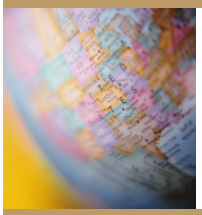

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HOW DID STATE/LOCAL PLANS BECOME UNDERFUNDED?

*By Alicia H. Munnell, Jean-Pierre Aubry, and Mark Cafarelli**

Introduction

This *brief* presents a new tool that describes the evolution of the unfunded liability for each of the 150 plans in the *Public Plans Database*. The period of analysis is from 2001, when most plans were fully funded, to 2013, when virtually every plan reported significant underfunding. The goal is to identify the impact on underfunding of a few well-defined factors, such as poor investment returns, inadequate contributions, and benefit changes.

The discussion proceeds as follows. The first section describes the methodology and presents the results for one of the better-funded plans in our sample. The second section examines the range of experiences across plans, which are classified as good, average, or bad based on their funding performance. While all plans were hurt by two financial crises, bad plans also significantly undermined their financial position by failing to make adequate contributions and having to correct for overly optimistic actuarial assumptions. The final section concludes that this type of analysis presents a clean story of what happened in each plan. It reports the impact of the financial crises, but also highlights the inadequacy of plan sponsor contributions. This new tool provides a valuable way to cut through the political rhetoric and identify why a plan is in trouble.

Methodology

For most plans, the actuarial valuation includes the Unfunded Actuarial Accrued Liability (UAAL), the change in the UAAL, and some information on the

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factors that led to the change. These factors include: 1) investment returns; 2) contributions; 3) deviations from actuarial assumptions (e.g. workers living longer than expected); 4) benefit changes; and 5) assumption changes (e.g. long-run investment returns).

Let's start with data from the Georgia Teachers Retirement System (TRS) report for fiscal year 2013, during which the UAAL rose by $1,539.7 million (see Table 1).[1] For each year, the UAAL grows by the interest on the existing unfunded liability and is reduced by contributions paid toward the unfunded liability. If contributions do not cover the interest cost – and the cost of benefits acrrued in 2013 – the unfunded liability will grow (see Box). The unfunded liability will also grow or decline as a result of a host of other factors listed in Table 1, which comes straight from the Georgia TRS actuarial valuation report.

The challenge is to take these individual changes for each year and for each plan, categorize them in a consistent fashion across plans, and combine the data for 2001-2013 to highlight the factors that have played a role in the development of the UAAL over the past 12 years.[2] The year 2001 was selected as the starting point because it is the first year for which complete data were available for our sample of plans. The analysis is based on each plan's actuarial assumptions and methods – including a discount rate that reflects the plan's long-run expected return and the smoothing of investment gains and losses.[3] Moving systematically from one year to the next over this period presents a clear picture of how unfunded liabilities grew for each plan.

The results for Georgia's TRS, one of the better funded plans in our sample, are shown in Table 2 on the next page. The table contains a lot of numbers, so it may be helpful to explain what is going on. Starting in 2001, Georgia TRS was more than fully funded; it had a surplus of $1,431.4 million. In 2002, poor investment returns – measured on an actuarially smoothed basis – cut the surplus in half. The smoothing of the 2002 market losses limited the growth of actuarial assets in the years that followed. In addition, Georgia TRS (like many plans that were overfunded during the early to mid-2000s) used its funding surplus to lower the contributions made from 2002-2007 to a level below the normal

Table 1. 2012-2013 Change in the UAAL for Georgia TRS, from the Plan's Actuarial Valuation, Millions of Dollars

Item	Amount of increase/(decrease)
Interest (8.09%) added to previous unfunded accrued liability	$977.8
Accrued liability contribution	(604.7)
Experience:	
Valuation asset growth	1,241.1
Pensioners' mortality	52.7
Turnover and retirements	378.2
New entrants	96.2
Salary increases	(715.2)
Method changes	(926.7)
Interest smoothing	915.9
Miscellaneous	124.4
Total	1,539.7

Source: Georgia TRS Actuarial Valuation (2013).

How Should Plans Fund? The ARC vs. Normal Cost Plus Interest on the UAAL

The commonly used metric for adequate funding is the Annual Required Contribution (ARC) as defined by the Governmental Accounting Standards Board (GASB). This measure consists of two components: a payment to cover the normal cost – the cost of benefits accrued in the current year – and a payment to amortize the UAAL. This *brief* uses a different measure for adequate contributions: the normal cost plus the interest on the unfunded liability – the minimum amount required to keep the UAAL from growing each year.

Interestingly, some actuarial methods produce an ARC that is less than what is required to keep the UAAL in check. Traditionally, GASB has allowed the UAAL to be amortized over 30 years for reporting purposes. A 30-year horizon, when coupled with a percent-of-pay method that backloads payments, results in initial payments that are too low to keep the UAAL from growing for many years. Under a closed 30-year period, the UAAL would grow for the first half of the amortization period before beginning to decline. Under a rolling (open) period, where each year the amortization period is reset to 30 years, the plan would be continually paying only the small initial payments and *never* see the UAAL decline.[4]

Table 2. Change in the UAAL for Georgia TRS, 2001-2013, Millions of Dollars

Year	Investment return lower/ (higher) than assumed	Contribution lower/(higher) than normal cost + interest on UAAL	Actuarial experience worse/(better) than assumed	Benefit changes	Changes to assumptions & methods	Other	Total change in UAAL	UAAL
2001	($296.4)	($229.1)	($791.3)	–	$657.9	$27.0	($631.9)	($1,431.4)
2002	667.7	(62.7)	30.6	–	–	–	635.6	(795.8)
2003	788.5	19.7	768.5	–	(1,247.9)	–	328.8	(467.0)
2004	507.5	44.6	(473.0)	–	–	–	79.1	(387.9)
2005	516.4	20.3	(77.6)	–	903.1	–	1,362.2	974.3
2006	675.3	125.0	312.7	48.5	(339.2)	–	822.3	1,796.6
2007	(132.3)	183.5	746.0	–	–	303.5	1,100.7	2,897.4
2008	548.9	83.1	771.4	–	–	478.7	1,882.1	4,779.5
2009	2,433.5	233.5	556.4	–	(2,062.3)	70.9	1,232.0	6,011.5
2010	1,674.9	187.1	(557.5)	–	1,472.4	274.2	3,051.1	9,062.6
2011	2,018.7	336.9	(181.8)	(685.5)	–	–	1,488.3	10,550.9
2012	1,855.1	402.7	(722.4)	–	–	–	1,535.4	12,086.3
2013	1,241.1	1,289.0	(188.1)	–	(926.7)	124.4	1,539.7	13,626.0
Total	12,498.9	2,633.6	193.9	(637.0)	(1,542.7)	1,278.7	14,425.6	–

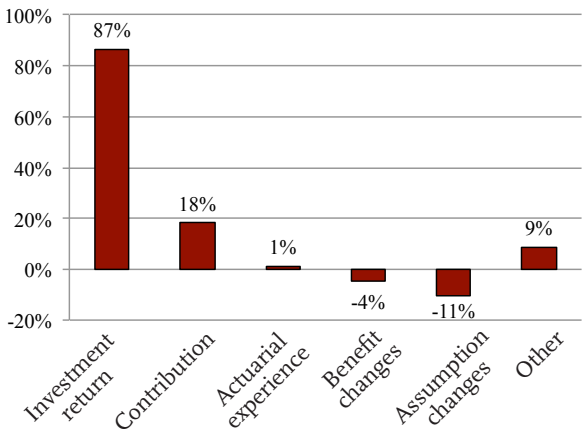
Source: Authors' calculations from Georgia TRS Actuarial Valuations (2001-2013).

cost (known as negative amortization). Even though it was making its full Annual Required Contribution (ARC) as defined by the Governmental Accounting Standards Board (GASB), the unfunded liability grew as the benefits being accrued – the normal cost – exceeded the contributions being made.

The combination of poor investment returns and inadequate contributions would have had a more powerful effect had not the plan increased its discount rate from 7.25 percent to 7.5 percent in 2003, lowering the accrued liability. And in 2007, after most of the 2002 losses had been realized, Georgia TRS posted its first actuarial investment gain since 2001. But then, in 2008 and 2009, it was hit by two years of poor returns. Similar to the years following 2002, the smoothing of market losses continued to limit growth of actuarial assets in the years that followed. And while Georgia TRS continued to pay its full ARC, the amount was below normal cost plus interest on the UAAL, a practice which continued from 2009-2013.[5] Finally, throughout the period, the plan's actuarial experience was sometimes better than assumed and sometimes worse; these changes were largely offsetting. Overall, then, the story is that inadequate contributions and poor investment returns moved the UAAL from surplus to deficit, resulting in an unfunded liability of $13,626.0 million in 2013.

While Table 2 details the year-over-year changes in the UAAL, it is interesting to look at the relative impact of each factor on the overall change in the UAAL from 2001-2013. As shown in Figure 1, the biggest contributor to the unfunded liability for Georgia TRS

Figure 1. Reasons for Change in the Aggregate UAAL for Georgia TRS, as a Percentage of Overall Change in UAAL from 2001-2013



Source: Authors' calculations from Georgia TRS Actuarial Valuations (2001-2013).

has been the shortfall between actual and assumed investment returns. Critics may contend that the assumed discount rate based on expected long-run returns was simply too optimistic and that costs should have been projected using a riskless rate. Blame it on the assumptions; blame it on the market outcomes; but regardless of how the outcome is framed, poor investment performance was the major reason for the shortfall.

Variation by Plan Type

Public pensions are extremely heterogeneous in their approach to funding benefit obligations. As a result, some plans are in a better funding position than others. It is interesting to compare the performance of plans along these lines. Table 3 sorts the 150 plans in the *Public Plans Database* by their average funded ratios over the period 2001-13 and shows the funded ratio, the percentage of ARC paid, and the percentage change in the UAAL for plans in the top (good), middle (average), and bottom (bad) thirds of the distribution.

Table 4 presents the source of the increase in unfunded liability for the plans in each group. By definition, the components total to 100 percent and therefore do not reflect the fact that good plans have relatively low unfunded liabilities relative to bad plans. Nevertheless, the patterns are illuminating. First, all plans were hurt by the financial crises, which was the major factor causing an increase in the UAAL. Interestingly, across all the plan groups, contributions fell short of the normal cost plus the interest on the unfunded liability; contributions for the poorly funded plans, however, fell much further short than those for the well-funded plans. And the actuarial experience of the poorly funded plans was worse than expected. The worst-funded plans responded to these shortfalls by cutting benefits, which partially mitigated the increase in the UAAL.

It may be useful to look at one of the most poorly managed plans – New Jersey Teachers (TRS). (Georgia TRS, discussed above, is one of the good plans.) In every year since the turn of the century, New Jersey has failed to contribute enough to cover the normal cost and the interest on the unfunded liability – much less make a stab at paying off the unfunded liability. This shortfall in payments comes close to the two financial crises in its effect on the unfunded liabil-

Table 3. Key Funding Parameters for Plans in the Top, Middle, and Bottom Thirds, 2001-13

Plan type	Average funded ratio	Average percentage of ARC paid	Percentage change in UAAL
Good	98.3	100.0	26.7
Average	82.5	91.2	38.6
Bad	66.3	63.1	34.7
Total	82.4	89.8	100.0

Source: Authors' calculations from *Public Plans Database* (2001-2013).

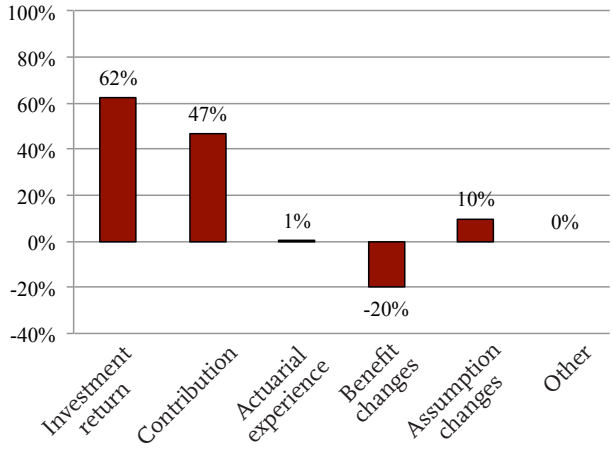
Table 4. Reasons for Change in the UAAL for Plans in the Top, Middle, and Bottom Thirds, 2001-13

Plan type	Investment return lower/ (higher) than assumed	Contribution lower/(higher) than normal cost + interest on UAAL	Actuarial experience worse/(better) than assumed	Benefit changes	Changes to assumptions and methods	Other	Total
Good	69.0%	13.4%	(0.1)%	5.3%	7.8%	4.7%	100.0%
Average	59.0	23.0	(0.6)	(0.2)	6.6	12.1	100.0
Bad	55.4	32.5	7.5	(6.3)	7.5	3.4	100.0
Total	60.4	23.7	2.4	(0.8)	7.2	7.1	100.0

Sources: Authors' calculations from *Public Plans Database* (2001-2013); various actuarial valuations; and plan Comprehensive Annual Financial Reports (2001-2013).

ity (see Figure 2). In addition, corrections to overly optimistic demographic assumptions (termination, retirement, disability, and mortality) further increased the unfunded liability. To offset this increase, the state eliminated the cost-of-living adjustment (COLA) for all current and future retirees effective October 2011.[6] The numbers tell a very clear story: failure to make contributions is a key reason for the financial problems facing the New Jersey TRS, a fact that is often obscured in the political debate.

Figure 2. Reasons for Change in the Aggregate UAAL for New Jersey TRS, as a Percentage of Overall Change in UAAL from 2001-2013



Source: Authors' calculations from New Jersey TRS Actuarial Valuations (2001-2013).

Conclusion

The tool described in this analysis presents a clean story of what happened in each plan based on the annual reports produced by each plan's actuary. The analysis simply involves categorizing each component of change in a consistent manner across plans and pulling together data for the last 12 years for each plan. But the output is powerful. It shows the impact of the two financial crises and highlights the inadequacy of contributions, based on backloaded contribution schedules and rolling amortization periods. The numbers tell a story that often gets obscured in the political debate. This type of analysis should be added to every plan's annual actuarial valuation.

Endnotes

1 Georgia TRS Actuarial Valuation prepared as of June 30, 2013, page 10.

2 Using Georgia TRS as an example, salary increases, turnover and retirements, pensioners' mortality, and new entrants were categorized as "actuarial experience." Interest smoothing and method changes were categorized as "changes to assumptions and methods." Valuation asset growth was categorized as "investment return," and miscellaneous was categorized as "other."

3 Each plan's Comprehensive Annual Financial Reports were used if the actuarial valuation did not provide any relevant data on factors underlying the change in the unfunded liability. For some plans, the only information available was the overall change in the UAAL.

4 In practice, only a handful of plans (albeit including CalPERS), use an open 30-year amortization schedule in conjunction with a level percent-of-pay amortization method. The purpose of the 30-year period is to achieve payments that are level as a percent of the plan's aggregate payroll over the work life of a career employee. The issue is that employers often do not understand the consequences of this method in terms of addressing unfunded liabilities.

5 The amortization period used by Georgia TRS has changed many times since 2001. UAAL payments made in 2001 were based on a 7-year amortization period. Those made in 2002 and 2003 were based on a rolling 40-year period. Those made from 2003-2008 were based on rolling amortization periods between 11 and 15 years. Those made from 2009-2013, when the plan was the most underfunded, were based on a rolling 30-year amortization schedule. Amortization payments made in 2016 will be based on a closed 30-year period for the UAAL existing as of June 30, 2013, and a closed 30-year period for any additional UAAL arising in each year after June 30, 2013.

6 In 2011, Gov. Christie signed into law SB 2937, which removed all COLAs for current and future retirees until the plan is 80 percent funded, after which a panel will decide whether or not to reinstate them. The Public Employees Unions filed a class action lawsuit in Trenton District Court in 2011 (*New Jersey Education Association vs. State of New Jersey*). This case was dismissed for lack of jurisdiction in U.S. District Court in 2012, and was dismissed again by the State Supreme Court in 2012, effectively upholding the COLA cut. The plaintiffs appealed in January 2014, however, and on June 26, 2014, a state appeals court ruled that retirees and workers do have a contractual right to COLAs. The COLA cuts currently remain in place as the case is being sent to a lower court for further review.

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