

Tax Supported
Special Report

Enhancing the Analysis of U.S. State and Local Government Pension Obligations

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Related Research

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- *U.S. State Government Tax-Supported Rating Criteria*, Oct. 8, 2010
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- *Tax-Supported Rating Criteria*, Aug. 16, 2010

Summary

This report details Fitch Ratings' approach to evaluating a state or local government's defined benefit pension obligations. Although this does not represent a change in criteria, Fitch is implementing several additional steps to enhance its analysis.

Fitch expects that limited negative rating action is possible as a result of this enhanced framework but does not expect such action to be widespread. To the extent that there is negative rating action, it is more likely to be for local governments than for state governments, because labor costs represent a larger share of local governments' budgets. The analysis of long-term obligations, including pensions, is an important part of Fitch's rating review for state and local government credits, although it remains one of many factors. The market declines of 2008 and early 2009 lowered virtually all plans' funding levels significantly and increased the fiscal pressure on state and local government sponsors and participants. This dynamic has been all the more severe for plans that consistently have underfunded their contributions. Fitch notes that there is cause for near-term concern about a number of public sector defined benefit pension plans and recognizes the considerable pressure that these obligations will place on many government budgets in the coming years. However, Fitch believes that the vast majority of governments will withstand the substantial pressures they face from their pension obligations.

To enhance pension analysis, Fitch will create standardized investment return and asset valuation scenarios. Fitch believes that this will improve comparability and facilitate an increased focus on pension obligations as part of the broader analysis of state and local government credits. This report provides several investment return and asset valuation scenarios. Fitch will consider the funded ratio with a 7% investment return assumption adjustment, which Fitch considers a reasonable adjustment for comparison purposes, rather than the funded ratio as reported by the system. The asset valuation adjustment will remove the impact of disparate smoothing methods by calculating a system's funded ratio based on a rolling five-year average of market value of assets. Fitch generally considers a funded ratio of 70% or above to be adequate and less than 60% to be weak, while noting that the funded ratio is one of many factors considered in Fitch's analysis of pension obligations.

Fitch recognizes the limitations of pension information currently disclosed by governments and pension systems. One important example is reporting requirements related to the state-run, cost-sharing multiemployer pension systems through which many state and local governments provide pensions to their employees. Based on current disclosure requirements, it is not possible for Fitch to accurately allocate a cost-sharing multiemployer system's unfunded pension liability to the numerous participating employers. In many cases the state is not the majority employer or contributor in a state-run system, and there is significant variability in the states' responsibilities for pensions of local government employees, particularly teachers. Fitch believes that allocating the entire unfunded liability of a multiemployer system to a

state just because it manages the system would overstate the burden on the state and understate the commitments of the participating local governments that are actually responsible for unfunded obligations of the system. Therefore, as part of its enhanced framework, Fitch now will request from states that it rates a documented estimate of the portion of the unfunded liability of each state-run, cost-sharing multiemployer system that is attributable to the state itself and, if possible, to participating local government employers. In cases where this information is not available (particularly for local governments), Fitch will focus on the funded ratio, and contribution trends for the overall plan and the rated entity, in projecting the current and future burden that pension obligations place on the rated entity. Assuming Fitch is able to accurately allocate the unfunded actuarial accrued liability (UAAL) of cost-sharing multiemployer plans, Fitch will consider adding a new ratio for long-term liabilities that combines debt and the entity-specific UAAL, using the 7% investment return adjustment, to supplement its analysis of long-term liabilities. Based on disclosure currently available, all information in this report is provided for state systems rather than the states themselves.

The Governmental Accounting Standards Board (GASB) is formulating significant changes to pension disclosure requirements that are expected to improve transparency and reliability. Fitch will revisit its analytical framework after these changes are made and enhanced disclosure becomes available.

Pensions and the Analysis of Overall Creditworthiness

In the analysis of the defined benefit pension obligations of state and local governments, Fitch reviews “where things have been” to help predict “where things are going.” Actuarial valuation is an extremely complicated arena. The consideration of pension obligations requires the analyst to look at a combination of factors to get a sense of the overall picture, with a focus on whether there has been stabilization or progress in the funded ratio over time and a commitment to funding ARCs. Management actions play an important role in this analysis.

Fitch notes that there is cause for near-term concern about a number of public sector defined benefit pension plans and recognizes the considerable pressure that these obligations will place on many government budgets in the coming years. The steep market decline of late 2008 and early 2009 has presented governments with both long- and short-term challenges: Assets available to make future payments are reduced and ARCs are rising considerably at the same time that government revenues to fund them have dropped and demand for overall government services has risen. Although investment returns have rebounded significantly, many plans’ actuarial valuations will continue to weaken as losses are smoothed in over multiple years.

Fitch believes that the vast majority of governments will withstand the substantial pressures they face from their pension obligations, although for many governments this will mean taking difficult steps to adjust contributions and/or benefits to ensure adequate pension funding. Fitch has observed a long record of generally responsible financial management actions by state and local governments and believes officials will work in the near term to improve funded ratios. There has already been significant activity on government pensions to lower benefits or improve funding.

Governments that exhibit a steady history of meeting their pension commitments should not experience rating pressure due to market-driven declines in funded ratios unless it becomes clear that pension costs will be significantly deferred or that increasing pension expenses will contribute to or exacerbate declines in liquidity and financial flexibility.

The systems that pose the greatest risks are those with significant unfunded liabilities for which the government's annual payments have been significantly less than an actuarially determined ARC over multiple years. Plans with relatively low funded ratios prior to the market downturn will likely be in a weak position as market losses are fully reflected. However, as always it is important to consider the complete picture. For example, a plan that appears relatively poorly funded may be on a path to full funding over a reasonable period of time without undue financial pressure due to the consistent funding of actuarially determined ARC payments, while ARC payments associated with a plan that is well funded may be placing an increasingly heavy burden on overall governmental resources and therefore present a credit concern.

For governments with poorly funded systems, the need to act to ensure a more sustainable footing is pressing, since the beneficial impact of any adjustments on funding levels and contributions will accrue over an extended period. However, since governments and their tax bases are long term in nature, in most cases, officials have some time to fully implement changes to control their long-term liabilities. The significant powers of most state and local governments to control their revenue and spending should not be overlooked in this discussion.

Pension Information Reviewed in Tax-Backed Credit Analysis

As noted in Fitch's tax-supported rating criteria, state and local governments' defined benefit pension obligations are reviewed as part of the analysis of debt, recognizing that pension benefits represent a more variable commitment to future payments than bonded debt to the extent that they can be significantly influenced by a variety of actuarial, accounting, investment, and other policy decisions of the sponsoring government. Defined contribution plans are not subject to Fitch's pension analysis, as they are a predictable annual commitment and considered as part of the issuer's operating budget.

Fitch's analysis of defined benefit pension plans focuses on the magnitude of the liability, the funded ratio, the size of the resource base from which funding is derived, the amount of the government's budget needed to make pension contributions, and the government's historical commitment (or lack thereof) to system funding, as well as actuarial and other assumptions influencing the burden. For each rated entity, Fitch closely evaluates all significant pension plans in which the government participates. This generally excludes the smallest systems, such as the pension plans for judges and legislators, that exist in many states but do not place a meaningful burden on resources.

Rated Entity's Plan Participation

Fitch first considers the type of plan (single employer, agent multiemployer, cost-sharing multiemployer) and the rated entity's role in the plan. Given the wide variability of benefits and obligations, Fitch believes that it is critical to have a clear sense of the decision-making powers for plans that the government participates in or sponsors, responsibility for contributions, and the ultimate obligation for retiree benefits. Although many local governments sponsor their own pension plans, particularly for police and fire personnel, local levels of government also often participate in cost-sharing multiemployer plans run by the state and simply contribute whatever the state instructs them to, with no control over actuarial or funding decisions. States are often one of many contributing participants in systems that they manage, with no clear obligation for the portion of the liability that is not associated with their own employees. In some cases, even though the state controls the system, no state employees are covered under the plan and the state does not contribute to the plan; however, many states contribute to the pensions of employees of lower levels of government to varying degrees. (This is particularly true for teachers, the pensions for whom, in numerous cases, are partly or entirely the state's responsibility.) Some states

do not contribute as an employer to the state-run plan that covers local government employees but guarantee the benefit. For a local government that provides pension benefits to its employees through a cost-sharing multiemployer state plan that it does not control, the status of the plan does not affect the analysis of the local government's management strength, although Fitch takes into account the local government's pension obligation and required contribution demands.

Funded Ratio

A key data point that Fitch considers for all plans is the funded ratio. The analysis considers the trend over the most recent five years, recognizing that this ratio can move considerably from year to year. The funded ratio over time is a good indicator of the strength of the system.

Appendix I on pages 10–11 provides information for the major state-run pension systems for states rated by Fitch, although it is not a comprehensive list of all state pension plans. As the table illustrates, in many cases, the funded ratios have dropped substantially between the actuarial valuations performed in 2005 and 2009, generally reflecting market losses in 2008 and 2009 more than any change in the governments' funding behavior. The liability estimates and, thus, the funded ratios over time are also significantly influenced by factors such as the granting of new benefits, which occurred widely in the early part of the last decade, and the updating of experience studies that estimate the length of employment and lifespan, among other variables. Although 2010 disclosure is available for some plans, for comparability in this report, Fitch is using 2009 information, as this is available for almost all systems. Of note, the systems and unfunded liabilities listed, while managed by the states, are often for cost-sharing multiemployer systems for which the state is one of many participating employers and often not the majority contributor to the system.

Actual and Actuarially Required Annual Contributions

Fitch also analyzes the history of the issuer's actual annual contributions to the system, focusing on the most recent five years, and seeks projections for actuarially required contributions (ARCs) in the coming three years.

The analysis considers how actual annual contributions have compared to the annual ARCs and notes whether actual contributions are dictated by actuarial analysis or, more commonly, by statute. Fitch does not consider it a credit negative if contribution levels are established by statute as long as regular adjustments are made so that actual contributions approximate actuarial contribution requirements on an ongoing basis. However, as many states have established statutory formulas, the result of which is often referred to as the "required" pension contribution, it is important to understand whether the numbers being presented are actuarially based or not.

Appendix II on pages 12–13 shows the percentage of the ARC, as reported by the system, that was funded in fiscal 2009. These are ARCs for the systems as a whole, not the state that manages the system. As noted, in many cases, the state is a minority contributor to the system.

In analyzing ARC levels and the rated entity's record of contributions compared with the ARC, Fitch notes that this figure can be substantially influenced by the amortization period selected for the unfunded liability. GASB standards allow this liability to be amortized on as long as a 30-year rolling basis, although some plans opt for a closed amortization period of a much shorter duration. A system that is underfunding its ARC using a short amortization period could otherwise appear to be overfunding the ARC at the same contribution level if it chose a longer, but still GASB compliant, period to amortize the UAAL. Recognizing this, to provide a more complete picture, the table in Appendix II

includes the amortization period reported by the system. This is just one of many examples of why actuarial assumptions must be a key part of the analysis of pension obligations. Fitch considers a closed amortization of shorter duration more conservative and a credit positive.

Assessing the Burden on Resources

Fitch considers the level of pension contributions not only as a percentage of ARC, but also as a percentage of the rated entity's budget over time. Fitch recognizes that, for most rated entities, pension contributions will derive from the general fund and any other fund that supports personnel expenses of active employees. Assessing the contributions against the general fund, in the case of most entities, provides an indication of the affordability of the pension commitments and whether spending for pensions is or could be expected to start crowding out spending for other needs. Fitch notes in its analysis if pensions demand more than 10% of an issuer's operating budget.

Ideally, Fitch also would consider the aggregate UAAL of each rated entity, based on all of the systems that it participates in, as a percentage of market value of property for local governments, or personal income, for states. (Fitch believes that market value of property and personal income are the most appropriate bases for evaluating ability to pay for local and state governments, respectively.) However, as discussed, many state and local governments provide pensions to their employees primarily through state-run cost-sharing multiemployer public pension systems. Based on current disclosure requirements for government employers that participate in such systems and the pension systems themselves, it is not possible for Fitch to accurately allocate the UAAL to participating employers. Until disclosure requirements are expanded to require such allocation, as is under consideration by GASB, Fitch will request that the states it rates provide an estimate of the portion of the UAAL attributable to the state itself and, if possible, to participating local government employers. In cases where this information is not available (particularly for local governments), Fitch will focus on the funded ratio and contribution trends for the overall plan and the rated entity when projecting the current and future burden that pension obligations place on the rated entity.

Fitch continues to believe that reported pension obligations, although long-term liabilities, are meaningfully less comparable than bonded debt and subject to numerous and changing variables that render them more volatile. As such, Fitch will continue to calculate a debt ratio that includes only bonded debt and analogous obligations. However, assuming Fitch is able to accurately allocate the UAALs of cost-sharing multiemployer plans, Fitch will consider adding a new ratio for long-term liabilities that combines debt and the entity-specific UAAL, using the 7% investment return adjustment, to supplement its analysis of long-term liabilities.

Actuarial Assumptions

Pension obligations and management cannot be meaningfully analyzed without a consideration of actuarial assumptions. Fitch considers whether the assumptions are outside the norm (i.e. smoothing meaningfully shorter or longer than five years or an investment return assumption that is less than 7.5% or greater than 8.5%) and whether there are any offsets (such as a corridor method for asset values that ensures actuarial asset value will remain within a specified percentage of market value). Fitch considers any underlying reasons for deviations from the norm. The analysis also notes when the issuer changes assumptions, as may be the case for issuers facing fiscal stress. As will be discussed in more detail, to enhance comparability, Fitch will evaluate scenarios that standardize two key variables (investment return rate and asset valuation).

Management Actions

Finally, Fitch considers any past or planned managerial action affecting the rated entity's pension obligations and contributions. Given that pension disclosure for a given period is often released well beyond the period end date and even the rated entity's own annual report, a focus on management actions (including actuarial or funding policy changes and benefit adjustments) enables Fitch to have a more up-to-date perspective on the condition of the plan and direction of plan funding. Management action to address challenges is a key factor in tax-backed credit analysis overall and no less so when looking at pensions.

Standardizing Investment Return and Asset Valuation

Recognizing the limitations in evaluating one entity's pension obligations against another's due to the relatively wide latitude given in making actuarial decisions, Fitch will be incorporating two adjustments into its analysis of defined benefit pension commitments. The adjustments will be to the investment return assumption and asset valuation methodology, two of the more significant sources of variability among plans. Fitch notes that there are many other disparate methods and assumptions that inhibit direct comparability among plans, including the amortization period for the unfunded liability, as noted, cost of living adjustment assumptions, and inflation and salary growth projections. Therefore, the outcome of this scenario analysis will in no way be Fitch's assessment of the "real" plan liability. However, Fitch believes that the investment return assumption and asset valuation method allow for meaningful adjustment across plans and that the outcome of these adjustments will enhance analysis.

Investment Return Adjustment

Each system's UAAL will be adjusted to approximate the impact of a 6%, 7%, and 8% investment return assumption to provide a range of outcomes. Fitch believes that, given the recent market downturn and potential for lower returns in the future, the current 8% average discount rate used by public pension plans is likely optimistic. Fitch notes that there are reasons why assumptions may vary from plan to plan (e.g. based on allowable investments); however, this is an effort to look at scenarios that normalize for this assumption, albeit through a rough approximation.

Based on a review of the literature and discussions with actuaries and pension experts, Fitch believes it is reasonable to adjust the actuarial accrued liability up by 11% for each 1% by which the plan's current investment return assumption exceeds the standardized return scenario being considered — 6%, 7%, and 8%. The 11% adjustment is in the middle of the range of the 10%–12% approximation that is most frequently cited as the impact of a 1% adjustment to the return. Given the complexity of actuarial analysis, it is important to stress that this is just an approximation.

Asset Valuation Adjustment

To calculate the UAAL, the actuarial value of a system's assets is subtracted from the system's actuarial accrued liability. In the same way that the investment return assumption can understate or overstate the liability, the actuarial valuation of assets is influenced by the method used to recognize actual market returns. Most public pension systems incorporate investment returns and losses into the actuarial value of assets over time, generally four or five years. This methodology, which is designed to avoid extreme swings in required contributions from year to year, results in actuarial values that are below market values in times of strong returns and above market values following investment losses. It is not uncommon for systems to establish "corridors" to ensure that actuarial and market values stay within a specified range of each other.

Fitch notes the limits to comparability that result from the varying smoothing methods used in calculating the actuarial value of assets. However, Fitch does not believe that the funded ratio based on the market value of assets in a given year is a meaningful statistic in analysis because it can vary substantially from year to year. Therefore, to remove the impact of disparate smoothing methods, Fitch will consider the system's funded ratio based on an equally consistent but less volatile rolling five-year average of market value.

In reviewing the market value statistics in Appendix IV, pages 16–17, it is important to note that the funded ratio using market value is a point-in-time statistic that can vary significantly from year to year. In most cases, the 2009 market value used in this report reflects the low point for plan assets, which have benefited from significant investment gains since that time. The market value funded ratios for 2010 in most cases will show improvement. In addition, 2009 numbers are not based on the same date in 2009 for all plans, which clearly influences the reported figures as well (*see Appendix I, pages 10–11, for the month and day of the valuation date for each system*).

Use of Adjusted Ratios

Actuarial analysis is complex, and as noted, Fitch does not believe that the adjustments being made result in the real funded ratios for the systems. Rather, the adjustments provide more standardized information that will be used to assess each system's position compared to the universe of defined benefit pension plans funded by the state and local governments rated by Fitch. For comparison purposes, Fitch will consider the funded ratio using the 7% investment return assumption adjustment rather than the funded ratio as reported by the system. Fitch generally considers a funded ratio of 70% or above to be adequate and less than 60% to be weak.

Case Studies

The following is a discussion of some of the more challenged state-defined benefit pension systems. Fitch notes that, in all of these cases, pension reform has been undertaken and/or future modification is expected.

Illinois

In the universe of state defined benefit pension systems, those of Illinois are clearly the most strained, despite the issuance of pension obligation bonds. The funded ratios are low, unfunded liabilities are high, and annual contributions to the systems have been consistently below the actuarially required amount. Moreover, the state's current pension contributions, though inadequate to ensure full funding of the system in the 30-year period authorized under GASB rules, reflect a steep ramp up in recent years that has contributed to the state's severe financial strain. For many years, the state opted to fund current services and keep taxes low rather than fund pensions, and the pension problem was exacerbated by unfunded benefit increases and unexpectedly expensive retirement incentive plans. The state will have issued \$7.2 billion in general obligation bonds in the past two years to fund its annual pension contributions, and contributions are expected to equal more than 12% of the state's operating budget in fiscal 2012. The state passed comprehensive pension reform in March 2010 that will lower its future pension liability, but it did not have a significant near-term effect on financial operations.

Kentucky

The funding of Kentucky's employees retirement system is weak, although, unlike the situation in Illinois, the funding of its teachers system is meaningfully stronger. Funded ratios have shown a steady and steep decline as annual payments have been well below actuarially required levels. Kentucky has enacted some pension reforms, requiring more years of service and a higher retirement age for certain workers, which are expected to

slow the growth of the state's unfunded liability. However, the reform included a schedule that does not reach full funding of the ARC for the main employees retirement system until 2025.

Oklahoma

The other system with a 2009 funded ratio of less than 50% using Fitch's more conservative 7% investment return adjustment is the plan for Oklahoma teachers; the funding of the other major system in the state, for public employees, is stronger. As in many states, pension contributions in Oklahoma are determined annually by the state legislature rather than through an actuarial calculation. The state has underfunded its ARC but has enacted legislation to increase funding, including through allocations of specific state revenue streams as well as increasing payroll contributions.

New Jersey

New Jersey's large unfunded pension liabilities, which Fitch has highlighted as an area of concern, are a useful example of the dangers of failing to make adequate pension contributions. The annual funding of pensions in the state's operating budget has been well below the actuarially required level for many years and the virtual elimination of pension funding has been a significant part of budget balancing measures in the downturn, exacerbating future budget challenges and stressing already weakened funding levels. The funded ratios of the state's systems have dropped considerably in recent years, to less than 60% after the 7% investment return adjustment. Most recently, the state passed pension reform for new employees in 2010 that included a plan for the state to fund pensions at one-seventh of the ARC starting in fiscal 2012, ramping up to full ARC contributions in fiscal 2018. The governor subsequently proposed a number of more aggressive pension and health benefit reforms designed to address unfunded accrued liabilities and limit future expenditure growth in these areas, and recently several bills have been introduced in the legislature which address pension reform in different ways. Fitch is monitoring legislative action on this front.

Pennsylvania

Although Pennsylvania's systems have historically been well funded and remain adequately funded after the 7% investment return adjustment, Fitch notes that the annual contributions are well below actuarially required levels. The state had been funding pensions based on a statutory schedule, and contributions were scheduled to rise significantly in fiscal 2013, which begins on July 1, 2012. Fitch has noted this as a looming budgetary pressure for the state. In November 2010, Act 120 of 2010 was signed into law which, among other actuarial changes and pension reforms, implemented annual contribution collars which will stave off the significant increases the commonwealth was facing in fiscal 2013. Fitch will continue to monitor how the commonwealth's contributions compare to actuarially required levels following Act 120.

Connecticut

The funding levels for Connecticut's major pension systems remain a concern. No 2009 valuation was performed. As of the 2010 valuation, the state employees' retirement system had a low reported funded ratio of 44.4%, down from 52% in 2008. The funding of the teachers' system, which benefited from the deposit of pension bond proceeds in 2008, is 61.4% funded as of the 2010 valuation, down from 70% in 2008. The contributions to the teachers' system match actuarially required amounts as a result of a requirement enacted at the time that pension bonds were authorized, part of a larger package of pension reforms. However the state lowered its contributions to the state employees system in the downturn as part of budget gap closing.

Indiana

The Indiana teachers' system highlights the point that one number does not tell the pension story. The teachers' plan had the second lowest reported funded ratio of the major state plans in 2009 (see Appendix I). However, this is not a significant credit concern for Fitch. The system is funded on a pay-as-you-go basis from state general fund appropriations for employees hired prior to July 1, 1995, while funding of the benefits for members hired after that point is actuarially sound. The state has a pension stabilization fund that is used to limit the rate of increase in the state general fund appropriation requirements for the plan. That pension stabilization fund, which receives a portion of annual lottery moneys, had a balance of \$1.9 billion as of June 30, 2010.

West Virginia

The funded ratio of the West Virginia teachers plan was one of the weakest of the states in 2009, at just 41.3%. Fitch notes that this reported 2009 funded ratio was higher than the funded ratio in 2005. Although significant unfunded pension liabilities remain, the state has substantially increased funding for pensions and demonstrated a commitment to disciplined efforts to address accumulated financial challenges. Strong severance taxes collections, fueled by a robust energy economy, have contributed to state budget surpluses in recent years, over half of which have been dedicated to reducing pension system deficits. This is another example of the importance of a focus on trends and context, as well as snapshot statistics, in analyzing pension obligations.

Appendix I

Reported Plan Information

(As of Actuarial Valuation Dates^a)

Plan Name	Plan Type	Actuarial Valuation Date	2005 Funded Ratio (%)	2008 Funded Ratio (%)	2009 Funded Ratio (%)	2009 UAAL (\$000)
Alabama Employees Retirement System	AME	9/30	84.0	75.7	72.2	3,828,072
Alabama Teachers Retirement System	CSME	9/30	83.6	77.6	74.7	6,955,052
Alaska Public Employees' Retirement System	CSME	6/30	65.7	78.8	63.0	3,593,558
Alaska Teachers' Retirement System	CSME	6/30	60.9	51.0	57.0	2,348,272
California Public Employee Retirement Fund	AME	6/30	87.3	86.9	83.3	49,078,000
California State Teachers' Retirement Fund	CSME	6/30	85.7	87.3	78.2	40,541,000
Connecticut State Employees Retirement System	SE	6/30	53.3	51.9	N.A.	N.A.
Connecticut Teachers Retirement System	SE	6/30	N.A.	70.0	N.A.	N.A.
Delaware State Employees	SE	6/30	101.6	103.1	98.8	82,956
District of Columbia Police & Fire Pension Plan	SE	10/1	N.A.	99.8	100.7	(20,500)
District of Columbia Teachers Pension Plan	SE	10/1	N.A.	108.2	110.8	(140,500)
Florida Retirement System	CSME	7/1	107.3	105.3	87.1	17,610,905
Georgia Employees' Retirement System	CSME	6/30	97.2	89.4	85.7	2,264,416
Georgia Teachers Retirement System	CSME	6/30	98.0	91.9	87.2	8,051,765
Hawaii Employees' Retirement Plan	CSME	6/30	68.6	68.8	64.6	6,236,283
Idaho Public Employee Retirement Fund	CSME	7/1	94.2	93.3	74.1	3,026,600
Illinois State Employees Retirement System	SE	6/30	54.4	46.1	43.5	14,298,392
Illinois Teachers' Retirement System	CSME	6/30	60.8	56.0	52.1	35,001,154
Indiana Public Employees Retirement Fund	AME	7/1	96.4	97.5	93.1	936,944
Indiana State Teachers' Retirement System	CSME	6/30	43.4	48.2	41.9	11,132,805
Iowa Public Employees' Retirement System	CSME	6/30	88.7	89.1	81.2	4,894,614
Kansas Public Employees Retirement System	CSME	12/31	68.8	58.8	63.7	7,676,985
Kentucky Employees Retirement System – Nonhazardous	CSME	6/30	73.6	52.5	45.0	5,863,938
Kentucky Teachers' Retirement System	CSME	6/30	76.3	68.2	63.6	8,514,445
Louisiana State Employees Retirement System	SE	6/30	61.5	67.6	60.8	5,487,185
Teachers Retirement System of Louisiana	CSME	6/30	64.6	70.2	59.1	9,338,645
Maine Public Employees Retirement System	AME	6/30	76.0	79.7	72.6	3,943,100
Maryland Employees Retirement & Pension System	CSME	6/30	84.9	74.6	61.2	5,850,402
Maryland Teachers Retirement & Pension System	CSME	6/30	89.3	79.6	66.1	10,567,299
Massachusetts State Employees' Retirement System	SE	1/1	82.8	89.4	71.6	6,731,026
Massachusetts Teachers' Retirement System	SE	1/1	67.6	73.9	58.2	13,616,051
Michigan Public School Employees' Retirement System	CSME	9/30	79.3	83.6	78.9	11,982,000
Michigan State Employees' Retirement System	SE	9/30	79.8	82.8	78.0	3,127,000
Minnesota Public Employees Retirement Fund	CSME	6/30	74.5	73.6	70.0	5,640,926
Minnesota State Employees Retirement Fund	CSME	6/30	95.6	90.2	85.9	1,482,359
Mississippi Public Employees' Retirement System	CSME	6/30	72.4	72.9	67.3	9,996,965
Missouri State Employees' Plan	SE	6/30	84.9	85.9	83.0	1,618,727
Montana Public Employees Retirement System	CSME	6/30	85.5	90.2	83.5	790,607
Montana Teachers Retirement System	CSME	7/1	73.4	79.9	66.2	1,411,600
Nevada Public Employees' Retirement System	CSME	6/30	75.8	76.2	72.5	9,103,200
New Hampshire Retirement System	CSME	6/30	N.A.	67.8	58.3	3,537,732
New Jersey Public Employees' Retirement System	CSME	6/30	85.3	73.1	64.9	15,612,170
New Jersey Teachers' Pension & Annuity Fund	CSME	6/30	79.1	70.8	63.8	19,737,850
New York State & Local Employees' Retirement System	CSME	4/1	102.8	107.3	101.0	(1,302,000)
New York State & Local Police & Fire Retirement System	CSME	4/1	104.8	108.0	103.8	(826,000)
North Carolina Teachers' & State Employees' Retirement System	CSME	12/31	106.5	99.3	95.9	2,360,173
Ohio Public Employees Retirement System	CSME	12/31	87.2	75.3	N.A.	N.A.
Ohio State Teachers Retirement System	CSME	6/30	72.8	79.1	60.0	36,538,096
Oklahoma Public Employees Retirement System	CSME	6/30	72.0	73.0	66.8	3,083,212
Oklahoma Teachers' Retirement System	CSME	6/30	49.5	50.5	49.8	9,511,975
Oregon Public Employees Retirement System	CSME	12/31	104.2	80.2	85.8	8,081,400
Pennsylvania Public School Employees' Retirement System	CSME	6/30	83.6	86.0	79.2	15,739,100
Pennsylvania State Employees' Retirement System	CSME	12/31	92.9	89.0	84.4	5,592,324
Rhode Island Employees' Retirement System	CSME	6/30	55.8	60.9	N.A.	N.A.
South Carolina Police Officers' Retirement System	CSME	7/1	87.4	77.9	76.3	1,081,891
South Carolina Retirement System	CSME	7/1	71.6	69.3	67.8	11,967,253
South Dakota Retirement System	CSME	6/30	96.6	97.2	91.8	608,886
Tennessee State Employees, Teachers & Higher Education Employees Pension Plan	CSME	7/1	99.8	N.A.	90.6	2,719,767
Texas Employees Retirement System	SE	8/31	94.8	92.6	87.4	3,398,157

^aThe figures reported are based on the reported actuarial valuation date of each plan rather than the financial statement date. CSME – Cost-sharing multiemployer. AME – Agent multiemployer. SE – Single employer. N.A. – Not available.

Reported Plan Information (continued)

(As of Actuarial Valuation Dates^a)

Plan Name	Plan Type	Actuarial Valuation Date	2005 Funded Ratio (%)	2008 Funded Ratio (%)	2009 Funded Ratio (%)	2009 UAAL (\$000)
Texas Teacher Retirement System	SE	8/31	87.1	90.5	83.1	21,645,838
Utah Public Employees Contributory Retirement System	CSME	1/1	92.1	94.2	90.1	120,861
Utah Public Employees Noncontributory Retirement System	CSME	1/1	92.3	95.1	86.5	2,467,129
Vermont State Retirement System	SE	6/30	97.8	94.1	78.9	326,506
Vermont State Teachers' Retirement System	CSME	6/30	90.7	80.9	65.4	727,759
Virginia Retirement System	CSME	6/30	81.3	84.0	80.2	13,138,000
Washington Public Employees Retirement System – Plan 1	CSME	6/30	71.0	70.9	69.9	4,208,900
Washington Public Employees Retirement System – Plan 2/3	CSME	6/30	106.8	101.1	99.3	137,500
Washington Teachers Retirement System – Plan 1	CSME	6/30	78.0	76.8	75.3	2,673,800
Washington Teachers Retirement System – Plan 2/3	CSME	6/30	122.7	107.9	101.8	(111,600)
West Virginia Public Employees' Retirement System	CSME	6/30	83.6	84.2	79.7	999,457
West Virginia Teachers' Retirement System	CSME	6/30	24.6	50.0	41.3	5,053,098
Wisconsin Retirement System	CSME	12/31	99.5	99.7	99.8	193,300

^aThe figures reported are based on the reported actuarial valuation date of each plan rather than the financial statement date. CSME – Cost-sharing multiemployer. AME – Agent multiemployer. SE– Single employer. N.A. – Not available.

Appendix II

Reported ARC Funding and Remaining Amortization

(As of 2009)

Plan Name	Fiscal 2009 ARC Funding (%)	Remaining Amortization (Years) ^a
Alabama Employees Retirement System	100.0	30
Alabama Teachers Retirement System	100.0	30
Alaska Public Employees' Retirement System	116.1	20
Alaska Teachers' Retirement System	139.3	19
California Public Employee Retirement Fund	100.0	28
California State Teachers' Retirement Fund	63.1	30
Connecticut State Employees Retirement System	92.8	N.A.
Connecticut Teachers Retirement System	100.0	N.A.
Delaware State Employees	100.0	20
District of Columbia Police & Fire Pension Plan	100.0	N.A.
District of Columbia Teachers Pension Plan	100.0	N.A.
Florida Retirement System	111.0	30
Georgia Employees' Retirement System	100.0	30
Georgia Teachers Retirement System	100.0	30
Hawaii Employees' Retirement Plan	109.9	28
Idaho Public Employee Retirement Fund	122.7	25
Illinois State Employees Retirement System	77.2	30
Illinois Teachers' Retirement System	75.9	30
Indiana Public Employees Retirement Fund	102.2	29
Indiana State Teachers' Retirement System	104.2	30
Iowa Public Employees' Retirement System	87.8	30
Kansas Public Employees Retirement System	68.0	23
Kentucky Employees Retirement System – Nonhazardous	38.2	28
Kentucky Teachers' Retirement System	74.0	30
Louisiana State Employees Retirement System	102.8	30
Teachers Retirement System of Louisiana	106.4	30
Maine Public Employees Retirement System	100.0	19
Maryland Employees Retirement & Pension System	70.5	25
Maryland Teachers Retirement & Pension System	89.4	25
Massachusetts State Employees' Retirement System	57.0	16
Massachusetts Teachers' Retirement System	67.9	16
Michigan Public School Employees' Retirement System	101.1	27
Michigan State Employees' Retirement System	97.8	27
Minnesota Public Employees Retirement Fund	86.2	21
Minnesota State Employees Retirement Fund	59.6	11
Mississippi Public Employees' Retirement System	100.0	30
Missouri State Employees' Plan	100.0	30
Montana Public Employees Retirement System	79.4	N.A.
Montana Teachers Retirement System	100.0	N.A.
Nevada Public Employees' Retirement System	90.0	30
New Hampshire Retirement System	75.0	28
New Jersey Public Employees' Retirement System	48.8	30
New Jersey Teachers' Pension & Annuity Fund	6.0	30
New York State & Local Employees' Retirement System	100.0	N.A.
New York State & Local Police & Fire Retirement System	100.0	N.A.
North Carolina Teachers' & State Employees' Retirement System	100.0	9
Ohio Public Employees Retirement System	100.0	30
Ohio State Teachers Retirement System	89.0	30
Oklahoma Public Employees Retirement System	75.2	18
Oklahoma Teachers' Retirement System	86.6	30
Oregon Public Employees Retirement System	100.0	30
Pennsylvania Public School Employees' Retirement System	28.6	30
Pennsylvania State Employees' Retirement System	39.1	30
Rhode Island Employees' Retirement System	100.0	21
South Carolina Police Officers' Retirement System	100.0	30
South Carolina Retirement System	100.0	30
South Dakota Retirement System	100.0	20

^aIn cases where the system reports a minimum and maximum amortization period, Fitch reports the maximum. Data as of the 2009 actuarial valuation. N.A. – Not available or not applicable.

Reported ARC Funding and Remaining Amortization (continued)

(As of 2009)

Plan Name	Fiscal 2009 ARC Funding (%)	Remaining Amortization (Years) ^a
Tennessee State Employees, Teachers & Higher Education Employees Pension Plan	100.0	20
Texas Employees Retirement System	68.4	30
Texas Teacher Retirement System	108.0	30
Utah Public Employees Contributory Retirement System	100.0	25
Utah Public Employees Noncontributory Retirement System	100.0	25
Vermont State Retirement System	86.7	29
Vermont State Teachers' Retirement System	94.3	29
Virginia Retirement System	81.3	20
Washington Public Employees Retirement System – Plan 1	52.0	10
Washington Public Employees Retirement System – Plan 2/3	118.9	N.A.
Washington Teachers Retirement System – Plan 1	46.0	10
Washington Teachers Retirement System – Plan 2/3	86.0	N.A.
West Virginia Public Employees' Retirement System	100.0	26
West Virginia Teachers' Retirement System	94.3	25
Wisconsin Retirement System	100.0	20

^aIn cases where the system reports a minimum and maximum amortization period, Fitch reports the maximum. Data as of the 2009 actuarial valuation. N.A. – Not available or not applicable.

Appendix III

Funded Ratio Based on Liability at Adjusted Discount Rates

(As of 2009 Actuarial Valuation)

Plan Name	Reported Investment Rate Assumption (%)	Reported Funded Ratio 2009 (%)	Funded Ratio at 6%	Funded Ratio at 7%	Funded Ratio at 8%
Alabama Employees Retirement System	8.00	72.2	59.2	65.0	72.2
Alabama Teachers Retirement System	8.00	74.7	61.3	67.3	74.7
Alaska Public Employees' Retirement System	8.25	63.0	50.5	55.4	61.3
Alaska Teachers' Retirement System	8.25	57.0	45.7	50.1	55.5
California Public Employee Retirement Fund	7.75	83.3	69.9	77.0	85.7
California State Teachers' Retirement Fund	8.00	78.2	64.1	70.4	78.2
Connecticut State Employees Retirement System	8.25	N.A.	N.A.	N.A.	N.A.
Connecticut Teachers Retirement System	8.50	N.A.	N.A.	N.A.	N.A.
Delaware State Employees	8.00	98.8	81.0	89.0	98.8
District of Columbia Police & Fire Pension Plan	7.00	100.7	90.7	100.7	113.1
District of Columbia Teachers Pension Plan	7.00	110.8	99.8	110.8	124.5
Florida Retirement System	7.75	87.1	73.0	80.4	89.5
Georgia Employees' Retirement System	7.50	85.7	73.6	81.3	90.7
Georgia Teachers Retirement System	7.50	87.2	74.8	82.6	92.3
Hawaii Employees' Retirement Plan	8.00	64.6	53.0	58.2	64.6
Idaho Public Employee Retirement Fund	7.75	74.1	62.1	68.4	76.2
Illinois State Employees Retirement System	8.50	43.5	34.1	37.3	41.2
Illinois Teachers' Retirement System	8.50	52.1	40.8	44.7	49.4
Indiana Public Employees Retirement Fund	7.25	93.1	81.8	90.6	101.4
Indiana State Teachers' Retirement System	7.50	41.9	36.0	39.7	44.3
Iowa Public Employees' Retirement System	7.50	81.2	69.7	77.0	85.9
Kansas Public Employees Retirement System	8.00	63.7	52.2	57.4	63.7
Kentucky Employees Retirement System – Nonhazardous	7.75	45.0	37.7	41.6	46.3
Kentucky Teachers' Retirement System	7.50	63.6	54.6	60.3	67.3
Louisiana State Employees Retirement System	8.25	60.8	48.7	53.4	59.1
Teachers Retirement System of Louisiana	8.25	59.1	46.4	50.7	56.0
Maine Public Employees Retirement System	7.75	72.6	60.9	67.1	74.7
Maryland Employees Retirement & Pension System	7.75	61.2	51.3	56.5	62.9
Maryland Teachers Retirement & Pension System	7.75	66.1	55.4	61.1	68.0
Massachusetts State Employees' Retirement System	8.25	71.6	57.4	63.0	69.7
Massachusetts Teachers' Retirement System	8.25	58.2	46.6	51.1	56.6
Michigan Public School Employees' Retirement System	8.00	78.9	64.6	71.0	78.9
Michigan State Employees' Retirement System	8.00	78.0	64.0	70.3	78.0
Minnesota Public Employees Retirement Fund	8.50	70.0	54.9	60.1	66.3
Minnesota State Employees Retirement Fund	8.50	85.9	67.4	73.7	81.4
Mississippi Public Employees' Retirement System	8.00	67.3	55.2	60.7	67.3
Missouri State Employees' Plan	8.50	83.0	65.1	71.2	78.6
Montana Public Employees Retirement System	8.00	83.5	68.4	75.2	83.5
Montana Teachers Retirement System	7.75	66.2	55.5	61.1	68.1
Nevada Public Employees' Retirement System	8.00	72.5	59.4	65.3	72.5
New Hampshire Retirement System	8.50	58.3	45.7	50.0	55.2
New Jersey Public Employees' Retirement System	8.25	64.9	52.0	57.0	63.2
New Jersey Teachers' Pension & Annuity Fund	8.25	63.8	51.2	56.1	62.1
New York State & Local Employees' Retirement System	8.00	101.0	82.8	91.0	101.0
New York State & Local Police & Fire Retirement System	8.00	103.8	85.1	93.5	103.8
North Carolina Teachers' & State Employees' Retirement System	7.25	95.9	84.3	93.4	104.6
Ohio Public Employees Retirement System	8.00	N.A.	N.A.	N.A.	N.A.
Ohio State Teachers Retirement System	8.00	60.0	49.2	54.1	60.0
Oklahoma Public Employees Retirement System	7.50	66.8	57.4	63.3	70.7
Oklahoma Teachers' Retirement System	8.00	49.8	40.8	44.9	49.8
Oregon Public Employees Retirement System	8.00	85.8	70.3	77.3	85.8
Pennsylvania Public School Employees' Retirement System	8.00	79.2	64.9	71.3	79.2
Pennsylvania State Employees' Retirement System	8.00	84.4	69.2	76.0	84.4
Rhode Island Employees' Retirement System	8.25	N.A.	N.A.	N.A.	N.A.
South Carolina Police Officers' Retirement System	8.00	76.3	62.5	68.7	76.3
South Carolina Retirement System	8.00	67.8	55.6	61.1	67.8
South Dakota Retirement System	7.75	91.8	76.9	84.8	94.4
Tennessee State Employees, Teachers & Higher Education Employees Pension Plan	7.50	90.6	77.8	85.9	95.9
Texas Employees Retirement System	8.00	87.4	71.6	78.7	87.4
Texas Teacher Retirement System	8.00	83.1	68.1	74.9	83.1
Utah Public Employees Contributory Retirement System	7.75	90.1	75.5	83.2	92.6
Utah Public Employees Noncontributory Retirement System	7.75	86.5	72.6	79.9	89.0
Vermont State Retirement System	8.25	78.9	63.2	69.3	76.7
Vermont State Teachers' Retirement System	8.25	65.4	52.4	57.5	63.6
Virginia Retirement System	7.50	80.2	68.8	76.0	84.9
Washington Public Employees Retirement System– Plan 1	8.00	69.9	57.3	63.0	69.9

N.A. – Not available.

Funded Ratio Based on Liability at Adjusted Discount Rates (continued)

(As of 2009 Actuarial Valuation)

Plan Name	Reported Investment Rate Assumption (%)	Reported Funded Ratio 2009 (%)	Funded Ratio at 6%	Funded Ratio at 7%	Funded Ratio at 8%
Washington Public Employees Retirement System – Plan 2/3	8.00	99.3	81.4	89.4	99.3
Washington Teachers Retirement System – Plan 1	8.00	75.3	61.7	67.8	75.3
Washington Teachers Retirement System – Plan 2/3	8.00	101.8	83.5	91.8	101.8
West Virginia Public Employees' Retirement System	7.50	79.7	68.4	75.6	84.4
West Virginia Teachers' Retirement System	7.50	41.3	35.4	39.1	43.7
Wisconsin Retirement System	7.80	99.8	83.3	91.7	102.0

N.A. – Not available.

Appendix IV

Funded Ratio With Adjusted Asset Values

(As of 2009 Actuarial Valuation and 2009 Fiscal Year Market Values^a)

Plan Name	Reported Asset Smoothing Period (Years) ^b	Reported Funded Ratio – 2009 (%)	Funded Ratio at Market Value (%)	Funded Ratio with Five-Year Average Market Value (%)
Alabama Employees Retirement System	5	72.2	54.9	63.3
Alabama Teachers Retirement System	5	74.7	57.6	67.0
Alaska Public Employees' Retirement System	5	63.0	87.4	81.1
Alaska Teachers' Retirement System	5	57.0	67.6	69.0
California Public Employee Retirement Fund	15	83.3	62.4	73.3
California State Teachers' Retirement Fund	3	78.2	64.0	79.0
Connecticut State Employees Retirement System	5	N.A.	N.A.	N.A.
Connecticut Teachers Retirement System	4	N.A.	N.A.	N.A.
Delaware State Employees	5	98.8	73.3	87.4
District of Columbia Police & Fire Pension Plan	7	100.7	82.5	86.1
District of Columbia Teachers Pension Plan	7	110.8	90.9	105.7
Florida Retirement System	5	87.1	74.3	88.3
Georgia Employees' Retirement System	7	85.7	67.1	80.4
Georgia Teachers Retirement System	7	87.2	67.4	75.4
Hawaii Employees' Retirement Plan	4	64.6	49.2	55.7
Idaho Public Employee Retirement Fund	0	74.1	74.6	83.0
Illinois State Employees Retirement System	5	43.5	32.4	40.8
Illinois Teachers' Retirement System	5	52.1	39.7	49.9
Indiana Public Employees Retirement Fund	4	93.1	65.2	N.A.
Indiana State Teachers' Retirement System	4	41.9	34.7	38.5
Iowa Public Employees' Retirement System	4	81.2	69.0	81.6
Kansas Public Employees Retirement System	5	63.7	49.1	59.5
Kentucky Employees Retirement System – Nonhazardous	5	45.0	31.4	45.7
Kentucky Teachers' Retirement System	5	63.6	48.8	58.1
Louisiana State Employees Retirement System	4	60.8	49.9	57.2
Teachers Retirement System of Louisiana	4	59.1	48.1	59.6
Maine Public Employees Retirement System	3	72.6	58.3	65.2
Maryland Employees Retirement & Pension System	5	61.2	60.0	76.3
Maryland Teachers Retirement & Pension System	5	66.1	50.9	65.0
Massachusetts State Employees' Retirement System	5	71.6	64.7	N.A.
Massachusetts Teachers' Retirement System	5	58.2	52.9	N.A.
Michigan Public School Employees' Retirement System	5	78.9	62.4	72.0
Michigan State Employees' Retirement System	5	78.0	61.8	72.4
Minnesota Public Employees Retirement Fund	5	70.0	54.0	62.9
Minnesota State Employees Retirement Fund	4	85.9	64.3	77.0
Mississippi Public Employees' Retirement System	5	67.3	49.5	59.1
Missouri State Employees' Plan	5	83.0	58.8	68.8
Montana Public Employees Retirement System	4	83.5	61.8	72.3
Montana Teachers Retirement System	4	66.2	52.0	61.7
Nevada Public Employees' Retirement System	5	72.5	56.1	60.8
New Hampshire Retirement System	5	58.3	50.2	57.4
New Jersey Public Employees' Retirement System	5	64.9	45.8	52.3
New Jersey Teachers' Pension & Annuity Fund	5	63.8	45.1	55.1
New York State & Local Employees' Retirement System	5	101.0	74.0	92.9
New York State & Local Police & Fire Retirement System	5	103.8	76.0	95.3
North Carolina Teachers' & State Employees' Retirement System	5	95.9	78.4	89.2
Ohio Public Employees Retirement System	4	N.A.	N.A.	N.A.
Ohio State Teachers Retirement System	4	60.0	51.6	65.5
Oklahoma Public Employees Retirement System	5	66.8	56.2	64.4
Oklahoma Teachers' Retirement System	5	49.8	31.9	36.0
Oregon Public Employees Retirement System	0	85.8	78.5	95.1
Pennsylvania Public School Employees' Retirement System	5	79.2	57.1	75.9
Pennsylvania State Employees' Retirement System	5	84.4	67.9	80.1
Rhode Island Employees' Retirement System	5	N.A.	N.A.	N.A.
South Carolina Police Officers' Retirement System	10	76.3	47.4	55.6
South Carolina Retirement System	10	67.8	42.1	52.8
South Dakota Retirement System	5	91.8	76.8	93.3
Tennessee State Employees, Teachers & Higher Education Employees Pension Plan	10	90.6	71.8	82.1

^aMarket value of assets reflects the fair value of investments from the statement of net financial assets, excluding securities lending collateral, which differs from the market value used in plan calculations. ^bExcludes corridors. N.A.— Not available.

Funded Ratio With Adjusted Asset Values (continued)

(As of 2009 Actuarial Valuation and 2009 Fiscal Year Market Values^a)

Plan Name	Reported Asset Smoothing Period (Years) ^b	Reported Funded Ratio – 2009 (%)	Funded Ratio at Market Value (%)	Funded Ratio with Five-Year Average Market Value (%)
Texas Employees Retirement System	5	87.4	66.8	77.0
Texas Teacher Retirement System	5	83.1	68.5	77.7
Utah Public Employees Contributory Retirement System	5	90.1	81.8	89.0
Utah Public Employees Noncontributory Retirement System	5	86.5	78.4	82.3
Vermont State Retirement System ^c	5	78.9	65.3	75.3
Vermont State Teachers' Retirement System	5	65.4	54.2	65.2
Virginia Retirement System	5	80.2	60.9	71.9
Washington Public Employees Retirement System – Plan 1	8	69.9	54.0	71.0
Washington Public Employees Retirement System – Plan 2/3	8	99.3	76.7	82.3
Washington Teachers Retirement System – Plan 1	8	75.3	58.2	77.3
Washington Teachers Retirement System – Plan 2/3	8	101.8	78.6	87.0
West Virginia Public Employees' Retirement System	4	79.7	65.8	75.3
West Virginia Teachers' Retirement System	0	41.3	40.8	32.9
Wisconsin Retirement System	5	99.8	87.3	93.1

^aMarket value of assets reflects the fair value of investments from the statement of net financial assets, excluding securities lending collateral, which differs from the market value used in plan calculations. ^bExcludes corridors. N.A. – Not available.

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