separated from the plan sponsor. Some jurisdictions already have this arrangement. There may be little we can do when an employer fails to fund the ARC. However, the trustees have a fiduciary role. Model legislation can provide pressure and guidance to boards to request proper funding (and, if needed, provide a basis for legal action against the boards or the employers). It would be naïve to assume that all boards are unbiased, but this is the best option.
3. State rules should require and enforce adequate (but not necessarily best practice) funding. This includes creating member rights to adequate funding that can be enforced in the courts.

## Is There a Difference Between Normal Best Practices and Minimum Acceptable Standards?

Yes, there is a difference. Goals for model legislation should be primarily focused on eliminating the worst practices. There needs to be room to accommodate differences of opinion and allow some flexibility in contributions. Not everyone is likely to agree what the term "model funding practice" means, and it may be plan design dependent (e.g., for a variable annuity plan, entry age normal funding is not a model funding practice). The

most conservative practice is not always the best practice (e.g., one-year amortization of investment losses might be most conservative but is not practical). There also needs to be a clear statement that employers cannot choose to reduce their contractual benefit obligations simply to implement model funding practices.

Consider the following proposal allowing for one type of flexibility:

> Have model legislation that allows a phase-in of the increase in the contribution resulting from assumption changes using one of two options: (1) a phase-in of the assumption itself or (2) directly phasing in the contribution increase. When the actuary for City D recommended a drop in the discount rate[3] (investment return assumption), the board decided to phase in the change by slowly lowering the discount rate (option 1). Boards tend to favor this option, since they feel that they are asking the state or municipalities to fully fund the ARC. A better solution (option 2) would be to have governance models that allow the phasing in of the cost of assumption changes (i.e., paying less than the ARC). Option 2 (also referred to as direct rate smoothing) has the following virtues: (1) it reduces the incentive to delay needed changes, (2) it can avoid the creation of a fiscal emergency where none existed, and (3) it shows liabilities and costs based on the ultimate set of assumptions. Option 1 has only the first two advantages. Having either type of phase-in should be acceptable as long as the phase-in is disclosed. Neither option falls under the CCA's white paper model practice (which is to not phase in the increase), and this is an example where model legislation should not require model practice.

Here is another example where model or best practices might be the goal but should not be the minimum standard for model legislation. Consider the following differences in amortization approaches that have occurred:

**Situation #1:** City E had a 20-year level dollar amortization policy. Unfortunately, much of the true unfunded liability had not been recognized. Shortly after assumptions were made more conservative (to recognize the true cost of the plan), benefits were cut deeply to allow for the current contribution rate to be roughly maintained without adopting a new amortization policy. The unions asked for fewer benefit cuts and a 25- or 30-year amortization period with level percentage of pay amortization, but no amortization changes were made.

**Situation #2:** In City F, again shortly after major assumption changes were made, benefit cuts were made (do you see a theme?). The benefit cuts came with a resetting (lengthening) of the level percentage of pay amortization period to 25 years. The benefit cuts and amortization changes effectively "funded" the first year's cost of assumption changes by reducing the ARC to the preassumption change level. Again the unions asked for 30-year amortization to avoid some of the cuts, but the resetting to 25 years was used.

[3] This concept is not limited to discount rate assumption changes.

A question to ask is: Why should City E be allowed to cut contractual benefits[4] rather than make the type of changes taken by City F or those proposed by the unions? Model legislation should provide amortization over 15–25 years but force employers to adopt 30-year closed amortization (and get state approval) before considering other actions. There could be a debate about what employer financial differences should be present to allow for differences in funding requirements, but this is not an actuarial issue and most likely has no clear answer.

Finally, there will always need to be some type of transition rule. Plans currently using 30-year closed amortization periods should not be required to immediately cut the amortization period of the existing unfunded liabilities.

## How Much Risk Is Acceptable Under a Best Practices Model?

There is a reason a paper about model legislation that is focused on minimum standards must talk about best practices in the area of risk. It is not that model legislation should require best practices in this area but rather to realize that (1) some decisions on risk tolerance go beyond model legislation and (2) models and markets are still evolving. There is no universal answer to the level of risk all plan sponsors can accept or how it can be determined. A discussion of risk can include the following three areas, only the first of which should be part of model legislation:

1. What is the best way to measure and communicate pension risk?
2. How much risk can an employer afford?
3. What is an employer's risk appetite (understanding that, all other things being equal, employers tend to avoid risk)?

Truly understanding risk goes beyond simple disclosures and what we can expect simple model legislation to cover. Model legislation should focus on the best way to measure and communicate risk. One simple measure of risk noted in the beginning of this paper is the ratio of assets to payroll. As this ratio increases, the impact of a swing in market returns increases the volatility in the contribution as a percentage of payroll. Most plans are still maturing by this measure. This implies that simply keeping an existing asset mix (e.g., 70 percent equities and 30 percent bonds) increases a plan sponsor's risk over time, even if this is not how annual risk is most commonly communicated by the plan's investment adviser.

How should good governance factor in risk and future risk trends? Decisions on affordability[5] should be based on (1) the current cost of the plan, (2) the projected best

[4] This drifts into the area of what is "reasonable and necessary" to allow for benefit cuts. However, model legislation should not define this. What is needed is flexibility in contributions that does not simply turn into always contributing the smallest possible amount.

[5] Decisions on affordability and the employer's ability to pay are not ones that actuaries or trustees should be making. However, there are pension cost risks that the actuary can quantify.

estimate of future cost and, to a lesser extent, (3) a stochastic type of projection of possible future outcomes. Many employers would like to derisk their plans. In the public sector, that means that defined benefit formulas are reduced and possibly replaced with defined contribution plans. State X decided to derisk by adopting a more conservative investment mix, lowering its discount rate and paying for this by lowering benefits. Is the sponsor obligated to consider these risks early enough to avoid reducing benefits? A transition rule may need to be considered if we deal with future risk more than is common current practice.

A related question about investment policy statements: Should these policies self-adjust (i.e., reduce annual investment risk) as the plan matures? The ideal answer is yes, which would also imply that this is something the actuary should take into account now under a best practices model. However, over the last 20 years we have seen increases in both plan maturity and investment risk. Some of this is driven by real rates of return on bonds declining to virtually zero, adding to a preference for other asset classes. This makes the ideal answer somewhat less ideal. It also makes it difficult to include this in model legislation while allowing flexibility to react to market conditions.

At a minimum, model legislation should include requiring historical metrics such as the ratio of plan assets to payroll, as is being considered by the Actuarial Standards Board (ASB). A second round of refinements to model legislation can go further. Such refinements can specify useful projections. However, some projections are useless. For example, one often-quoted projection is when a plan will run out of money if the employer stops making unfunded liability payments. It is no surprise that if unfunded liability payments are not made that a plan will run out of money, and therefore there is no need to ask when this would occur. What this calculation does is imply that the employer has no responsibility for unfunded liabilities and moves the focus away from funding the benefit promises.

## Who Gets Access to Information and Neutral (Balanced) Service Providers?

Asymmetric availability of (actuarial) information on public pension plans should be unacceptable. Actuaries usually work for the retirement boards. It is common, understandable and proper for the plan actuary to be asked to provide contribution projections to the board or employer. Retirement board websites tend to provide access to more information compared to what is available in other areas of actuarial practice. However, some boards are controlled by labor members, and many others by management members. There have been instances where key information was withheld from board members by executive directors and service providers. In a political environment, this type of activity is often not punished. We should have code of conduct rules for board members, staff and service providers. Model legislation should reduce the chance of continuing to hear from those responsible for the hidden (unshared) sins of the past: "It is not important how we got where we are. We need to move forward and fix things now."

Often there is one actuary who performs the valuation and is relied on by all parties. Sometimes there are three actuaries: one for the board, one for the sponsor and one for the unions. The board should have only one actuary (subject to audits), but rules of communication need to be established. Should all work done by the plan actuary for an interested party other than the board be shared with the board? After a healthy debate, model legislation should address this.

Boards do not always have independent attorneys. There is also the human nature that the attorneys selected by boards (like actuaries) might favor the positions of the majority of board members. Many ERISA multiemployer boards hire two attorneys. In these ERISA plans, one attorney often does all of the heavy lifting, but both labor and management get to pick their own attorney, who is paid out of plan assets. While not an actuarial issue, legal advice representing both sets of stakeholder representatives should be addressed in model legislation.

It is also important to have an independent competent auditor who is familiar with pension rules. This has been lacking in the past for many plans.

## What Are Some of the Other Items to Consider in Model Legislation?

Model legislation should also include a requirement that, before any benefit change is adopted, an actuarial study regarding the costs and risks of the change be prepared. (Note: Many jurisdictions already have this requirement, and this falls in the category of low-hanging fruit when this rule does not exist.) This is much more than just a best practice; it should be a minimum standard for model legislation. These studies are often prepared by the plan actuary, particularly when judgments on assumption changes are needed as a result of the proposed change (e.g., retirement rate changes due to changes in retirement eligibility). However, using the plan actuary for this work (1) often leads to questions about whether the plan should pay for these settlor functions and (2) often draws the plan actuary into the employer's sphere of influence. These factors should be addressed in model legislation.

As noted previously, those drafting model legislation should consider both best practices and minimum standards, and we believe they should focus on enforcing minimum standards. This will certainly lead to a debate with questions such as: (1) Should we draft minimum funding rules and hope that employers contribute more than the minimum? and (2) How sure are we that the minimum funding level will be the only contribution level most employers are likely to fund, given competing demands for funds? These questions and others should be part of a healthy debate.

A review of the Government Finance Officers Association (GFOA) best practices should be part of any discussion of model legislation, including actuarial and data audits and experience studies. Like the SOA work and actuarial standards, GFOA also has

disclosure recommendations. Again, model legislation does not always need to follow best practices.

There could be a debate about *disclosing* the sponsor's ability to change or reduce benefits. The time to resolve this debate is not now. Commentators to the GASB standards asked the GASB to require the employer to disclose this information. However, the GASB felt it inappropriate to do so because this issue is beyond the expertise of the auditors, who cannot easily audit the meaning of legal provisions. The problem for the auditor is that it requires legal expertise, and the law seems to be changing. What we thought was protected, we are not so sure about anymore. This leads to the concerns of the unions. Unions probably would have more easily supported better disclosure of employers' ability to change or reduce benefits 20 years ago than they would now, since the fear is that now employers will use the model legislation process to reduce benefit promises. Model legislation should not be used as an excuse to cut benefits. The law is too much in flux in this area to make now the time to include this in any model legislation.

If benefits are reduced, how much documentation should be prepared regarding the historical situation that resulted in the need to reduce benefits? What is the penalty for those who breached their fiduciary duty in the past? This can all be debated.

Should every rule proposed for model legislation be "back-tested" to see if it would have solved key problems in a state before it is adopted?

Who should draft such model legislation? It needs to be a diverse group—e.g., the GFOA, the National Association of State Retirement Administrators (NASRA), the CCA—with both legal and actuarial input.

Finally, drafting model legislation will not be easy. It is much harder to ask someone to regulate themselves than to regulate someone else. No one is going to like all the results of such a group effort, and putting together a balanced group of drafters will not be easy. Like when the group of actuaries created the CCA white paper on funding, it must be realized that not all existing policies can be accommodated. Yet, if this turns into a process to help employers eliminate these plans or to try to make the plans funded as if they were insurance companies, it should not be supported. One test of any proposal is whether it will reduce the likelihood that the trustees or the plan actuary will be used by one stakeholder against another, while still allowing improvements in governance and some flexibility. Refusing to try to create model legislation should not be an option. Whether to adopt the final outcome of this process is its own debate, once we know what we are debating.

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**Comments on**

# "Model Legislation for Better Public Plan Governance (vs. Risk Disclosure)"

By Evan Inglis

Thomas Lowman has written a thoughtful piece on the value that model legislation would have for public pension plans. Given the challenges of governing a large, long-term financial commitment within a political decision-making system, his advocacy for this kind of regulatory guidance seems like a very worthy ambition.

The paper appropriately identifies governance as the biggest issue that has resulted in the current challenging situation for public pensions. The paper does not deal with governance in the broad sense but is focused on funding strategies and how they could be better controlled. Actuarial methods and assumptions that result in contributions that are too low, contribution requirements and recommendations that are not met by plan sponsors, and a lack of risk analyses and an appropriate evolution of investment strategies are identified as key issues.

The paper contrasts best practices with minimum standards. It is suggested that the worst approaches to determining contributions should be addressed with minimum standards, rather than trying to define and implement best practices. On the other hand, the paper suggests that best practices for analyzing risk should be discussed and encouraged with model legislation.

More specifically, the paper includes the following recommendations for change:

- Use the standards from the white paper on public plan funding practices published by the Conference of Consulting Actuaries (CCA) to guide improvements in actuarial methods. The white paper identifies acceptable and model practices that would generally reduce deferral of current pension costs.
- Place control of hiring actuaries and defining how to determine contributions with independent boards of trustees, separate from the plan sponsor.
- Increase transparency so that all stakeholders have equal access to good information.
- Allow for transition from current practice, rather than ask for immediate reform.
- Disclose metrics such as the ratio of plan assets to payroll.
- Use stochastic analyses to better understand the range of potential outcomes.
- Evolve investment strategies toward lower-risk approaches as the plan population matures.
- Ensure that all stakeholders have access to the same good information.

- Require that an actuarial study be done to identify the costs and risks of any proposed benefit change. (Note from discussant: Can it be true that some plan sponsors make changes without such a study?)

In addition, the paper mentions several questions such as: "Who should draft model legislation?" and "Should different actuaries be hired to serve different stakeholders?"

The paper takes a practical approach rather than an idealistic one, and this perspective should be appreciated. It can be argued that it simply won't be possible to do anything more than gradually eliminate the worst practices. At the same time, the current models for funding and investing seem very far from a desirable state. One wonders whether codifying something that simply eliminates today's worst practices might result in a permanent state of practice that could be characterized as "barely acceptable." The CCA work on funding standards defines a positive step forward but does not define a solid framework for ensuring that promised benefits ultimately get paid without the potential for undesirable sacrifices in other areas of state and city services.

Most important, there is too little understanding of the financial nature of the pension obligation and how to manage assets against that obligation by investment experts, actuaries and other public pension experts. The value of a pension obligation is sensitive to interest rates. Because this fundamental financial concept is not utilized in assessing the financial status of public pensions, risk management and risk taking will be less than fully effective. Investment teams don't talk to actuaries enough, and actuaries don't know enough about investment strategies. Thus really good asset-liability modeling and management is not encouraged or even possible. The model legislation concept described in the paper does not address these issues, except for the important suggestion that investment strategies be adapted to the maturity of the plan. It may be that the author does not view a better understanding of the obligation as important, or it may be seen as too challenging and controversial. It could well be that addressing this area directly would throw any model legislation initiative off course.

It would be useful for Lowman to work with others to take the ideas in his paper to the next level. His paper has the character of a first attempt to get thoughts and observations down on paper for the sake of further discussion. Defining a framework of ultimate objectives such as secure benefits or intergenerational equity would be useful—these are the ultimate goals that better funding is meant to achieve. The best practices for risk analysis and management could be defined in more detail. Ideas about transparency of information and different roles for different actuaries could also be clarified.

Just as significant, the next steps should include thinking about how to actually make this happen. The paper advocates a practical approach that does not try to force too much change too quickly, but there is no sense in just writing about a practical approach—let's make it happen. Who will draft this kind of model legislation? How could the potential for adoption be increased? Are there states or cities willing to

participate in creating the model and advocating for it? What other influences can be brought to bear?

We need our profession to unite around ideas with open minds and a desire to make improvements. Too much time and energy is spent on "discussing" the right way to do things. Too much effort is put into defending the status quo. Both of these problems enable the status quo to continue.

One point that is made in the paper is that actuaries should not be blamed for the current state of public pension plan funding. This is true. The profession has limited influence at the individual plan level or at the broader policy level. Still, the profession and its methods must be viewed as a contributing factor to the existing situation, and certainly our profession's expertise is needed to design and implement improvements. Lowman's paper can be considered a worthwhile effort toward a better state of being for public pensions.

*Evan Inglis, FSA, CFA, works in the Institutional Solutions group at Nuveen Asset Management.*

# Author's Response to Comments by Evan Inglis

By Thomas Lowman

I would like to thank Evan Inglis and focus on the risk issues he raises. I do believe that (1) as public plans have matured, the investment risks have increased relative to the size of plan sponsors and (2) plans need to deal with risk better than they have to date. I also believe that the issues I dealt with in my paper are a higher priority for many plans in the first round, but if we do not do more to deal with risk, we will not have gone far enough (similarly, the issue of the impact of risk on funding was the first item in the "Items for future discussion" in the CCA white paper on funding policies). However, I also don't want risk reduction to become synonymous with freezing benefit accruals. ERISA single-employer plan funding evolved slowly post-ERISA and eventually dealt with risk, but participant coverage was largely lost. To be successful, we must convince sponsors and unions of the value of reducing risk, even if the benefits need to be smaller to be as sustainable as larger benefits that were created earlier in a plan's life.

Dealing with risk (largely investment risk in this context) may not be as formulaic as discussing amortization periods or funding methods. I see the following possibilities in dealing with risk as part of developing model legislation.

First, send signals via model legislation. Two potential signals that get stakeholders adjusting to risk and not just measuring risk are:

1. Require that any individual purchase of service credit that is intended to be on an actuarial basis be tied to bondlike rates (e.g., 417(e) or GASB 20-year bond rates).
2. Require that an employer leaving a cost-sharing plan settle liabilities at a bondlike rate (often employers are currently restricted from leaving cost-sharing plans).

Having plans use bondlike rates for some purposes such as these will help educate trustees (those who make investment decisions).

Beyond sending signals, model legislation could ask for a risk management plan. There are obviously many types of risk that could be included. However, it should include a plan that deals with investment risk, both current and what risk levels are expected to be in the future. I also want to be clear that I am not simply talking about disclosure. The Actuarial Standards Board (ASB) is dealing with disclosure of pension risks. Model legislation should be focused on actions that can be done through a risk management plan.

*Thomas Lowman, FSA, EA, FCA, MAAA, is vice president and chief actuary at Bolton Partners Inc. in Baltimore.*

# Presenting Market Value Liabilities for Public Employee Retirement Systems

By Robert C. North Jr.

## Synopsis

In a world that is calling for more transparency with respect to the status of public pension plans and with the ideas and concepts of financial economics as applied to pension plans (hereafter referred to as pension finance) being discussed more and more, this author believes that it is past time for actuaries to introduce the ideas of pension finance into the ongoing information flows of Public Employee Retirement Systems (PERS) in the United States.

Pension finance ideas and estimates of obligations, usually very rough, are being developed and published by academics, ratings agencies and others. These results are often developed for specific purposes, are not always well constructed or theoretically robust values, and many times are used to present sensational and distortive pictures of the financial state of PERS. If actuaries would disclose these numbers for the PERS for whom they provide other financial information, with such additional disclosure the actuary deems appropriate, then those seeking this information would have more accurate values and explanatory information from which to work. In addition, actuaries would now be seen as experts on this information and sought out for their expertise on it.

This article discusses some of the ideas of pension finance, how to present such information, and how it was presented to the New York City Retirement Systems (NYCRS) in a way that made it available to other interested parties, including the public.[1]

## Introduction

Beginning in 2003, as the Actuary and technical advisor for the NYCRS, I developed and presented for each of the five major NYCRS a market-value-related liability (aka Market-Consistent Present Value, Economic Value, Financial Value, Market Liability, and Market Value Liability, or MVL). For reasons discussed later in this article, these MVLs for the NYCRS were determined by discounting benefits accrued to date using U.S. Treasury spot yields and are equal in amount to so-called Solvency Liabilities.

[1] The views expressed in this article are those of the author and do not reflect any official policy or opinion of the New York City Retirement Systems or the City of New York.

While determining the accrued benefit components can be done in slightly different ways, I initially utilized and developed each MVL consistent with Accrued Benefit Obligation (ABO) methodology and referred to this MVL as a Market Value Accumulated Benefit Obligation (MVABO).

Specifically, the MVABO is calculated by projecting the accrued portion of benefits (i.e., the benefits earned to date without use of future salary increases or benefit service credits, allowing eligibility service to grow) and discounting at each payment date those accrued benefits using discount rates equal to U.S. Treasury spot yields.

Dividing the Market Value of Assets (MVA) for each NYCRS by its MVABO as of each measurement date provides a market-related funded ratio (referred to hereafter as a Market Value Funded Ratio, or MVFR). This article discusses the impetus for developing and presenting the MVABO and MVFR, sets forth how the MVABO is calculated, compares MVFR with more traditional funded ratios, and sets forth how the MVABO and MVFR provide valuable financial information on the key financial and risk characteristics of a PERS.

Note: While the annual change in the MVABO was not presented, providing this measure would also be useful and a discussion thereof can be found in an article by Jeremy Gold and Gordon Latter titled "The Case for Marking Public Plan Liabilities to Market."[2]

## Current Funding and Disclosure Requirements

Most PERS in the United States are governed by state and local laws, and their financing is not subject to the funding rules set forth in Internal Revenue Code (IRC) Sections 412 and 430. Consequently, actuaries for PERS enjoy broad freedom to design financing mechanisms, subject, of course, to whatever limitations are established by State and local legislatures, plan sponsors and/or boards of trustees.

Disclosure of funding status is generally provided in footnotes to financial statements that are prepared following Generally Accepted Accounting Principles (GAAP) and in accordance with rules set forth by the Governmental Accounting Standards Board (GASB).

With respect to defined benefit plans, until a few years ago, the primary GASB pronouncements on pensions were GASB Statement No. 25 (GASB 25), which covers financial reporting by the PERS themselves, and GASB Statement No. 27 (GASB 27),

[2] Gold, Jeremy and Gordon Latter. 2009. The Case for Marking Public Plan Liabilities to Market. In *The Future of Public Employee Retirement Systems*, Olivia S. Mitchell and Gary Anderson, Eds., New York: Oxford University Press.

which covers financial reporting by employers. With respect to certain disclosures of funded status, each of these was modified by the issuance of GASB Statement No. 50 (GASB 50).

Starting with fiscal years beginning after June 15, 2013, GASB Statement No. 67 (GASB 67) superseded GASB 25, and starting with fiscal years beginning after June 15, 2014, GASB Statement No. 68 (GASB 68) superseded GASB 27. GASB 67 was amended slightly by GASB Statement No. 82 (GASB 82), and GASB 68 was amended modestly by GASB Statement No. 78 (GASB 78) and GASB 82.

In addition, most major PERS publish a Comprehensive Annual Financial Report (CAFR) that is prepared in accordance with a format prescribed by the Government Finance Officers Association (GFOA). The CAFR format includes a section presenting the financial statements, generally prepared by the PERS staff and audited by an outside accounting firm.

The CAFR format also includes sections that present actuarial, statistical and investment information on the PERS. Of particular interest to this discussion, a CAFR presents information available as of its preparation date plus certain historical information. Thus, within any individual CAFR, and by comparing CAFRs from year to year, users can gain significant insight into trends.

Under the requirements of GASB 25, the funded status of a PERS was generally equal to its Actuarial Asset Value (AAV) as a percentage of the Actuarial Accrued Liability (AAL), where the AAL is usually computed under the Actuarial Cost Method (ACM) used to fund the PERS.[3] Under the requirements of GASB 67, the funded status of a PERS is generally equal to its MVA as a percentage of the AAL, where GASB 67 requires the use of the Entry Age AAL (EAAAL), calculated using an individual-participant version of the Entry Age Actuarial Cost Method (EAACM), to determine that AAL.

Unfortunately, in the situation of certain spread gain ACMs (e.g., Frozen Entry Age ACM or Frozen Initial Liability FIL ACM), reporting in accordance with the GASB 25 and GASB 27 rules historically resulted in funded ratios that provided little informational value. While GASB 50 attempted to fix the conceptual problem, GASB 50 actually applied only to the Aggregate ACM and not the other spread gain methods.

[3] GASB 50 expanded the requirements of GASB 25 to require, for PERS that are funded using the Aggregate ACM, the presentation of the AAV as a percentage of the Entry Age AAL (EAAAL) (i.e., the AAL calculated using the Entry Age ACM). Under GASB 25 and GASB 27, preparers of financial statements were not required to disclose (or were prohibited from disclosing) funded ratios where the Aggregate ACM was utilized. Under the requirements of GASB 50, effective beginning most fiscal years 2008 and later, PERS that utilized the Aggregate ACM were required to disclose funded ratios based on the EAAAL. Note, however, that GASB 50 did not apply the same requirement to other spread gain ACMs, thereby not fully fixing the concerns identified with the Aggregate ACM.

For example, prior to fiscal year 2012 (July 1, 2011 to June 30, 2012), the NYCRS used the FIL ACM,[4] and under this ACM, the AAL equaled the Unfunded Actuarial Accrued Liability (UAAL) plus the AAV.

To illustrate, the New York City Police Pension Fund (POLICE) reset its UAAL to zero as of June 30, 1999, based on the Entry Age ACM but with the UAAL not allowed to equal less than zero. While it was anticipated that some UAAL might be established in the future, no new UAALs were ever created under the FIL ACM. Consequently, the AAL under the FIL ACM each year from June 30, 1999 to June 30, 2009, equaled the AAV. With the AAL and the AAV reported as equal under GASB 25, the funded ratios shown in the financial statements equaled 100% every June 30—from June 30, 1999 until the ACM was changed to the EAACM as of June 30, 2010. The reported funded ratio of 100% did not change, no matter what changes occurred in benefits or in economic conditions.

Note: Because a UAAL under a spread gain ACM is generally amortized over a fixed period with scheduled payments, even where a UAAL were to exist, the AAL would equal the AAV plus the UAAL, and, again, little information would be derived from the resulting uniform, year-by-year progression of the reported funded ratios.

## Concepts Supporting MVABO

The MVABO was designed to follow the principles of pension finance, where pension benefits are recognized as having financial characteristics similar to traded securities (e.g., primarily bonds). Further, whatever obligations exist should be evaluated in reference to their characteristics, not the characteristics of any assets that might support them.

Following are some of the applicable principles of pension finance:

- Assets and liabilities should be marked to market.
- The discount rate used to determine Market Liabilities should be independent of the asset allocation or the expected rate of return of the funds supporting the liabilities.
- Market Liability is determined by reference to a portfolio of traded securities that matches the benefit stream in amount, timing and probability of payment.

[4] The FIL ACM is a spread gain ACM that may incorporate a frozen UAAL of any amount including a zero UAAL. FIL with a zero UAAL could be considered the same as the Aggregate ACM were no UAAL ever expected to be created. Both the Frozen Entry Age ACM and the Aggregate ACM were acceptable ACMs under GASB 25 and GASB 27 and were effectively the ACMs used by the NYCRS. The description of the ACM used by the NYCRS as the FIL ACM allowed for using a single ACM description to cover all of the NYCRS and anticipated the possibility of new UAALs. GASB 50 changed disclosure requirements for PERS using the Aggregate ACM but, probably inadvertently, not for PERS using other spread gain ACMs, such as the FIL ACM.

- Solvency Liability is determined by reference to a portfolio of default-free securities that matches the benefit stream in amount and timing.[5]
- When interest rates are lower, payments are more valuable, and vice versa.

## Development of MVABO and MVFR

With the requirements of GASB 25 and GASB 27 resulting in funded ratios that provided limited information to the users of the financial statements of the NYCRS, and desiring to create more transparency for the financial status of the NYCRS, beginning fiscal year 2003, the MVFR was published in the actuarial section of the CAFR for each NYCRS and the MVA and MVABO on which the MVFR was based.

As noted earlier, in these calculations, MVABO equals a projection of the benefits payable in accordance with the ABO methodology, calculated on a going-concern basis using the same actuarial assumptions, except the discount rate, as are used in the regular actuarial valuation.

Note: Given the minor difference in results for the NYCRS, changes in actuarial software and the desire for reduced programming challenges, for the June 30, 2012 and later calculations, accrued benefit cash flows for the NYCRS have been determined using Unit Credit ACM.

Going forward, it makes sense to use the Unit Credit ACM for calculating accrued benefits to determine MVABO, since determining accrued benefits under the Unit Credit ACM is completely consistent with what is needed and is readily available under most actuarial computer programs currently in use. The only issue now for me is whether MVABO should now be called MVAB (i.e., Market Value of Accrued Benefit).

Note: The choice of either ABO or Unit Credit methodology to determine the portion of benefits earned to date is consistent with pension finance theory.

The choice of benefits accrued to date, without salary or future service projections, also follows the logic that, since the MVA represents the value of assets accumulated to date, the comparable value for liabilities should be based on the value of benefits accumulated to date.

Once developed, accrued benefit cash flows are then discounted using U.S. Treasury spot yields.

[5] In the case of the NYCRS and many other public pension plans, Solvency Liability and Market Liability are effectively equal, given an almost 100% likelihood of payment of the benefits.

As noted earlier, the use of U.S. Treasury spot yields derives from pension finance theory, which calls for using a Reference Portfolio of securities whose characteristics match the expected benefit payments in amount, timing and probability of payment. For the NYCRS, where the payment of benefits is virtually certain, the appropriate Reference Portfolio consists of a portfolio of U.S. Treasury securities.[6]

## Source of U.S. Treasury Spot Yields

I chose to discount the ABO benefits using a Reference Portfolio of U.S. Treasury securities with spot yields by a noncommercial source.

Until 2012, the source of U.S. Treasury spot yields was the U.S. Department of the Treasury's Asset and Liability Price Tables, published quarterly by the Office of Thrift Supervision (OTS).

Since 2012, the source of U.S. Treasury spot yields may be found under the Treasury Yield Curve subsection of the Resource Center, Economic Policy section of the U.S. Department of the Treasury website. The spot yields can be readily derived from the spot rates that have been developed by James A. Girola and his colleagues, which are the result of sophisticated analyses, are updated as of the end of each month, and represent a superior product for use as input to the MVABO calculations.[7]

## Illustration and Comparison of Funded Ratios

A fuller presentation of the dollar amounts and funded ratios, together with commentary on them, can be found in the POLICE June 30, 2014 CAFR,[8] beginning on page

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[6] A further discussion of Reference Portfolios can be found in the "Pension Actuary's Guide to Financial Economics," published by the Society of Actuaries and the American Academy of Actuaries, at *http://www.soa.org/professional-interests/pension/research-thinking-ahead/actuary-journal-final.pdf*. Additional information regarding pension finance can also be found on the Society of Actuaries website. A Reference Portfolio consisting of U.S. Treasury securities is appropriate for determining a market-related liability for the NYCRS, since it is the belief of this author that the benefits provided by the NYCRS are virtually certain to be paid. Specifically, the benefits of the NYCRS are secured by both assets in Trust and by the taxpayers through Constitutional protection (i.e., the benefits of membership in a New York State PERS may not be diminished or impaired). Thus, for the NYCRS, the MVL developed is appropriately close to or the same as a Solvency Liability, which has no adjustment in discount rates to account for possible payment default.

[7] It would require a separate article to discuss all of the issues involved with obtaining appropriate U.S. Treasury spot yield information. There are multiple considerations involved in deciding whether to use spot yields derived by bootstrapping from, for example, yields based on Constant Maturity Treasuries (CMT), as published in Federal Reserve Statistical Release H.15; to use market information on U.S. Treasury STRIPS securities; or to use other techniques and yields derived from swap rates, and so on. Wanting the choice of U.S. Treasury spot yields to be transparent and from a noncommercial source, I found limited options and chose the spot yields published by the OTS. However, these OTS spot yields were published at the end of each calendar quarter only until Dec. 31, 2011. Subsequently, and fortunately, the U.S. Treasury developed its own U.S. Treasury spot yield tables and has been publishing them (average monthly and month-end values) at *https://www.treasury.gov/resource-center/economic-policy/corp-bond-yield/Pages/TNC-YC.aspx*.

[8] See *http://comptroller.nyc.gov/wp-content/uploads/2015/01/POLICE-CAFR-2014.pdf*.

142 under the section "Other Measures of Funded Status." The following table presents a subset comparison of various funded ratios for POLICE for each June 30 from 1999 to 2013. All actuarial liabilities (exclusive of MVABO) before June 30, 2010, were determined using a discount rate of 8.0% per annum, with a discount rate of 7.0% per annum used on and after June 30, 2010.

***New York City Police Pension Funds***
***Comparison of Funded Ratios***

| JUNE 30 | AAV/AAL[a] | AAV/ PBO[b] | AAV/ EAAAL[c] | MVA/ EAAAL[c] | MVA/ ABO[d] | MVA/ MVABO[e] | MVABO DISCOUNT RATE[f] | MVABO AVERAGE DURATION[g] |
|---|---|---|---|---|---|---|---|---|
| 1999 | 100% | 116% | 124% | 124% | 134% | 108% | 6.0% | 11.8 |
| 2000 | 100 | 103 | 109 | 111 | 117 | 94 | 6.0 | 12.4 |
| 2001 | 100 | 100 | 105 | 91 | 98 | 76 | 5.7 | 11.9 |
| 2002 | 100 | 96 | 97 | 74 | 82 | 65 | 5.8 | 11.1 |
| 2003 | 100 | 92 | 92 | 70 | 76 | 52 | 4.7 | 12.4 |
| 2004[h] | 100 | 87 | 85 | 74 | 81 | 63 | 5.5 | 11.5 |
| 2005[h] | 100 | 80 | 76 | 69 | 82 | 54 | 4.2 | 13.6 |
| 2006[h] | 100 | 74 | 69 | 69 | 80 | 61 | 5.4 | 12.4 |
| 2007[h] | 100 | 74 | 69 | 76 | 90 | 66 | 5.2 | 12.5 |
| 2008[h] | 100 | 77 | 71 | 70 | 81 | 55 | 4.5 | 12.8 |
| 2009[h] | 100 | 78 | 71 | 55 | 64 | 42 | 4.2 | 12.9 |
| 2010[i] | 60 | 58 | 60 | 52 | 55 | 36 | 3.7 | 13.3 |
| 2011[i] | 61 | 60 | 61 | 61 | 63 | 44 | 4.1 | 13.0 |
| 2012[i] | 64 | 63 | 64 | 61 | 62 | 34 | 2.5 | 15.2 |
| 2013[j] | 67 | 66 | 67 | 67 | 68 | 43 | 3.3 | 13.9 |

a. AAL based on funding assumptions and method in accordance with GASB 25 and GASB 27.
b. Projected Benefit Obligation (PBO) based on funding assumptions and method required under historical GASB Statement No. 5 (GASB 5).
c. EAAAL (most common ACM for PERS and required under GASB 67) based on funding assumptions.
d. ABO based on funding assumptions.
e. MVABO based on funding assumptions and ABO, except for discount using U.S. Treasury yields.
f. Weighted average discount rate.
g. Average duration measured in years.
h. Changes made in actuarial assumptions and in the Actuarial Asset Valuation Method (AAVM) as of June 30, 2004.
i. Changes made in actuarial assumptions, actuarial methods and AAVM as of June 30, 2010.
j. Preliminary figures. Changes made in actuarial assumptions, actuarial methods and AAVM as of June 30, 2010.

## Observations on Funded Ratios

As the table illustrates, funded ratios for the POLICE based on AAVs and traditionally calculated actuarial present values (e.g., AAL, PBO, EAAAL) provide either little or misleading information (AAV/AAL) or provide smoothed and lagged information (e.g., AAV/PBO or AAV/EAAAL).

Although funded ratios that compare MVA with ABO, PBO or EAAAL (based on a constant discount rate) reflect the impact of investment market volatility, prior to GASB

67 and GASB 68 these funded ratios were not routinely published, were not required by GASB 25 or GASB 27, and limited the presentation of market volatility to only the asset side of the equation.

However, MVFR fully reflects the annual impacts of benefit improvements, investment returns and changes in the level of interest rates.

Not surprisingly, funded ratios based on MVA tend to be volatile, especially where the asset and liability characteristics are mismatched.

In the case of funded ratios based on discount rates that remain constant over time, the primary source of that volatility is the fluctuation in the MVA.

In the case of MVFR based on market-related discount rates, the greatest source of volatility is usually the fluctuation in the MVA, but that volatility can be exacerbated or mitigated by changes in discount rates. During recent periods, discount rates based on market conditions have sometimes decreased during times when the economic conditions were unfavorable for equity investments. Both of these conditions correlate with lesser MVFR.

That said, it may be surprising to some that MVFR can be less volatile than funded ratios based on MVA compared with ABO, PBO or EAAAL (determined using a constant discount rate). Indeed, while the annual changes in the dollar amounts of MVABO are usually more volatile than those of traditionally calculated funded ratios, MVFR may be less volatile for a PERS where MVABO and MVA are relatively close in balance and there is a reasonable portion of bonds in the investment portfolio.

In the POLICE table shown, during the early years of the 10-year period from 1999 to 2009, MVFRs based on market discount rates were less volatile than the ratios of MVA to ABO and the ratios of MVA to EAAAL, where ABO and EAAAL were determined using a constant 8.0% percent per annum discount rate.

Overall, it appears that the volatility of all the funded ratios is primarily a function of the investment return volatility. However, when reasonably well funded on a MVABO basis, the use of market-related discount rates appears to dampen the volatility of MVFR, since the value of a portion of the assets (i.e., that invested in bonds) tends to move more closely with the market-related liabilities than the liabilities reported on a constant discount rate. This leads to less overall volatility in MVFR.

Where MVFR is not close to 1.0, the impact of interest rate changes may exacerbate the volatility of MVFR relative to funded ratios based on constant discount rates.

Where MVFR is close to 1.0 and the characteristics of the assets in an investment portfolio were to match the benefit payments in amount and duration, changes in market conditions would have only a modest impact on MVFR year to year.

## Additional Comments on MVFR

I like to describe MVFR as an asset/liability-sensitive measure of the financial status of a pension plan. Given how it incorporates the economic impact of both assets and liabilities, it can be useful in thinking about asset-liability mismatching and considering liability-aware investing. However, of course, MVFR is not the only useful number and is best reviewed over a period of years.

In addition to providing a market-related evaluation of funding status at a given point in time, MVFR is also a measure that changes directly in response to key impact factors:

For example, MVFR changes when (all other things being equal):

- Benefits go up: MVFR decreases.
- Contributions are not paid: MVFR decreases.
- Investment returns do not meet MVL growth: MVFR decreases.
- Interest rates decrease: MVFR decreases.

In theory, the first two of these issues could be controlled and the impacts of the other two issues could be hedged.

In one measure, MVFR provides more insight than any other funded ratio measure. MVFR highlights and illustrates the risks implicit in benefit policy, funding policy and investment policy, directly and immediately. Such information can help policymakers and others in their overall understanding of the financial dynamics of defined benefit pension plans.

An observation that becomes immediately apparent from the POLICE table is that the greatest annual changes in MVFR occur during periods of financial market volatility, where the mismatch of assets and liabilities (e.g., equities invested to support bond-like pension benefits) is the greatest. This is further exacerbated when the MVFR is not close to 1.0. For example, during fiscal years 2002 and 2009, equity markets and interest rates declined simultaneously and MVFR declined significantly.

That said, having information on MVFR and the related MVABO and MVA at a given point in time is valuable but only as a stepping stone to a broader discussion of the economic value of pension plan benefits and the risks inherent in financing defined benefit plans with assets whose characteristics are mismatched with the characteristics of the liabilities.

MVABO can also be particularly important for discussing the economic value of pension benefits as a component of total compensation. Discounting certain-to-be paid benefit payments and/or benefit improvements using actuarial expected rates of investment return almost universally undervalues this extremely valuable component of total compensation. Such undervaluation has often resulted in plan sponsors committing

current and future generations of taxpayers to providing levels of defined benefits that may become unsustainable—or sustainable at the expense of other governmental services or by breaking promises to their employees. Neither of these situations is desirable when recognition of the economic value of these benefits can guide sound public policy.

Although traditional actuarial budgeting techniques may forever be used to determine annual employer contributions to most PERS, I believe that publishing the MVABO and MVFR provides interested parties with useful information and can increase appreciation for the economic value and real financial risks of defined benefit pension plans.

MVABO and MVFR also provide actuaries with a useful vehicle to introduce the ideas of pension finance and Market Liabilities and the ability to use that information for more extensive discussions with interested stakeholders.

## Conclusion

In summary, the financial community wants more transparency regarding the economic status and risks of PERS. In addition, extensive press coverage has made trustees and plan sponsors more concerned and sensitized to the risks of their defined benefit pension plans.

Ultimately, I believe that the greater understanding of the economic status and risks inherent in defined benefit pension plans can help improve their management and chances to survive as useful elements of total compensation for their participants and for society. By supplying information such as MVABO and MVFR, actuaries can help increase the knowledge of interested parties and be central to more robust discussions on the financial obligations and risks inherent in these plans.[9]

*The author wishes to thank Jeremy Gold for all of his knowledge and education on pension finance over the years.*

*Robert C. North Jr., FSA, FCA, FSPA, EA, MAAA, is a consulting actuary in Princeton, New Jersey..*

[9] I am pleased to note that, during 2016, the Pension Task Force appointed by the Actuarial Standards Board suggested that actuaries be required to report a solvency or settlement value in funding valuations. As suggested, an acceptable proxy for such value would be the accrued benefits calculated under the traditional Unit Credit (TUC) actuarial cost method, discounted at U.S. Treasury rates. This suggested approach is identical to the MVABO reported by the NYCRS in the last few years.

**Comments on**

# "Presenting Market Value Liabilities for Public Employee Retirement Systems"

By David T. Kausch

I would like to thank Robert C. North Jr. for providing a well-reasoned article supporting communicating market value liabilities (MVL) for Public Employee Retirement Systems (PERS). Most important, North's firsthand experience in communicating such results for the New York City Retirement Systems (NYCRS) during his tenure provides the actuarial community with a valuable, real-world case study. These comments are my own opinion and do not represent those of my employer.

## Actuarial Communication Issues

North acknowledges early on that PERS are the subject of study by academics, ratings agencies and other groups, which often develop their own estimates of obligations that many times are "used to present sensational and distortive pictures of the financial state of PERS." Some private policy or research institutes do, in fact, estimate MVL by adjusting reported PERS' generally accepted accounting principles (GAAP) accounting results. They then report these estimates as the "true cost" and subsequently advocate for the elimination of defined benefit programs. In this environment, actuaries must take great care that actuarial services are not used to mislead.

North's role as the actuary for the NYCRS was perhaps different from that of most consulting actuaries in terms of deciding what or what not to disclose to the public, since he was directly involved in plan reporting decisions for the Comprehensive Annual Financial Report (CAFR). Consulting actuaries generally do not directly prepare the CAFR nor do they generally provide disclosures directly to the public; rather, they report to an intermediary such as the retirement system, and the system decides what to disclose to the public. For consulting actuaries, communicating MVL directly to the intended user such as a retirement system so that trustees may make informed decisions is different from disclosing such information to other users, where it may be subject to misuse. The decision of whether or how intended users should communicate their actuarial information is generally left up to the intended users and/or regulators.

It would be interesting to know if, in North's experience, external organizations relied on his expertise and used his figures directly rather than making their own estimates. Or, indeed, if MVL disclosures ever resulted in specific recommendations to reduce or eliminate benefits, reduce risk or change investments and, if so, what action was taken.

North's example of the New York City Police Pension Funds (POLICE) is a good illustration of when additional actuarial calculations such as MVL may enhance the communication of a plan's status. The example of frozen initial liability actuarial cost method (FIL ACM) showing a funded ratio of 100 percent for years despite fluctuations in assets and liabilities is a good example of the need for more robust calculations and disclosures. It is worth noting that this requirement for using FIL ACM is extremely rare in the public sector, so this case may be more of an anomaly rather than indicative of the norm for PERS.

In the POLICE case study, North disclosed several different calculations, not simply the MVL. This supports the point that describing a single liability at a single date as the "true cost" is an oversimplification. The reality is that PERS are complicated and dynamic, and one number will rarely tell the whole story. North makes valid points about comparing the MVL not just to the GAAP reported figures and not just at a single point in time but rather comparing it to other measures and monitoring results over time.

North focuses on the market value funded ratio (MVFR) rather than the liability calculation on its own. In support of MVFR, North states that MVFR highlights and illustrates the risks implicit in benefit policy, funding policy and investment policy directly and immediately. It is important to note that, other than the FIL ACM measure, each of the various funded ratios shown in the case study illustrates the risks implicit in benefit policy and funding policy immediately as well in the same manner as described by North. As for investment policy, funded ratios that depend on the actuarial or smoothed value of assets will generally reflect investment trends over a longer period. The decision usefulness of a market value of assets (MVA) measure versus a smoothed value of assets measure may depend on the specific PERS investment policy. In general, PERS measure investment performance over periods longer than a year. Similarly, measures based on market interest rates currently may not tie to benefit policy, funding policy or investment policy for a PERS. Measures based on the MVA and measures based on market interest rates may be more useful to PERS that use some form of liability-driven investing, which is currently rarely the case.

## Volatility of the MVFR

North states that the MVFR is less volatile from 1999 to 2009 than the other funded ratios that depend on the MVA. It's not clear how he defines volatility, but the standard deviation of the ratios for MVFR appears to be highest over that period when compared to the other ratios. That said, there certainly may be short periods where MVFR is indeed less volatile, but in the absence of full asset/liability matching, it is reasonable to expect that MVFR will in general be the most volatile of the measures shown.

There is a lot of discussion in the paper supporting matching assets and liabilities; however, it does not appear that the NYCRS engaged in asset/liability matching during the period shown. The implication is that if the POLICE system had done so in 1999, when the MVFR was greater than 100 percent, then it would stay at or near 100 percent, provided that new accruals were funded accordingly. I suspect that, in practice, maintaining a 100 percent MVFR would be difficult. Often the subject goes outside of the actuary's expertise into that of investments. General statements about the appropriateness of long bonds presume that the market has enough long bonds for all public plans to perfectly hedge. Moreover, changing a diversified portfolio to long bonds in a period of low interest rates when rates appear to be rising or entering into an interest rate swap for hedging purposes may involve a significant culture change for public plan investing—a change that most pension actuaries are not qualified to opine on or cannot opine on as a nonfiduciary.

The terms *volatility* and *risk* often have negative connotations. But volatility measures changes that go up as well as down. An increasing MVFR (which is generally viewed as a positive outcome) can be very volatile (which may be positive or negative). In the POLICE example, the 2012 MVFR was 34 percent, and all other measures were in the 60–70 percent range. The next year, the MVFR increased rather dramatically, to 43 percent (a 26 percent relative change—very volatile), and all other measures remained in the 60–70 percent range. From the perspective of financial economics, the ratios that stayed in the 60–70 percent range mask the risk. From a trustee or decision maker's perspective, if no action was taken between 2012 and 2013, one might expect less of a change in funded ratios—consistent with all the funded ratios other than the MVFR. In other words, the favorable experience of the MVFR in this case may be viewed as being driven by forces outside of the trustees' control and thus not considered actionable.

## Technical Considerations

North raises a few technical points about MVFR, including the difference between unit credit and accumulated benefit obligation (ABO) and the use of Treasury rates as discount rates. There are certainly more details that actuaries will need to decide upon, such as the treatment of inflation for certain cost-of-living assumptions (features that can be very complicated in the public sector) and for the market value of the normal cost, the treatment of ancillary benefits, and reflecting the credit quality of the sponsor or security of the benefits. On that last point, North generally equates MVL with solvency liability, which uses risk-free discount rates. His support of this decision is the assumption that NYCRS benefits are "virtually certain to be paid." This is a strong assumption, even in a state with strong constitutional benefit protections for PERS. Recent municipal bankruptcies in Detroit and Stockton and San Bernardino, California, resulted either in cuts in benefits or in legal opinions that benefits could be cut in states where the constitutional

protections of PERS benefits had previously been believed to be "virtually certain to be paid." It is interesting to recall that the City of New York nearly went bankrupt in the 1970s, which may have made for a very interesting case study.

In conclusion, North's paper provides the actuarial community with a real case study of disclosing MVL in a public employee retirement system. This paper may not answer every question we have on the subject, but it should prove to be a valuable resource as the actuarial community continues to grapple with this issue.

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# Author's Response to Comments by David T. Kausch

By Robert C. North Jr.

I want to thank Dr. David T. Kausch for taking the time to review and comment on my paper on "Presenting Market Value Liabilities for Public Employee Retirement Systems."

Before focusing on specific comments, it is my interpretation that several of the comments made by Dr. Kausch appear to be ones that address issues of politics and/or implementation. While I also inserted some of these into the paper, my primary intent was to provide a real case study of the what, how and why of presenting Market Values of Liabilities (MVLs) for Public Employee Retirement Systems (PERS). I was trying to make a case for the usefulness of making these disclosures and not trying to spend too much time on reacting to the dislike that most public plan actuaries, Trustees and Plan Sponsors have for this information. I have long felt that presenting MVLs and related disclosures is valuable, can lead to a better understanding of the economics of pension plans and should not be hidden away or ignored just because the results might be unpopular.

With respect to specifics, Dr. Kausch presents his comments in three sections and my responses are set forth hereafter in a similar manner.

First, following are responses to some comments under the Actuarial Communication Issues section of his discussion:

1. Dr. Kausch notes that MVL information is often used by those interested in harming defined benefit pension plans and that "actuaries must take great care that actuarial services are not used to mislead." I agree with this quoted concern but I also believe that actuaries who present MVL and explanations about it, in a manner similar to that shown in the Comprehensive Annual Financial Reports (CAFRs) of the New York City Retirement Systems (NYCRS), have met their professional standards. Possibly more importantly, by presenting MVL information themselves, actuaries increase their own opportunities to demonstrate their economic knowledge from which they can then better defend the benefits of defined benefit plans. In addition, I believe these actuaries can move the actuarial profession closer to being treated as a credible discussant in the ongoing, larger academic/economic/political debate around the future of defined benefit plans for public employees. Presenting MVL information may exceed the limited requirements for an actuary to serve an individual client but if actuaries do provide and discuss MVL they may then be given more credibility and be treated as having more expertise on the economics of PERS. This expansion of what is considered the range of professional expertise of actuaries can be nothing but a benefit for the actuarial profession, its clients, other stakeholders and the public at large.

2. Dr. Kausch also observes the value of multiple disclosures and their uses. He also raises the question of what is "true cost." First, I would observe that the term "true cost" needs to be appropriately defined. That said, it should be acknowledged that much actuarial terminology is at odds with that typically used by most financial experts. It should also be noted that whatever "true cost" might be defined to be by most financial experts, it is unlikely to be an actuarial definition and more likely something founded on the ideas of economics. I encourage all pension actuaries to consider the wider financial world and its terminology and to understand that the terminology used by actuaries is unique and, except where codified in statute, unseen anywhere else.
3. Dr. Kausch also asks whether there are any examples of the information presented in the NYCRS CAFRs being used elsewhere. I would point to the paper by Dr. Jeremy Gold and Mr. Gordon Latter titled "The Case for Marking Public Plan Liabilities to Market". Unlike my paper that is more of a case study, their paper is a thorough and academically valuable discussion of the reasons for utilizing MVL for PERS. As part of their analyses, Dr. Gold and Mr. Latter did utilize some of the NYCRS information to evaluate their own estimating techniques and to illustrate how to apply that information in various ways. Beyond that, I am not aware of academics or others utilizing directly any Market Value Funded Ratio (MVFR) or related information reported by the NYCRS. Alas, possibly because other actuaries do not report MVL information, academics choose to develop their own estimates, estimates that can never be as accurate or as well-explained as those that actuaries could provide.
4. Dr. Kausch further notes that my paper focuses mostly on the MVFR rather than on the underlying Market Value of Assets (MVA) and MVL. I have to confess that this was done intentionally in order to limit the tables and space requirements for the paper. This was probably a bad decision as seeing the MVA, Actuarial Asset Value (AAV), Governmental Accounting Standards Board (GASB) Actuarial Accrued Liability (AAL), Entry Age AAL (EAAL), Projected Benefit Obligation (PBO), Accrued Benefit Obligation (ABO) and MVABO values together, along with information on the economic and other assumptions, provides all kinds of useful information as well. I encourage readers to go to the June 30, 2014 New York City Police Pension Fund (POLICE) (or any other NYCRS) CAFR in order to see the whole of what was presented and how it was discussed.

Second, following are responses to some comments under the Volatility of the MVFR section of his discussion:

5. Dr. Kausch questions whether the volatility of the MVFR (i.e., the MVA/MVABO ratio) might be less than other reported funded ratios. It is my general contention that the MVFR should tend to be less volatile than the MVA/ABO ratios (and, likely, other MVA funded ratios based on AAL developed using a fixed discount rate) since a portion of the assets (i.e., longer-duration bonds) have characteristics similar to those of the benefits being paid. While I believe my measurement of this for POLICE from 1999 to 2009 is still true, I confess it is not compelling. Upon

further reflection, the bonds held by POLICE during that period, while having greater average duration than that typical of most PERS, still had an average duration much less than the duration of the benefit payments. They were also only a modest portion of the asset allocation. Hence, the offsetting impact of having these bonds versus the benefit payments was not dramatic. As noted by Dr. Kausch, a full Liability-Driven Investment (LDI) policy would produce significantly dampened volatility of the MVFR. While I am unaware of any PERS currently using a full LDI strategy, to the extent a PERS was to lengthen the duration of its bond portfolio and to increase its exposure to such bonds, then the volatility of the MVFR should be clearly less than the volatility of the MVA/ABO ratio. I thank Dr. Kausch for allowing for this clarification of my intended comments.

6. Note: It was never my intention to suggest that the MVFR would be less volatile than AAV/ABO or any other ratios based on AAV since the volatility of assets tends to be greater than the volatility of the liabilities and most asset smoothing techniques greatly dampen the impact of asset changes and/or the definition of the funded ratio itself limits volatility (e.g., funded ratio under the Frozen Initial Liability (FIL) Actuarial Cost Method (ACM)).
7. Dr. Kausch also notes that while risk is often focused on the downside, MVFR can be volatile to the upside and he questions whether this adds helpful information versus smoothed actuarial values for PERS with long-term investment policies. There is no question that MVFR is volatile to both the upside and the downside when a PERS chooses to mismatch the characteristics of its assets and liabilities. It is this volatility of the MVFR that highlights the mismatch and should encourage Trustees and others to focus more time and thought on the overall economics of the investment policies employed and the implications that reducing (or maintaining) such volatility could have on benefit and funding policies.
8. Dr. Kausch also raises questions about actuarial expertise in the area of investments with issues such as whether there would be enough long-duration bonds to implement an LDI strategy and whether actuaries may be treading into fiduciary and other areas where they should not go. While many actuaries may not be and/or may not wish to be considered experts on all financial aspects of PERS, I believe most pension actuaries are able to and should engage widely in discussions of the individual and combined economic implications of benefit, funding and investment policies on a PERS.

Finally, following are responses to some comments under the Technical Considerations section of his discussion:

9. Dr. Kausch questions my equating of MVL with Solvency Liability for the NYCRS. I am willing to stand by this contention as long as the City of New York continues to appear to be an economically viable governmental unit, the City remains committed to the NYCRS and New York State Constitution Article 5, Section 7 remains in effect. Given a choice between reporting an MVL and a Solvency Liability, I confess that I would prefer for every PERS to report a Solvency Liability for no other reason than the Solvency Liability is the commitment

and using Solvency Liability instead of MVL does remove the debate over the issue of Plan Sponsor support and PERS viability. I consider it a great shame that places such as Detroit have had to declare bankruptcy and, in the process, have the State Constitutional protections overridden, benefits cut and, effectively, commitments reneged upon. I believe our profession is doing a disservice to our clients, usually the Trustees of PERS, and to other stakeholders by not presenting Solvency Liabilities and discussing their implications, especially the asset/liability mismatch risks. This is particularly so in any situations where the long-term viability of the Plan Sponsor could be suspect.

I want again to thank Dr. Kausch for reviewing and commenting of my paper. I appreciate his observations and the opportunity to respond and expand upon the ideas I have set forth.

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