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Underfunded Public Pensions in the United States:

The Size of the Problem, the Obstacles to Reform and the Path Forward

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Executive Summary

Statement of Problem

Across the United States, state and local government-sponsored pension plans are in trouble. They are dangerously underfunded to the extent that their assets are unable to meet future liabilities without either outside investment returns or huge cash infusions. As evidence, the sidebar located to the right lists the five states with the largest unfunded actuarial accrued liabilities (UAAL or unfunded liabilities).¹

Over the past several years, estimates of the total size of the public pension problem in the U.S. have ranged from \$730 billion in unfunded liabilities² to \$4.4 trillion.³ Many financial economists believe that the true size of the total unfunded liability lies closer to the larger estimates than it does to the smaller.

For purposes of comparison, an unfunded liability of \$4.4 trillion would constitute a substantial 33% of the 2011 real U.S. gross domestic product (GDP) of \$13.32 trillion.⁴ As a further reference point, the 2011 Social Security Trustees report calculates that through the end of 2085, the present value (PV) of unfunded U.S. Social Security obligations is \$6.55 trillion.⁵

The problem of public pensions' unfunded liabilities is growing. Using the conservative estimates of governments themselves, Wilshire Consulting estimates

Five States with the Largest Unfunded Pension Liabilities

Liabilities based on government financial statements (\$billions and % underfunded)

1. California: \$154.2 (32% underfunded)
2. Illinois: \$85.4 (57%)
3. Ohio: \$75.3 (39%)
4. New Jersey: \$62.9 (51%)
5. Texas: \$53.7 (30%)

Liabilities discounted using Treasury yields (\$billions and % underfunded)

1. California: \$475.7 (59% underfunded)
2. Illinois: \$219.1 (77%)
3. Ohio: \$216.9 (65%)
4. Texas: \$188.2 (60%)
5. New York: \$166.4 (47%)

SOURCE: Novy-Marx and Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." 2009.

¹ The sidebar on this page notes that the same states will have a different unfunded liability depending on the rate used to discount future pension obligations (in this case the rates used by respective state governments, or the yield on Treasuries). This is a topic discussed extensively in Section 2 and Section 4.

² Wilshire Consulting. *2012 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation*. Santa Monica, CA: Wilshire Associates Incorporated, 2012: 3.

³ Rauh, J. (2011, October 5). *Kellogg Insight Presents*. Retrieved March 18, 2012, from "Shortfall for State and Local Pension Systems Today: Over \$4 Trillion": <http://kelloggfinance.wordpress.com/2011/10/06/shortfall-for-state-and-local-pension-systems-today-over-4-trillion/>.

⁴ Bureau of Economic Analysis. *Economic Accounts*. April 2, 2012 <<http://www.bea.gov/national/index.htm#gdp>>.

⁵ Trustees, OASDI. *The 2011 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. Annual Report. Washington, D.C.: OASDI Trustees, 2011.

that the market value of the 126 largest public pension plan assets has shrunk from equaling 95% of all state pension liabilities in 2001, to funding only 74% of liabilities in 2011 (after having reached a low of 64% in 2009).^{6 7}

As this funded ratio shrinks, unfunded liabilities necessarily grow. The sooner plan sponsors (states and, in many cases, local governments) implement meaningful reforms, the less likely the problem will continue to spin out of control. However, many states and municipalities face an uphill climb in implementing reforms, with legal and political obstacles impeding progress. In the case of pension reform, time is money, and any delay in implementing needed changes will likely cost taxpayers — and public pension beneficiaries — significant resources.

In the course of writing this paper, we have not completed new actuarial analysis of public pension liabilities, or attempted to create a new estimate of the size of the unfunded liabilities of state and local pension plans. Rather, we attempt to explain the complex nature of pensions as a form of deferred compensation, to describe the size of the problem faced by public pension plan sponsors, and — most important — to offer a series of potential policy changes that can address the problem of public pension underfunding.

In order to accomplish these tasks in a comprehensive manner, we analyze and explain a series of recent efforts to size the magnitude of the public pension crisis in the U.S., and further examine the myriad financial, accounting, legal and political causes of the current predicament. We will also examine case studies of those states and local governments that have succeeded in the face of pension challenges and those that have not. Only through understanding the mix of dynamic issues that affect public pensions will we be able to generate practical solutions to this growing problem.

The potential solutions discussed in this paper will center on changes to public pension plans. They can be divided into two groups: potential benefit design changes and potential financing changes.

A. Potential Benefit Design Changes

1. Eliminate legislative end runs around the collective bargaining process (i.e., sweeteners). Benefits would be either negotiated or legislated, but not both.
2. Eliminate final-salary plans in favor of final average compensation (FAC), career average or hybrid (e.g., cash balance) designs.
3. Reduce/eliminate postretirement cost-of-living adjustments, or make them subject to affordability (possibly conditioned on funded status).
4. Tighten up eligibility for heavily subsidized benefits, such as disability and early retirement.
5. Tighten up eligibility for overtime hours to reduce opportunities for pension padding.
6. Raise the age of eligibility for full retirement benefits. When early retirement is offered, it should be actuarially fair (i.e., the PV of benefits received under early retirement must be equal

⁶ Wilshire Consulting. *2012 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation*. Santa Monica, CA: Wilshire Associates Incorporated, 2012: 3.

⁷ Wilshire's liability totals for 2011 so far include only 102 of the total 126 plans it normally studies. The 102 reported plans have a funded ratio of 74% for 2011. Wilshire estimates that all 126 plans could have a funded ratio of as high as 77% for 2011. This paper will refer to 74% when describing Wilshire's 2011 funded ratio for state pension plans.

to the PV of benefits that a retiree would have received if he or she had delayed receipt of benefits until normal retirement age).

7. Reduce benefit accruals (i.e., use lower percentages of compensation to calculate benefit accruals).
8. Combine pensions with Social Security participation.
9. Raise employee contributions.

B. Potential Financing Changes

1. Reduce the intergenerational risk transfer. For a fully funded plan, this would mean investing assets covering former employees' liabilities in matching assets (when possible), and changing the actuarial return assumption to reflect this policy. For less mature public pension funds, this might not involve substantial changes in asset allocation (due to the fact that less mature public pension funds have fewer employees near retirement or already retired).
2. In keeping with the previous item, annual required contributions (ARC) calculations could be based on:
 - A risk-free rate used to discount liabilities postemployment
 - A discount rate reflecting the asset allocation invested to match the liabilities during employment

This will ensure that the target liabilities associated with current retirees are set assuming no risk taking for services already performed, while the liabilities associated with current workers are discounted at a rate in accord with their pension assets' likely rate of growth during their work lives.

3. Require amortization of deficits over reasonable periods. On the basis of an individual participant, amortization should not last much longer than an employee's remaining work life.
4. Make contributing the ARC a legal requirement. This would require federal legislation for the state plans and federal or state legislation for plans sponsored by local governments.
5. Control and monitor the size of a pension plan's funding ratio. In other words, as a plan's assets and liabilities grow relative to the size of the plan sponsor and its economy, do not automatically allow the overall level of asset/liability mismatch to increase without examining whether it truly is affordable in case of poor investment outcomes. The funding ratio should be monitored through required stress testing in actuarial valuations.

We acknowledge that the road to substantive pension reform is a difficult one, fraught with legal, political and financial obstacles. We have outlined these challenges to public pension reform in this paper. However, the rewards of public pension reform are substantial. In, Section 10: Potential Solutions, we apply some of the most effective potential benefit design changes (listed above) to a model pension plan. The resulting savings of these changes are significant, potentially reducing the cost to taxpayers by as much as 85%.

By any measure, the opportunity for reduction in overall cost to taxpayers is significant. These cost reductions, in concert with the potential financing changes listed above, offer the prospect of real and beneficial reform for public pension plan sponsors, beneficiaries and taxpayers. Certainly, pension plan sponsors and taxpayers stand to benefit financially from the reduced cost of public pension plans, but plan beneficiaries also stand to benefit from public pension plan reforms. Most notably, sound reform makes it all the more likely that public pension plans will still exist and be in a position to pay out benefits well into the future.

Section 1: Fundamentals of Pensions

In simple terms, pensions are deferred compensation. Under a pension, services performed during one period are exchanged for pension benefits payable during a future period. Because the promise to pay the benefit is not ironclad, it is often thought desirable that investment assets be set aside to pay for the promised benefits via trust, annuity contract, or another funding vehicle. Several parties are involved in this transaction:

- **Participants and beneficiaries:** Those individuals who will receive benefits under the plan, who may be represented by collective bargaining. These individuals often contribute a percentage of their own salary toward their future pension benefits.
- **Settlers:** The entity or entities responsible for establishing the plan's benefits and maintaining the plan. These entities may or may not be the same as the participating employers.
- **Participating employers:** The employers responsible for contributing to the pension funding vehicle.
- **Trustees:** In the case of a plan funded by a trust, the entity or entities responsible for maintaining the accumulation vehicle. Generally, this function owes a fiduciary duty to the participants and beneficiaries.

Pension benefits can be classified into two types: defined benefit (DB) plans and defined contribution (DC) plans. The source of the distinction is due to the need to balance the following equation over the life of a pension program:

$$\text{Contributions} + \text{Investment Income} = \text{Benefits} + \text{Expenses}$$

The reason this equation must balance should be rather evident: Benefits must be paid from *some* source. In other words, what comes out must match what goes in. If no assets are put aside to accumulate, then all benefits must be paid directly as a result of contributions. If some prefunding has occurred, the investment income on the prefunding serves to offset contributions that would otherwise be due.

In a DC plan, demonstrated in Equation B (below), benefits are produced by the actual contributions and actual investment earnings. When benefits are predetermined by some formula (as demonstrated in Equation A), and contributions are made in amounts sufficient to fund the benefit promise, a DB pension plan results.

$$\text{A. } \text{Contributions} = (\text{Benefits} + \text{Expenses}) - \text{Investment Income}$$

or

$$\text{B. } \text{Benefits} = \text{Contributions} + (\text{Investment Income} - \text{Expenses})$$

Another way to look at this differentiation is in terms of risk. In a DB plan, the employer bears the risk of planned contributions being insufficient to fund the benefits. In a DC plan, the beneficiaries bear the risk that the contributions and investment income will not be sufficient to provide adequate benefits. Hybrid arrangements, where both contributions and benefits might be adjusted or multiple plans might be provided, also exist but are less common in the U.S. One such hybrid is the U.S. Federal Employee Retirement System (FERS), a plan discussed further in Section 9.

DB benefits vary in type, and cash flows vary considerably depending on the details of plan design. DB plans typically define the benefit as either an amount payable as a type of life annuity or as a lump sum. Examples include:

- **Final pay plan:** The annuity payment equals 1% multiplied by the years of service, multiplied by the final five-year average salary. It is payable for the participant's lifetime.
- **Career pay plan:** The annuity payment equals 1% multiplied by total career pay. It is payable for the participant's lifetime.
- **Cash balance plan:** Establishes a notional account, credited annually with a percentage of that year's pay, accumulated at a declared rate of interest (e.g., 5% or the current yield on one-year Treasuries). The benefit is payable as a lump sum at retirement or annuitized (using current or fixed rates).

DC plans are typically structured as accounts to which contributions are made (one for each participant). Each account is invested in financial instruments (most often stocks and bonds), and the actual returns on these instruments determine the value of the account. In the U.S., it is most common for participants to have the choice of investment among various vehicles (often mutual funds), but some plans leave the choice of asset allocation to the plan trustee, or fiduciary.

Ultimately, the allocation of risk is an important one when it comes to deciding what type of retirement plan to institute. If funds are insufficient to provide adequate benefits at the time of retirement, the costs (both financial and in terms of quality of life) can be severe. This issue is a major concern for governments that currently provide DB retirement plans for their employees, as it is becoming increasingly clear that their plans are short of funds. When a public pension plan runs short on funds, beneficiaries will almost certainly suffer most, but taxpayers will also likely end up paying the unexpected costs.

Section 2: Magnitude of Public Pension Underfunding

The question of the actual size of government-sponsored pension plans' unfunded liabilities is subject to debate, with in-depth studies over several years producing estimates ranging from a conservative \$730 billion to an enormous \$4.4 trillion. The \$4.4 trillion figure is an estimated update to an earlier calculation of \$3.1 trillion, and was generated by Joshua Rauh (one of the authors of the original \$3.1 trillion figure and a prominent expert on the nation's government-sponsored pension crisis).^{8 9} Many

⁸ Rauh, J. (2011, October 5). *Kellogg Insight Presents*. Retrieved March 18, 2012, from "Shortfall for State and Local Pension Systems Today: Over \$4 Trillion": <http://kelloggfinance.wordpress.com/2011/10/06/shortfall-for-state-and-local-pension-systems-today-over-4-trillion/>.

⁹ As explained later in this Section and Section 4, the growth in this figure is largely due to the fact that by October, 2011, the Treasury yields used to discount the liabilities had lowered by about 150 basis points since Novy-Marx and Rauh completed their earlier calculations in June, 2009.

financial economists believe the true size of the total liability lies closer to the larger estimates, than it does to the smaller. Various methods are used by different entities when valuing both pension plan assets and liabilities. These methods are discussed in this section and Section 4.

A Growing Problem

The problem of public pensions' unfunded liabilities is large and has grown considerably over the past decade. In the 2012 edition of its annual report on state retirement systems, Wilshire Consulting estimates that the market value of the 126 largest public pension plan assets has shrunk from funding 95% of all state pension liabilities in 2001, to funding only 74% of liabilities in 2011 (after having reached a low of funding 64% of liabilities in 2009).^{10 11} Wilshire uses the conservative calculations of the governments themselves when determining the size of plans' liabilities. As will be discussed in Section 4, the method used to size liabilities is a contentious issue within the context of the current debate on public pensions.

State leaders are reacting to the growing nature of this crisis. The National Conference of State Legislatures (NCSL) cites a "flurry of activity" around public pension reform legislation in 2010.¹² During that year, 21 states enacted changes to their pension laws; in 2011, 25 states had enacted significant changes in public pension plans by the end of June (with some states acting in both years).¹³ When one begins to analyze the size of the liabilities owed by government-sponsored pension plans, the reason for legislators' concern is clear.

Valuing Public Pension Plan Liabilities

Finance professors Robert Novy-Marx of the Simon Graduate School of Business (University of Rochester) and Joshua Rauh of the Kellogg School of Management (Northwestern University) have done extensive research on the size and scope of public pension obligations. Their work is cited extensively throughout this section regarding the overall size of public pension obligations and the size of the obligations of individual public plan sponsors (i.e., states or local government units).

In their 2009 summary of the assets and liabilities of the 116 largest public pension plans (using reporting data from 2008), Novy-Marx and Rauh calculated the aggregate present value (PV) of all state-sponsored public pension plan liabilities to be \$2.97 trillion. This figure was based on reporting by each of the 50 states in their respective financial statements (see **Appendix Figure A**).¹⁴ As will be discussed further in Section 4, many of the states currently use rates in the range of 8% when discounting their

¹⁰ Wilshire Consulting. *2012 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation*. Santa Monica, CA: Wilshire Associates Incorporated, 2012: 3.

¹¹ Wilshire's liability totals for 2011 so far include only 102 of the total 126 plans it normally studies. The 102 reported plans have a funded ratio of 74% for 2011. Wilshire estimates that all 126 plans could have a funded ratio of as high as 77% for 2011. This paper will refer to 74% when describing Wilshire's 2011 funded ratio for state pension plans.

¹² Snell, Ron. *National Conference of State Legislatures, Pension Reform: Not Easy, But Worth It*. August 2010. August 9, 2011 <<http://www.ncsl.org/?tabid=20716>>.

¹³ Snell, Ron. "State Retirement Legislation in 2010 and 2011." Presentation. June 30, 2011.

¹⁴ Novy-Marx, Robert and Joshua Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." *Journal of Economic Perspectives* (2009): 198.

future pension liabilities.¹⁵ If more conservative Treasury yields are used to discount the same 2008 state pension obligations, the size of the total liability balloons to \$5.17 trillion.¹⁶ (Section 4 will also discuss the issue of appropriate discount rates).

In a later study using reporting data from 2009, Novy-Marx and Rauh updated their figures to include all state *and local* pensions. Using newer data and including local plans, Novy-Marx and Rauh sized total plan liabilities as being worth \$5.4 trillion when discounted using the Treasury rate.¹⁷ Joshua Rauh has since updated this calculation of state and local pension liabilities, and, as of October, 2011, estimates the size of total state and local pension liabilities at \$7.03 trillion.¹⁸ This growth is largely due to the fact that by October, 2011, the Treasury yields used to discount the liabilities had lowered by about 150 basis points since Novy-Marx and Rauh completed their earlier calculations in June, 2009.¹⁹

Novy-Marx and Rauh, however, are not the only researchers to size the liabilities of public pension plans. In an April, 2011 report using data from fiscal year 2009, the Pew Center on the States reported the total liabilities of 231 public pension plans (including all major state pension plans) as \$2.94 trillion.²⁰ Pew used the actuarial assumptions employed by each plan sponsor in making the previous calculation.²¹ When Pew used the Treasury rate to discount the same liabilities, the amount grew to \$4.6 trillion.²²

In its 2012 report, Wilshire calculates the total size of 2010 pension liabilities for the 126 largest public plans at \$3.23 trillion (As of this paper's publishing, Wilshire's total state pension liability calculations for 2011 are not complete).²³ As mentioned previously, Wilshire uses the conservative calculations of the government sponsors themselves when determining the size of plans' liabilities. Some of the above-listed liability totals are displayed in **Figure 1** below.

¹⁵ Congressional Budget Office (CBO). The Underfunding of State and Local Pension Plans. Washington D.C.: CBO, 2011: 3.

¹⁶ Novy-Marx, Robert and Joshua Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." Journal of Economic Perspectives (2009): 198.

¹⁷ Rauh, J. (2011, October 5). *Kellogg Insight Presents*. Retrieved March 18, 2012, from "Shortfall for State and Local Pension Systems Today: Over \$4 Trillion": <http://kelloggfinance.wordpress.com/2011/10/06/shortfall-for-state-and-local-pension-systems-today-over-4-trillion/>.

¹⁸ Ibid.

¹⁹ Ibid.

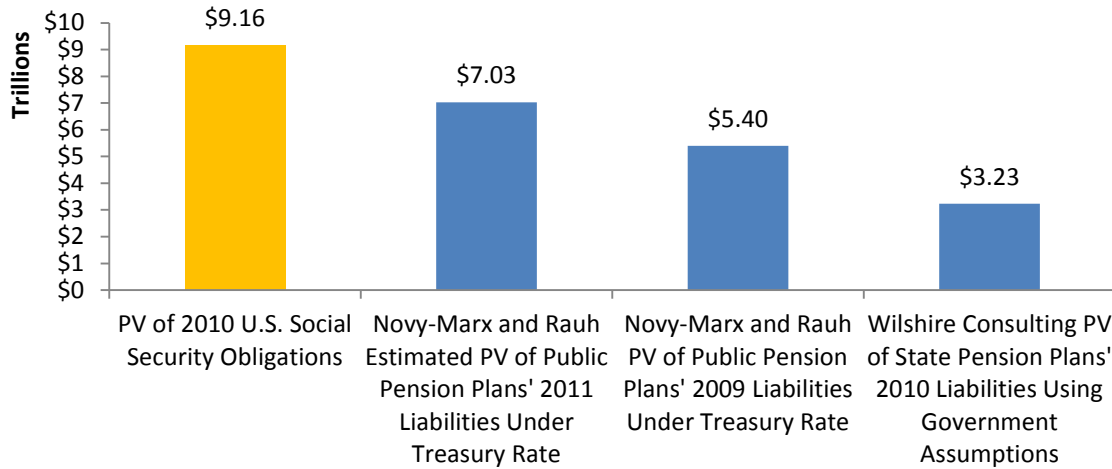
²⁰ Pew Center on the States. "The Widening Gap: The Great Recession's Impact on State Pension and Retiree Health Care Costs." April, 2011: 1, 9.

²¹ Ibid: 8.

²² Ibid: 8.

²³ Wilshire Consulting. *2012 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation*. Santa Monica, CA: Wilshire Associates Incorporated, 2012: 3.

Figure 1: Comparison of Total Present Values (PV) of Liabilities²⁴



For purposes of comparison, it is worth examining the present value of the future cost of the obligations of the Old Age, Survivors and Disability Insurance (OASDI) program, commonly known as U.S. Social Security. Discounted at a rate of only 5.7%²⁵, OASDI's 2011 report states the present value of 2010 Social Security obligations as totaling \$9.16 trillion.^{26 27} The largest estimate of the PV of public pension liabilities (discounting at the Treasury rate) is equal to over 75% of the PV of U.S. Social Security obligations, despite the fact that all current state and local employees constitute only 5.2% of the total U.S. population. From these numbers, it is clear that very large promises have been made to public pension beneficiaries.

Valuing Public Pension Plan Assets

Almost all states and local governments prefund some of their future pension liabilities, and these funds are invested in a diversified portfolio of securities. As a result of the financial turmoil of the past several years, there has been a great strain on those pension plans that rely on portfolios of invested assets to fund their benefit payments. Pension plan assets can be calculated at either their market value or their actuarial value. For publicly traded securities, a market value is the amount that investors are willing to pay for them (which may be difficult to estimate). Calculations of assets' actuarial value vary, but they generally recognize realized and/or unrealized gains and losses in the market value versus book value over a period of years (typically five), rather than immediately. The use of the actuarial value of assets (rather than the market value) in financial statements and cost calculations is a technique known as smoothing.

Smoothing helps plan sponsors reduce variability in their reporting of asset values (i.e., smoothed asset values do not immediately adjust according to market changes). This reduced variability then allows for a more stable environment in which to plan pension funding over the long term. Given the recent rocky

²⁴ See citations in previous paragraph.

²⁵ Trustees, OASDI. *The 2011 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. Annual Report. Washington, D.C.: OASDI Trustees, 2011.

²⁶ Ibid.

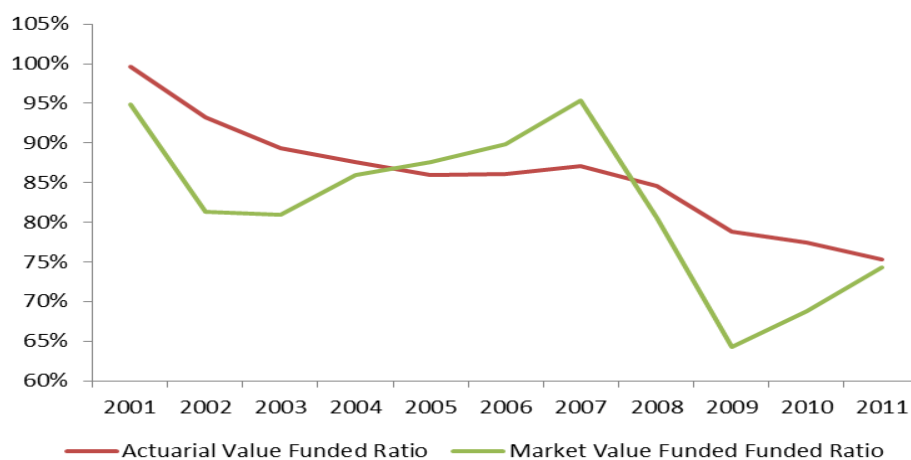
²⁷ All OASDI citations refer to calculations of the long-range (75-year) actuarial balance under intermediate assumptions.

investment environment, many plans' actuarial asset values have been greater than their market values since 2008 (i.e., market losses have not been fully recognized). That said, the 2012 Wilshire Report on State Retirement Systems does show a recent trend of convergence between the actuarial and market value of assets (see **Figure 2** below).²⁸

In its 2012 report on state retirement systems, Wilshire Consulting measured the 2011 market value of most of the largest public retirement plans' assets as a percentage of long-term liabilities (or the market value funded ratio) and found the plans analyzed to be 74% funded (up from 69% funded in 2010).^{29 30} This uptick occurred as investment assets have recovered following significant losses in recent years. As previously noted, Wilshire accepts governments' self-reported accounting of their pension liabilities for its calculations.

Figure 2, below, shows the overall decline in the funded ratios of the plans studied by Wilshire since 2001 (measured in terms of both actuarial and market value). Use of the actuarial value of assets clearly smooths out the highs and lows seen in the market value of assets. The decision to use one or the other of these two methods when valuing pension assets can have a large effect on a plan's current funded status (and hence, the size of its unfunded liabilities). Since 2008, the decision to use the actuarial valuations of assets for the purpose of determining the funded status of public pension plans has resulted in a greater funding ratio than the use of the market valuations of the same assets.

Figure 2: Wilshire Comparison of Actuarial Value Funded Ratio and Market Value Funded Ratio of State Retirement Systems^{31 32}



²⁸ Wilshire Consulting. *2012 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation*. Santa Monica, CA: Wilshire Associates Incorporated, 2012: 3.

²⁹ Ibid.

³⁰ Wilshire's liability totals for 2011 so far include only 102 of the total 126 plans it normally studies. The 102 reported plans have a funded ratio of 74% for 2011. Wilshire estimates that all 126 plans could have a funded ratio of as high as 77% for 2011. This paper will refer to 74% when describing Wilshire's 2011 funded ratio for state pension plans.

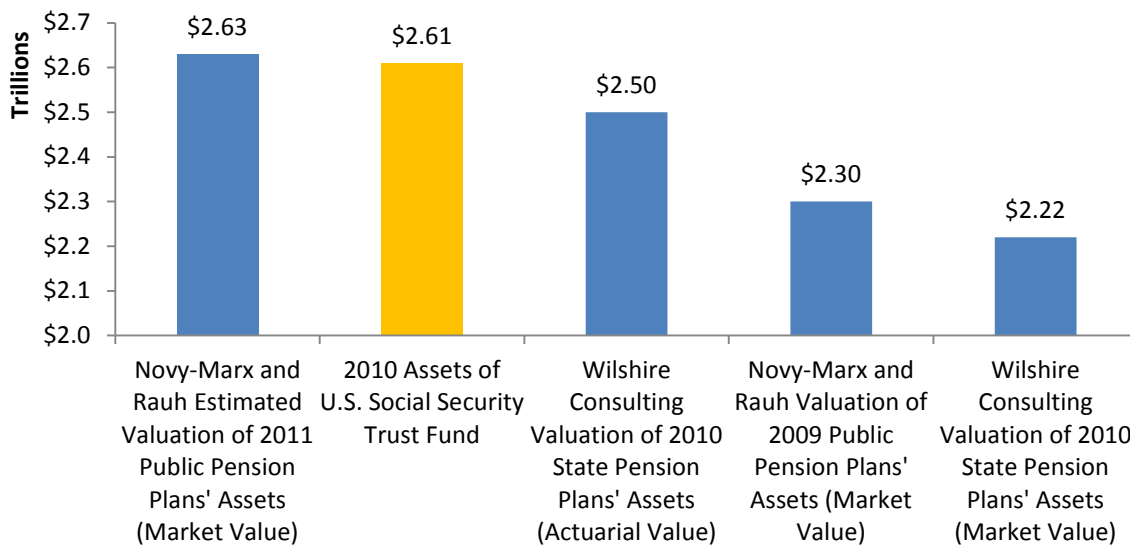
³¹ Ibid: 3.

³² Note: Data is limited to the state retirement systems for which Wilshire Consulting had data at the time of report. For example, 126 plans reported actuarial values for 2010, while only 102 have reported actuarial values for 2011.

Using the market value method, Novy-Marx and Rauh calculated total state pension plan assets as worth \$1.94 trillion using data from 2008.³³ In work using data from June, 2009, Novy-Marx and Rauh placed the value of total assets from all state *and local* pension plans as being worth \$2.3 trillion.³⁴ Joshua Rauh's more recent 2011 update estimates the total state and local pension plan assets as being worth \$2.63 trillion.

Using the actuarial (smoothing) method, Pew calculates state pension plan assets at \$2.28 trillion (using data from fiscal year 2009).³⁵ Wilshire, meanwhile reports the value of state pension plan assets using both methods. Since the 2011 data so far includes only a portion of the 126 plans that Wilshire studies, it is useful to look at Wilshire's complete 2010 data. Under the market value method, Wilshire lists 2010 state pension plan assets at \$2.2 trillion, while under the actuarial (smoothing) method, 2010 assets total \$2.5 trillion.³⁶ For comparison purposes, the U.S. Social Security Trust Funds were valued at \$2.61 trillion in assets in December 2010.^{37 38} Some of these asset totals are displayed in **Figure 3** below.

Figure 3: Comparison of Total Asset Valuations³⁹



³³ Novy-Marx, Robert and Joshua Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." *Journal of Economic Perspectives* (2009): 198.

³⁴ Rauh, J. (2011, October 5). *Kellogg Insight Presents*. Retrieved March 18, 2012, from "Shortfall for State and Local Pension Systems Today: Over \$4 Trillion": <http://kelloggfinance.wordpress.com/2011/10/06/shortfall-for-state-and-local-pension-systems-today-over-4-trillion/>.

³⁵ Pew Center on the States. "The Widening Gap: The Great Recession's Impact on State Pension and Retiree Health Care Costs." April 2011: 1, 9.

³⁶ Wilshire Consulting. *2012 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation*. Santa Monica, CA: Wilshire Associates Incorporated, 2012: 3.

³⁷ Trustees, OASDI. *The 2011 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. Annual Report. Washington, D.C.: OASDI Trustees, 2011.

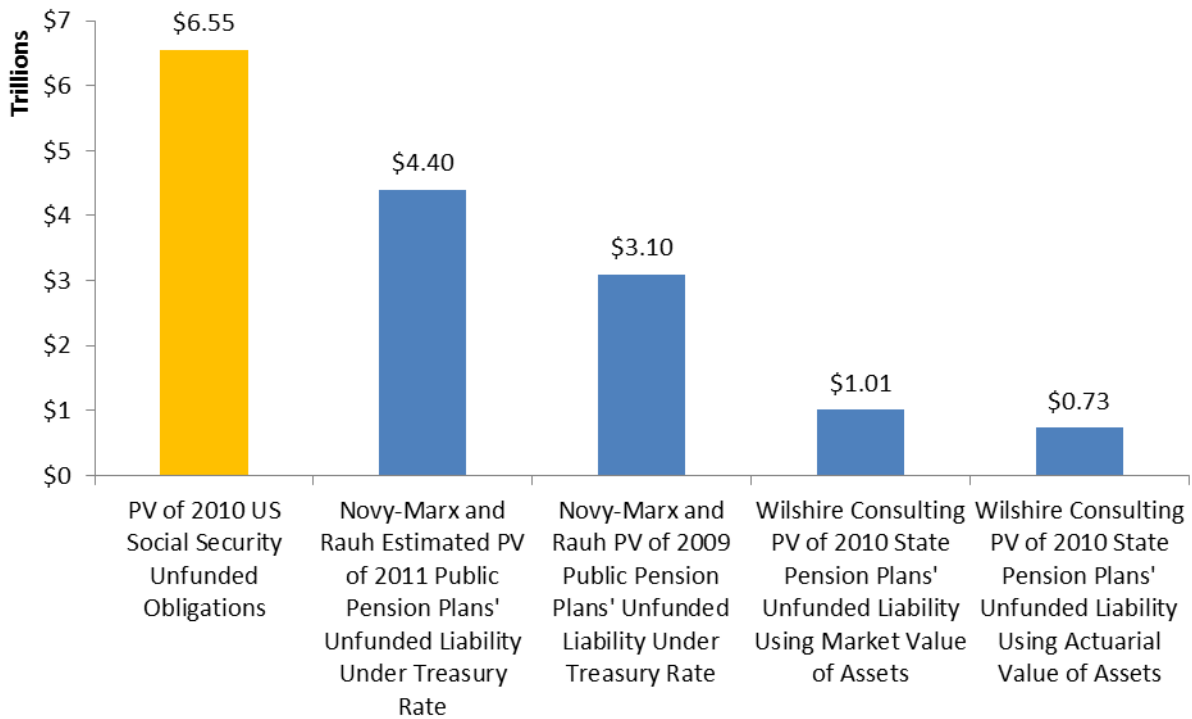
³⁸ Total includes both the Old Age and Survivors (OAS) Trust Fund and the Disability Insurance (DI) Trust Fund.

³⁹ See citations in previous paragraph.

Size of Public Pension Plan Unfunded Liabilities

As seen above, both the discounting methodology and the method used to value pension plan assets has a large impact on the size of a pension plan’s unfunded liability (which is a simple calculation of liabilities minus assets). **Figure 4** below displays the unfunded liabilities resulting from the asset and liability calculations above. The numbers in **Figure 4** range from a very conservative \$730 billion (using Wilshire’s 2010 actuarial value of assets and government liability assumptions) to an enormous \$4.4 trillion (using Novy-Marx and Rauh’s 2011 estimate of market value of assets and liabilities discounted at the Treasury rate).⁴⁰ The \$4.4 trillion figure constitutes a substantial 33% of the 2011 real U.S. GDP of \$13.32 trillion.⁴¹ As a further reference point, the 2011 Social Security Trustees report calculates that through the end of 2085, the entire present value of unfunded U.S. Social Security obligations is \$6.55 trillion.⁴²

Figure 4: Comparison of Present Value (PV) of Unfunded Liabilities⁴³



⁴⁰ Ibid.

⁴¹ Bureau of Economic Analysis. *Economic Accounts*. April 2, 2012 <<http://www.bea.gov/national/index.htm#gdp>>.

⁴² Trustees, OASDI. *The 2011 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. Annual Report. Washington, D.C.: OASDI Trustees, 2011.

⁴³ Size of unfunded liabilities derived from subtracting asset totals in Figure 3 from liability totals in Figure 1.

States with the Highest Percentage of Public Pension Underfunding

Liabilities as calculated and stated in state government financial statements:

1. Oklahoma: 63% Underfunded
2. Arkansas: 61%
3. Indiana: 57%
4. Illinois: 57%
5. Connecticut: 52%

Liabilities discounted using rate of U.S. Treasuries:

1. Arkansas: 79% Underfunded
2. Oklahoma: 78%
3. Rhode Island: 78%
4. Illinois: 77%
5. Indiana: 75%

SOURCE: Novy-Marx and Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." 2009.

Determining What State and Local Governments Owe

The burden of the unfunded liabilities listed above is spread unevenly throughout the states and local governments; some face much more severe financial challenges than do others. **Appendix Figure A** lists the December, 2008 assets and liabilities of the 116 largest public pension funds by state. Using stated liabilities, 20 states have unfunded liabilities less than \$10 billion, while five states have unfunded liabilities in excess of \$50 billion. Using the Treasury rates to discount, only eight states have unfunded liabilities less than \$10 billion, while 24 states have unfunded liabilities in excess of \$50 billion, a much less rosy picture.

Absent *very* large investment returns (well above 8%), these unfunded pension liabilities will generate sizable revenue demands on states and their taxpayers. Furthermore, state-sponsored pension plans only constitute a portion of the public pension unfunded liability problem. Many local municipalities and school districts also sponsor separate pension plans, and many of those plans are also underfunded.

Local Government Obligations Add to the Problem

According to 2010 calculations performed by Novy-Marx and Rauh, if discounted with the yields of zero-coupon Treasuries, the unfunded pension liabilities owed to two-thirds of local government workers in

the United States would total \$383 billion.⁴⁴ This total unfunded obligation results in an obligation of more than \$14,000 per local household in affected jurisdictions.⁴⁵ If the total obligation is projected out to account for the other third of local government workers in the United States (not covered in the initial calculation), the total local public pension unfunded obligation balloons to \$574 billion.⁴⁶ This local government unfunded obligation exists on top of trillions in state unfunded obligations.

⁴⁴ Novy-Marx, Robert and Joshua Rauh. "The Crisis in Local Government Pensions in the United States." 2010: 1.

⁴⁵ Ibid.

⁴⁶ Ibid.

Since all of the local governments that sponsor local underfunded pension plans are located in states with underfunded public pension plans of their own, risks are compounded for taxpayers and public pension beneficiaries alike. For example, a resident in Chicago has to worry not only about the city's unfunded pension liability of \$41,966 per household,⁴⁷ but also the state of Illinois' unfunded pension liability of \$46,152 per household.⁴⁸ This leaves each Chicago household responsible for \$88,118 in unfunded public pension liabilities.

The Five Cities with the Worst Pension Funding Problems*

	Net Pension Assets (\$B)	Liability as Stated (\$B) and % Underfunded	Liability Treasury Yield (\$B) and % Underfunded	Unfunded Liability per household (under Treasury Yield)
Chicago	\$21.8	\$46.3 (53%)	\$66.6 (68%)	\$41,966
New York City	\$92.6	\$155.8 (41%)	\$214.8 (57%)	\$38,886
San Francisco	\$11.9	\$16.3 (27%)	\$22.6 (47%)	\$34,940
Boston	\$3.6	\$7.4 (51%)	\$11 (67%)	\$30,901
Detroit	\$4.6	\$8.1 (43%)	\$11 (58%)	\$18,643

*Ranked based on size of unfunded public pension liability per household. Calculations of liabilities performed in June 2009.

SOURCE: Novy-Marx and Rauh. "The Crisis in Local Government Pensions in the United States." 2010.

As discussed later in this paper in Section 8, some local governments have already begun to default on their pension obligations and declare bankruptcy; such actions have the potential to burden states with even greater pension obligations than those they already face.

Potential impact of Unfunded Public Pension Liabilities on Tax Burdens

In the face of such overbearing financial burdens, there are no easy answers. **To fully fund both state and local public pension plans (with liabilities discounted using Treasury yields), every household in the United States would have to be assessed an additional tax of \$1,398 a year for 30 years.**⁴⁹ This tax would have to be levied on top of any additional tax revenue generated through economic growth⁵⁰ and is based on the assumption that no public pension reforms are put in place to reduce state pension liabilities.

⁴⁷ Ibid: 29.

⁴⁸ This number is calculated by taking Illinois' \$219.1 billion in unfunded pension liabilities (cited in **Appendix Figure A**) and dividing that amount by the average amount of Illinois households that the U.S. census counted for the years 2005 to 2009: 4,749,388 (<http://quickfacts.census.gov/qfd/states/17000.html>).

⁴⁹ Novy-Marx, Robert and Joshua Rauh. "The Revenue Demands of Public Employee Pension Promises." 2011: 1.

⁵⁰ Ibid.

Five States with the Largest Unfunded Pension Liabilities

Liabilities based on government financial statements (\$billions and % underfunded)

6. California: \$154.2 (32% underfunded)
7. Illinois: \$85.4 (57%)
8. Ohio: \$75.3 (39%)
9. New Jersey: \$62.9 (51%)
10. Texas: \$53.7 (30%)

Liabilities discounted using Treasury yields (\$billions and % underfunded)

6. California: \$475.7 (59% underfunded)
7. Illinois: \$219.1 (77%)
8. Ohio: \$216.9 (65%)
9. Texas: \$188.2 (60%)
10. New York: \$166.4 (47%)

SOURCE: Novy-Marx and Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." 2009.

A 2011 comparison of the amounts projected as being necessary to fully fund public pension obligations (discounted to their present value using Treasury yields) to current state and local tax burdens (as calculated by the Tax Foundation) can be found in this paper's appendix (see **Appendix Figure B**). **Appendix Figure B** indicates that the greatest projected increase in state and local taxes is 22.5% (New Mexico), while 33 states would see an increase of 10% or more in their state and local tax burden. The average required increase in the state and local tax burden is 12.1%. It is important to remember that the tax increases displayed in **Appendix Figure B** are calculated at the state level. As evidenced in the Chicago example (above), the residents of some municipalities will actually be affected to a far greater extent than others.

While the dollar amount of the projected *per capita* tax increases may not alone seem overwhelming to some (the projected increases range from \$127 to \$952 depending on the state), it is questionable whether it would be politically feasible to institute a 12.1% (or greater) increase over current state and local tax burdens for a period of 30 years, for the sole purpose of funding public pensions. As evidence, an August 2011 poll conducted on

this issue found that voters "strongly favor measures to pare the compensation of current and future public employees."⁵¹ The nationally conducted poll found that by almost a 2-1 ratio voters think that current public employees should contribute more toward their pension benefits.⁵² A majority of poll respondents (51%) said that they would not be willing to cut social service programming to maintain the compensation of public employees.⁵³ A plurality of 48% favors freezing public employees' salaries during the financial crisis that states are currently facing (while 40% oppose such a measure).⁵⁴

The survey insight that is particularly relevant to **Appendix Figure B** is the fact that 64% of poll respondents would not be willing to have their taxes raised as a means of keeping salaries and benefits of current public employees at their current levels. This means that regardless of the inclinations of state elected officials, it will be extremely challenging to institute tax increases to properly fund state pension plans (and nearly as difficult to cut other state expenditures to accomplish the same goal). This scenario points to a looming showdown between taxpayers, elected state officials and many public sector unions.

⁵¹ Schoen, Douglas E. "Voters Want State Government Reform." *The Wall Street Journal*. September 19, 2011.

⁵² Ibid.

⁵³ Ibid.

⁵⁴ Ibid.

Section 3: The Theory of Pension Funding

When considering the size of unfunded public pension obligations, it is important to consider why pensions are funded by assets in the first place. There are multiple ways to structure a retirement plan; a defined benefit pension funded by assets is only one possibility. In comparison to some alternatives, such a plan is potentially more complex to manage, opening the door to issues involving intergenerational equity and unfunded obligations.

The simplest retirement plan funding format, in concept, is pay as you go. Under this format, whenever a benefit is payable to a beneficiary, the sponsor simply pays it. Under pay as you go, no assets are dedicated toward paying benefits before they are due. However, there are elements of pay as you go that might be considered undesirable:

- Should the sponsor of a retirement plan not have sufficient assets at the time of benefit payment, the beneficiary is at risk. A pay-as-you-go system is highly dependent on the continuing credit worthiness of the plan sponsor.
- The pattern of compensation cash flows is not well aligned with the pattern of labor. That is, labor is performed currently, but funding is deferred far into the future. (In a public plan context, future taxpayers would be funding current services.) This mismatch would be aggravated should the workforce and retiree populations not remain in balance or if these populations grew in size relative to the financial resources of the contributing employers.

As a result of the first bullet, it is generally considered desirable —as a matter of public policy —that private sector sponsors of pension funds be required to prefund their plans. While the danger of impermanence does not typically apply to public retirement plan sponsors, the second bullet — generational inequity among taxpayers — forms a strong rationale for public pension prefunding.

A rational system of retirement-plan costing should obey the following five principles:

Five Costing Principles of Retirement Plans

1. Costs should be apportioned over beneficiaries' working lifetimes in a reasonable relation to the value of the deferred compensation.
2. Risk must be explicitly priced across time periods.
3. All benefits will be payable when due.
4. There must be a 'catch-up' mechanism for costs not met;
5. There must be a 'catch-up' mechanism for experience different than assumed.

The latter three principles address the permanence issue, while the first two deal with generational equity.

As an example, assume a one-person pension program with a benefit of \$1,000 for each year of service, payable as a lump sum at retirement (age 65). What should the cost of a 45-year-old's benefit for the current year be? The plan sponsor could pay for this \$1,000 benefit with certainty by purchasing a zero-coupon Treasury bond with a \$1,000 face amount, as the cost of the benefit is the price of such a bond.

In contrast, the plan sponsor could instead invest a lesser amount in a portfolio of other assets and hope that the assets accumulate to \$1,000 over the 20 years prior to the employee's retirement. There is no guarantee that the assets would actually accumulate the desired value. The second costing principle — that risk not be transferred across periods — applies in this case. The discount rate to cost the liability is the risk-free rate. (In the real world, things are more complex, as risk-free assets may not be available to use as matching assets.) The plan formula may be such that there is no perfect matching asset available in which to invest. A minimum-risk asset, rather than a risk-free asset, may need to be used instead.)

The previous paragraph is not meant as an argument that the plan sponsor should actually contribute this cost and invest in risk-free assets. However, should the retirement sponsor elect to contribute less than this cost and attempt to make up the difference by investing in a riskier asset portfolio that is likely to offer greater returns, that sponsor runs the chance

Pension Obligation Bonds: An Attempt at Increasing Funded Status

Some public pension plan sponsors facing large unfunded liabilities and unable to meet their ARC payments have opted to take on pension obligation bonds (POBs). The city of Oakland, Calif., issued the first POB in 1985, taking advantage of an arbitrage opportunity whereby the city could:

1. Avoid federal taxes through the issuance of tax-exempt municipal bonds; and,
2. Invest borrowed funds in higher-yield taxable securities.

While the Tax Reform Act of 1986 eventually eliminated the tax exemption for POBs, the concept has gained popularity for many public pension plan sponsors. Since 1986, public pension plan sponsors have issued billions in taxable POBs—transactions justified by the presumed high returns of equity-laden pension plan investment portfolios.

This borrow-and-invest strategy carries with it certain inherent risks, the most notable of which is the danger of a market downturn. A Center for State and Local Government Excellence analysis of the internal rate of return of all POBs issued since the passage of the Tax Reform Act of 1986, through July 1, 2009, shows the extent of this risk. The study indicates that, if assessed in 2007 at the market's peak, POBs appeared to represent a financially sound strategy. However, if the same assessment were completed in 2009 after the financial crisis, POBs would clearly appear as a net drain on government resources.

Ironically, those plan sponsors most likely to issue POBs in search of increased investment returns, are the same who are least able to bear out the risk associated with the strategy.

SOURCE: Munnell, Calabrese and Aubry. "Pension Obligation Bonds: Financial Crisis Exposes Risk." Center for State and Local Government Excellence. 2010.

Five States with the Smallest Unfunded Pension Liabilities

Liabilities based on government financial statements (\$billions and % underfunded)

1. North Dakota: \$0.7 (19% underfunded)
2. Delaware: \$0.7 (10%)
3. South Dakota: \$1.1 (15%)
4. Vermont: \$1.4 (37%)
5. Utah: \$1.8 (9%)

Liabilities discounted using Treasury yields (\$billions and % underfunded)

1. North Dakota: \$3.8 (57% underfunded)
2. Vermont: \$4.3 (64%)
3. Delaware: \$5.8 (48%)
4. Wyoming: \$7.5 (61%)
5. South Dakota: \$7.6 (56%)

SOURCE: Novy-Marx and Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." 2009.

necessary to amortize a plan's unfunded liability assuming the plan meets all its actuarial assumptions in the future, including expected return on investments.) An ARC includes payment of the present value of any newly accrued benefits and a portion of a plan's unfunded liability. The Government Accounting Standards Board (GASB) specifies how state and local governments must calculate the present value of newly accrued benefits, and issues guidance on how state and local governments must calculate their total ARC.⁵⁵ However, public plans are not required to pay their ARC.⁵⁶ Indeed, because of numerous financial priorities and a lack of specific requirements, roughly 45% of state government systems studied by Novy-Marx and Rauh paid less than the full ARC they owed during 2009.⁵⁷ A full quarter of those in the Novy-Marx and Rauh sample paid less than 80%, and the mean retirement plan (of those that did not pay the full ARC) paid only 73% of its ARC during 2009.

of its portfolio failing to attain desired results. (In essence, this plan is the equivalent of using a rate equal to the expected return on an asset mix to discount future pension liabilities.) This subject will be discussed further in Section 4.

Should desired returns not materialize under the above plan, then a catch-up contribution will be necessary. In the event that there is no catch-up contribution, then there will be a shortfall at the time of benefit payment. The concept of generational equity argues that this shortfall be met prior to the time of benefit payment.

Annual Required Contributions

In the U.S., public employees of state and local government units are typically covered by defined benefit plans, and these plans are typically funded by a mix of assets. These public pension plans often require predetermined contributions of participants (usually a percentage of salary).

The employer contributions under these plans are thus a balancing item, serving as the difference between actuarially required contributions (ARCs) and employee contributions. (An ARC is the actuarially determined pension fund contribution

⁵⁵ Ibid.

⁵⁶ Novy-Marx, Robert and Joshua Rauh. "The Revenue Demands of Public Employee Pension Promises." 2011: 13.

⁵⁷ Ibid.

New Jersey, for example, which previously failed to pay its ARC for a number of years, recently enacted pension reform requiring the state to pay 1/7 of its calculated ARC in 2011.⁵⁸ New Jersey must then increase its ARC payment by 1/7 of the total for each of the following six years to finally achieve full ARC payment within 7 years.⁵⁹ This is a major step for New Jersey, but the nature of the plan shows the difficulty of making full ARC payments for many states. New Jersey's pension reform is discussed more extensively in Section 9.

When the failure to pay ARC is considered within the context of the five costing principles of retirement plans, it is clear that many public pension plan sponsors are failing when it comes to issues of intergenerational equity (current costs are being disproportionately transferred to future taxpayers). As such, these same plan sponsors are in danger of not being able to pay benefits when they come due without a catch-up mechanism of some sort. Given the current financial and economic environment, it may be difficult to employ a successful catch-up mechanism during the working lifetime of affected pension plan beneficiaries (and much of the liability is on account of current retirees, who have no remaining work period).

Privately Sponsored Pension Plans as a Comparison

In contrast to public pension plans, U.S. corporate pension plans are subject to the restrictions of the Employee Retirement Income Security Act of 1974 (ERISA).⁶⁰ ERISA requires private pension plans to pay insurance to the Pension Benefit Guarantee Corporation (PBGC), which in turn ensures that pension benefits are paid out even after plans are closed (or after sponsors go bankrupt). The Internal Revenue Code of 1986 (the Code) further enforces an anti-cutback rule that prevents private pension plan sponsors from reducing promised benefits already accrued by participants.⁶¹

Both ERISA and the Code set forth minimum funding standards (i.e., contribution requirements) for corporations sponsoring pension plans. While the funding standards are very complicated, they essentially require that any deficit (the liability for accrued benefits, valued using a corporate yield curve, minus assets) be paid off over a seven-year period. This calculation has been modified many times since ERISA was first passed; the Pension Protection Act of 2006 (PPA) was the last major revision.

The PPA mandates the use of a high-quality corporate yield curve when discounting plan liabilities — an approach similar to the Financial Accounting Standards Board (FASB) mandate that high-quality corporate bond yields be used to discount plans' liabilities when they are reported on corporations' financial statements. Unless a corporate plan is in surplus, the sponsor must also contribute the value of new benefits accrued during a year. Additional rules apply to poorly funded plans, with those plans funded at ratios of less than 80% or 60% subject to additional restrictions and catch-up requirements. Given that it is far more difficult to presume permanence on behalf of any one corporation (as opposed to a government), these rules do help to safeguard plan participants' benefits (although they do not encourage plan formation). Overall, the contrast between the regulatory and funding standards of private-sponsored and public-sponsored pensions is striking.

⁵⁸ Norcross, Eileen. "The Crisis in Public Sector Pension Plans." *Mercatus Center* (2010).

⁵⁹ *Ibid.*

⁶⁰ Monahan, Amy B. "Public Pension Plan Reform: The Legal Framework." *Legal Research Paper Series* (2010). Page 2.

⁶¹ *Ibid.*: 3.

Section 4: Accounting Issues

Accounting treatment is an issue that has dogged many public pension plan sponsors and their beneficiaries as of late. This is the case not only in terms of investment strategies (as noted in Section 3), but also in terms of appropriate accounting practices. Accounting practices used in measuring the size of pension obligations directly affect plan sponsors' investment strategies, as well as political decisions regarding the size and nature of pension benefits. For example, a simple change in the rate used to discount liabilities can swell California's unfunded liability from \$154.2 billion to \$475.7 billion.⁶²

Accordingly, the accounting practices of public pension sponsors and the wide latitude given to these sponsors when determining key measurement figures have both come under increased scrutiny as of late.

Historical GASB Approach

The Government Accounting Standards Board (GASB) currently allows public pension plan sponsors to discount their future liabilities at a rate of anticipated return on pension fund assets; currently, the median public pension plan's assumed return on assets is 8%.⁶³ In contrast to the GASB method, Donald L. Kohn, former vice chairman of the board of governors of the U.S. Federal Reserve System, has stated, "There is no professional disagreement [among economists]. The only appropriate way to calculate the present value of a very low-risk liability is to use a very-low-risk discount rate."⁶⁴ By any measure, an 8% discount rate would not be considered "very-low-risk".

The GASB also allows public pension plan sponsors to report the value of their plan assets as an actuarial average over the course of several years so as to mitigate the effect of large market upheavals upon the reported value of plan assets (an effect explained in Section 2, and known as smoothing). Overall, the GASB allows public pension plans wide latitude in the measurement of their assets and liabilities.

Advocates of the GASB approach claim that the use of a discount rate based on a projected return on assets is appropriate for governments that will always be able to meet their financial obligations (as opposed to corporations, which may or may not exist in perpetuity). As will be discussed later in this paper, this argument has come up for renewed debate as some local governments have begun to default on their pension payments and even declare bankruptcy. Plan sponsors and public unions also argue that moving to lower discount rates would dramatically increase the amount of money needed to make ARC payments at a time when no such funds are available; they further argue that such dramatic increases in ARC payments may prove unnecessary over time.⁶⁵

⁶² Novy-Marx, Robert and Joshua Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." Journal of Economic Perspectives (2009): 198.

⁶³ Congressional Budget Office (CBO). *The Underfunding of State and Local Pension Plans*. Washington D.C.: CBO, 2011: 3.

⁶⁴ Kohn, Donald L. *Speech*. May 20, 2008.

⁶⁵ Congressional Budget Office (CBO). *The Underfunding of State and Local Pension Plans*. Washington D.C.: CBO, 2011: 7.

Fair-Value Approach

In contrast to the GASB approach, the fair-value approach (typically not used by public pension sponsors) attempts to measure the market value of a given asset or liability. Under the fair-value approach, assets are valued at whatever amount investors are willing to pay for them; pension liabilities are valued at whatever price an insurance company operating in a competitive market would charge to assume responsibility for those obligations.⁶⁶ If taxable municipal or Treasury bond yields were to be used as proxies for low-risk or risk-free rates respectively, then the discount rate applied under the fair value approach would currently be roughly half the 8% rate used by the median plan under the GASB approach.

When using a Treasury rate to discount, Novy-Marx and Rauh's calculations of 2008 state-sponsored public pension liabilities resulted in a figure of \$5.17 trillion (as noted in Section 2).⁶⁷ If municipal bond yields were used to discount these same pension liabilities, the present value of those liabilities would be \$3.6 trillion.⁶⁸ The implications of this difference are discussed further below, in the subsection, "Risk Free Versus Fair Value."

In the paper, "Valuing Liabilities in State and Local Plans," Alicia H. Munnell and her co-authors make a forceful case against the use of the GASB method (calculating future obligations at a rate based on anticipated returns on investments).⁶⁹ Munnell et al. argues that, because a yield is anticipated in accordance with the risk associated with assets, one should not assume that a projected yield will always materialize. Munnell et al., like Novy-Marx and Rauh, advocate for the use of Treasury yields as the appropriate proxy for the riskless rate to be used when discounting public pension liabilities.

The strategy of discounting pension liabilities at a high rate of expected investment returns (typically 8%) is further complicated by the fact that to achieve such a high rate of return, plan sponsors must inherently invest in riskier assets. As previously stated, riskier investment strategies are likely to result in losses at some point, even if they achieve the assumed rate of return over the long term. As such, the decision to understate future pension liabilities by assuming excessively high rates of return on assets can undermine plan sponsors in multiple ways. Not only are they understating future liabilities if the returns do not materialize, but they may also box themselves into a higher-risk investment strategy to chase the high returns necessary to cover their obligations.

Risk Free Versus Fair Value

Novy-Marx and Rauh, along with Munnell et al., have argued for using Treasury yields as a proxy for a risk-free discount rate. They have sometimes done so on the basis of the guaranteed nature of public pension plan payments, which are often strictly guaranteed by law. This argument states that because the pension payments are such a sure thing, they should be discounted with a riskless rate.

⁶⁶ Ibid: 4.

⁶⁷ Novy-Marx, Robert and Joshua Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." *Journal of Economic Perspectives* (2009): 198.

⁶⁸ Novy-Marx, Robert and Joshua Rauh. "Policy Options for State Pension Systems and Their Impact on Plan Liabilities." 2010: 1.

⁶⁹ Munnell, Alicia H., Thad Calabrese and Jean-Pierre Aubry. "Pension Obligation Bonds: Financial Crisis Exposes Risks." 2010: 4.

However, it should be noted that risk free is not the same as fair value. The term “risk free” indicates just what it says: free of risk. Historically, the risk-free rate has been most closely approximated by U.S. Treasury yields. That said, a fair-value approach does not necessarily warrant or demand use of a risk-free rate for discounting future liabilities. Instead, the risk of a fair-value approach may be more accurately approximated by the use of taxable bond yields for discounting purposes. Taxable bonds are more similar to the assets in which a buyer or guarantor of pension liabilities (i.e., an insurance company issuing group annuity contracts) would invest.

Any government’s likelihood of defaulting on its pension obligations should be seen as comparable to its likelihood of defaulting on its other debt. Overall, this risk is low. (When liabilities are funded by pension assets, of course, governments are even less likely to default on them.) Whether states and local governments should discount their liabilities using the rate of Treasury yields, however, is still not a simple question.

To date, many public pension plan sponsors, along with public sector unions, have resisted attempts to use lower discount rates in the valuation of public pension liabilities. Reaction to suggestions that they do so has often been dismissive. This debate is a complex and nuanced one, and it deserves significant consideration given the myriad risks at hand.

GASB June 2011 Proposed Statement

In 2011, the GASB released a proposed statement regarding Public Pension Accounting and Financial Reporting.⁷⁰ The supplement contains a number of proposals from the GASB’s two 2011 pension-related exposure drafts. Of greatest note to public pension plan sponsors is the following:

“A government would report in its financial statements a net pension liability equal to the difference between the total pension liability and the value of assets set aside in a pension plan to pay benefits to current employees, retirees and their beneficiaries.”⁷¹

This proposal would have the effect of bringing unfunded pension liabilities onto the financial statements of governments that sponsor public pension plans. This marks a significant change in the way that public pension plans have historically been reported.

The GASB is also recommending that public pensions use a discount rate that would combine “(1) the long-term expected rate of return on plan investments as long as the pension plan is projected to have assets to make projected benefit payments for current employees, retirees and their beneficiaries; and (2) a tax-exempt, high-quality municipal bond index rate beyond that point.”⁷² If such a proposal were adopted and enforced, it would increase the size of reported liabilities on government financial statements by hundreds of billions of dollars.⁷³

⁷⁰ Government Accounting Standards Board (GASB). "Proposed Statement of the Government Accounting Standards Board: Plain-Language Supplement." 2011: 3.

⁷¹ Ibid.

⁷² Ibid: 7.

⁷³ As noted in Section 2, \$730 billion represents the total unfunded liability of state pension plans according to states’ reported liabilities and actuarial value of assets. If followed, the GASB recommendation would necessarily

Section 5: Causes of Public Pension Underfunding

The problem of underfunded public pension plans did not appear overnight. Consistent political pressure to increase benefits, pension plan investment losses, plan designs that routinely increase benefits for retirees, poorly constructed plans and changing societal demographics all work to create a situation in which too few workers and taxpayers are paying into pension systems designed to support too many retirees with significant benefits.

Furthermore, defined benefit plans are not readily transparent to most taxpayers. The present value of the future liabilities of pension plans are found tucked away in the footnotes of long and obtuse government financial statements. Interested parties must examine financial statements for the actual public pension plans themselves (separate from those of public pension plan sponsors) to gain any detailed information on a given plan's financial health.

A system that faces consistent pressure to increase benefits, an aging population with limited capacity and will to support extensive public retirement plans, and poor financial transparency, is almost certain to face funding problems.

Consistent Political Pressure to Increase Benefits (Pension Sweeteners)

As will be discussed in greater detail in Section 7, public pension plan sponsors often face intense political pressure to maintain the status quo or to increase public pension plan benefits. The pressure to increase public pension benefits becomes greatest during economic booms when government coffers are full and public pension plans often appear to be fully funded (or near fully funded) by their assets. In the case of Atlanta, Ga., which is discussed further in Section 9, the city took votes in 2001 and 2005 to dramatically increase pension benefits for city workers.⁷⁴ As a result of these votes, Atlanta's police pension fell from a funding ratio of 95% in 2000 to a ratio of 64% by 2011.⁷⁵ The city's firefighters' pension fell from a ratio of 92% in 2000 to only 61.4% in 2011.⁷⁶

Atlanta's story is not unusual. As a result of the constant political pressure exhorted by public unions, many elected officials have managed to slip in various increases or "sweeteners" to public pension plan benefits outside of the collective bargaining process that normally determines public pension benefits. They range from added disability clauses to simple increases in benefit payments.

Some recent public pension reforms have guarded against the impulse to increase pension benefits during flush times through the use of mandatory funding ratios. New Jersey⁷⁷ and Minnesota⁷⁸ are two

raise this amount by lowering the rate used to discount state pension liabilities, and then add those liabilities to states' financial statements.

⁷⁴ McWhirter, Cameron and Belkin Douglas. "New Front in Benefits Fight, Atlanta May Drop Pensions." *The Wall Street Journal*. June 22, 2011.

⁷⁵ Ibid.

⁷⁶ Ibid.

⁷⁷ Office of the Governor of New Jersey. *Governor Christie Signs Into Law Bold, Bipartisan Pension and Health Benefits Reform*. June 28, 2011. July 24, 2011.

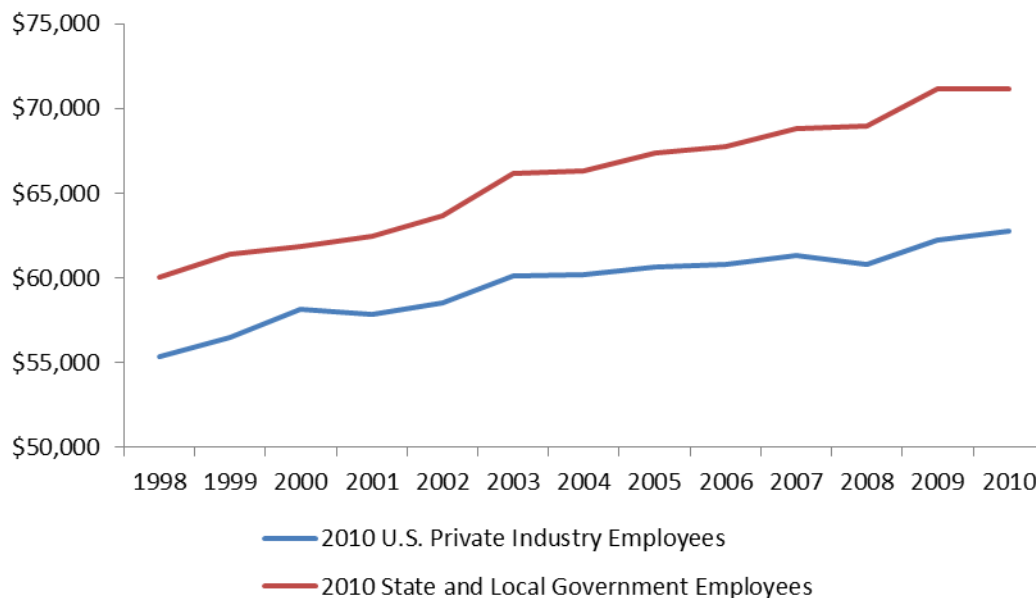
⁷⁸ National Conference of State Legislatures. *Pensions and Retirement Plan Enactments in 2010 State Legislatures*. November 23, 2010. July, 24 2011.

<http://www.ncsl.org/LinkClick.aspx?fileticket=v6KpQROK1ws%3d&tabid=20836>: 8, 9.

examples of states that have recently instituted mandatory funding ratios that restrict the increase of pension benefits when those increases would decrease targeted funding ratios. Those two states are discussed in greater detail in Sections 9 and 6, respectively.

The chart below exhibits the average total compensation of state/local public employees and private sector employees. To an extent, this chart is able to quantify anecdotes such as Atlanta’s. The salaries are adjusted for inflation and reflect real 2010 dollars:

Figure 5: Average Compensation in Real 2010 Dollars^{79 80 81}



As seen in **Figure 5**, public employees at the state and local level have seen an increase in their compensation that outpaces the increase in private sector employee compensation since 1998. From 1998 to 2010, the gap between the larger average state/local public employee compensation and the average private sector employee compensation grew from \$4,681 to \$8,390 (an increase of 79%). While average state/local employee compensation tapered off a bit between 2009 and 2010 (and private sector compensation grew slightly), for more than a decade state/local employees benefited from more substantial increases in their compensation and saw less of a decline after the financial crisis and economic downturn of 2007 and 2008.

⁷⁹ Salaries are calculated by taking the Bureau of Economic Analysis (BEA) figures for compensation of employees by industry (Table 6.2D) and dividing them by BEA’s full-time equivalent employment by industry figures (Table 6.5D). The resulting salaries are then adjusted to 2010 dollars through use of purchasing power adjustment: <http://www.measuringworth.com/ppowerus/result.php>

⁸⁰ Bureau of Economic Analysis (BEA). *Table 6.2D Compensation of Employees by Industry*. August 22, 2011 <<http://www.bea.gov/national/nipaweb/TableView.asp?SelectedTable=185&FirstYear=2002&LastYear=2004&Freq=Qtr>>.

⁸¹ Bureau of Economic Analysis (BEA). *Table 6.5D Full-Time Equivalent Employees by Industry*. August 22, 2011 <<http://www.bea.gov/national/nipaweb/TableView.asp?SelectedTable=197&FirstYear=2002&LastYear=2004&Freq=Qtr#>>.

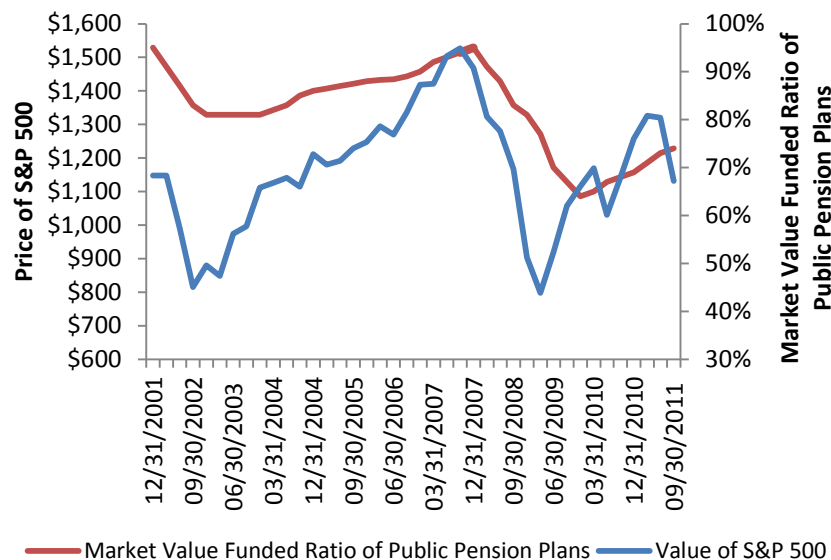
During the period from 1998 to 2010, U.S. real GDP grew by 27.4%.⁸² During that same period, state/local employee compensation increased by 18.49%,⁸³ while private sector employee compensation increased by only 13.36%.⁸⁴ This comparison indicates that increases in revenues during times of economic growth are more likely to translate into increases in compensation for public employees, than for private sector employees. This is likely the effect of political pressure to increase overall public employee compensation (to include pension benefits) in a robust economy.

Increased government revenues as a result of economic growth are not the only financial factor that encourages growth in public pension promises.

Loss in Market Value of Assets

The decline in the market value of assets is clearly a contributing factor to public pension underfunding. A comparison of the price of the Standard & Poor's 500 index (S&P 500) and Wilshire Consulting's calculation of the funded ratio public pension plans shows a strong correlation between the performance of the stock market and the funding ratio of public pension plans (see **Figure 6** below).

Figure 6: Comparison of Price of the S&P 500 and Wilshire's Calculation of Market Value Funded Ratio of Public Pension Plans^{85 86}



⁸² Bureau of Economic Analysis (BEA). *Gross Domestic Product*. August 20, 2011

<<http://www.bea.gov/national/index.htm#gdp>>.

⁸³ Ibid.

⁸⁴ Salaries are calculated by taking the Bureau of Economic Analysis (BEA) figures for compensation of employees by industry (Table 6.2D) and dividing them by BEA's full-time equivalent employment by industry figures (Table 6.5D). The resulting salaries are then adjusted to 2010 dollars through use of purchasing power adjustment:

<http://www.measuringworth.com/ppowerus/result.php>

⁸⁵ Standard & Poor's. *S&P 500*. March 20, 2011. <<http://www.standardandpoors.com/indices/sp-500/en/us/?indexId=spusa-500-usdof--p-us-l-->>>.

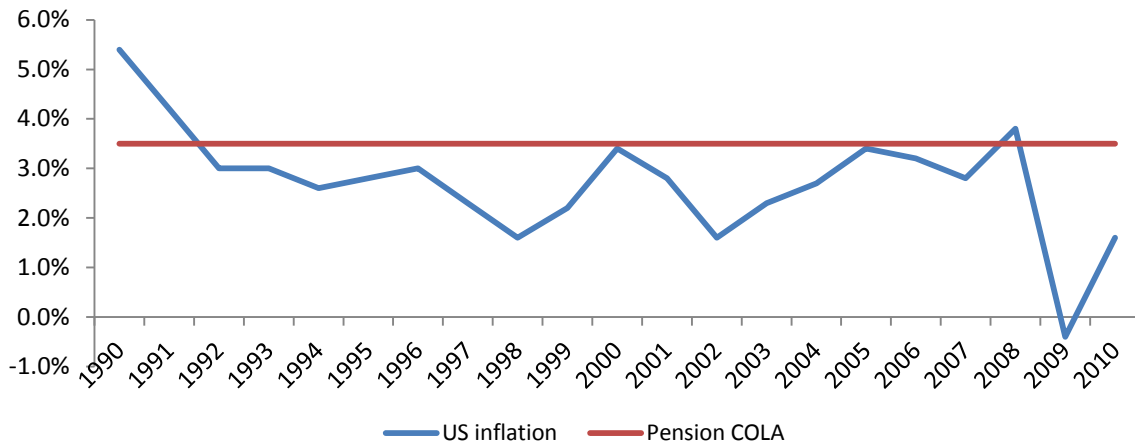
One should expect to see similarities between public pension plan funding ratios and stock market performance given that public pension plans invest in equities (and given that asset values are half of the equation that determines the size of unfunded liabilities). However, there is likely an additional causal relationship at play in this case. Much like the situation described in the previous subsection (regarding the ability of a strong economy to increase government revenues and encourage increases in public employee compensation), a bull market can make a plan appear to be fully funded (or overfunded). Such high funding ratios (temporary though they may be) often increase the pressure applied to elected officials to increase public pension payouts. Once markets drop, public pension plans are left with less valuable assets and even greater liabilities.

Benefit Creep

Funding problems are also exacerbated by the use of cost-of-living allowance (COLA) increases for retired beneficiaries. COLAs add an annual percentage increase (often 3%) to pension benefits to account for the erosion of the value of pension benefits due to inflation. Excessive COLAs can create a problem of significant benefit creep, whereby annual increases in benefits can eventually lead to pension benefits that sometimes actually exceed beneficiaries’ former working salaries.

As will be discussed further in Sections 6 and 9, before passing public pension reform legislation in 2010, the state of Colorado maintained a COLA of 3.5% for its public pension system.⁸⁷ As an example, **Figure 7** compares Colorado’s COLA of 3.5% with the annual rate of inflation since 1990:

Figure 7: Comparison of Annual U.S. Inflation and 3.5% Pension COLA⁸⁸



⁸⁶ Wilshire Consulting. *2012 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation*. Santa Monica, CA: Wilshire Associates Incorporated, 2012: 3.

⁸⁷ National Conference of State Legislatures. *Pensions and Retirement Plan Enactments in 2010 State Legislatures*. November 23, 2010. July 24, 2011

<<http://www.ncsl.org/LinkClick.aspx?fileticket=v6KpQROK1ws%3d&tabid=20836>>.

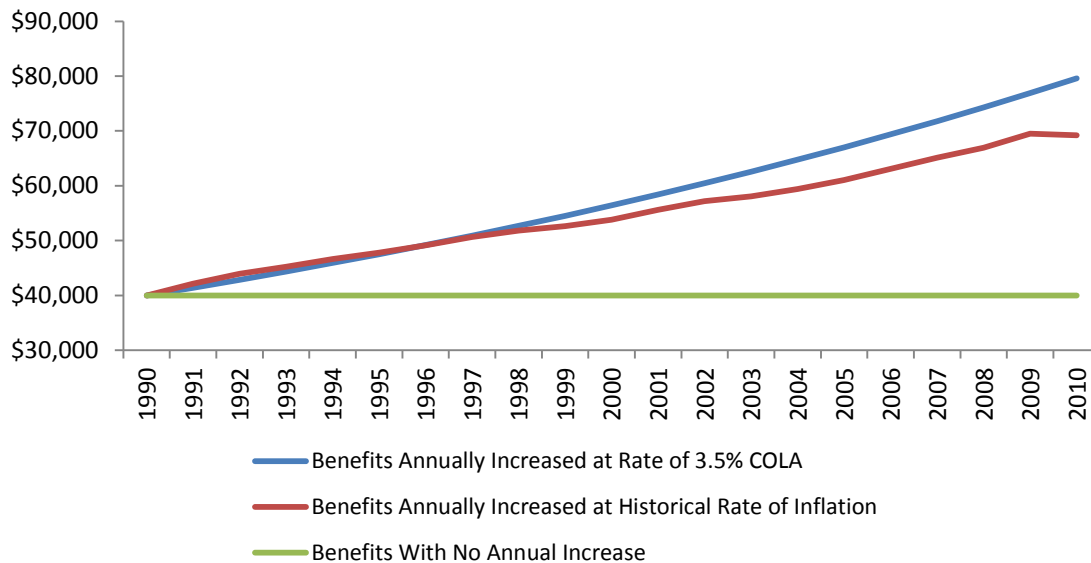
⁸⁸ U.S. Inflation Calculator. *Historical Inflation Rates: 1914 - 2011*. September 2, 2011

<<http://www.usinflationcalculator.com/inflation/historical-inflation-rates/>>.

As can be seen above, since 1991 the rate of inflation in the U.S. has exceeded 3.5% only in 2008. With the exception of 2008, all the years in **Figure 7** after 1991 represent a real increase in pension benefits (over and above inflationary cost-of-living increases) for the beneficiary of a pension with a COLA of 3.5%.

Figure 8 below displays this same principle by analyzing a hypothetical \$40,000 annual pension benefit beginning in 1990. **Figure 8** displays the hypothetical pension benefit increased at the rate of historical inflation, at the rate of a 3.5% COLA, and with no annual increase at all:

Figure 8: Benefit Creep⁸⁹



By 2010, the annual pension benefit grows to \$79,592 under the 3.5% COLA (*nearly double the initial annual benefit of \$40,000*) and grows to \$69,206 when raised by the historical rates of annual inflation. The \$10,386 gap in annual payments that develops by 2010 represents a real increase in pension benefits for the beneficiary of this hypothetical (but typical) pension plan.

Pensions with overly generous COLAs have helped lead to scenarios similar to that of Yonkers, New York, where more than 100 retired police officers and firefighters are now collecting pensions greater than their salaries at the time of their retirements.⁹⁰

Pension Padding

“Pension padding” refers to the practice of boosting overtime hours during the last years of employment to raise the “final pay” or “final average compensation” number that acts as a base for pension calculations (as explained in Sections 1 and 10). This final pay number could be based on the last year of employment before retirement or on a period of several years before retirement. In any

⁸⁹ U.S. Inflation Calculator. *Historical Inflation Rates: 1914 - 2011*. September 2, 2011 <<http://www.usinflationcalculator.com/inflation/historical-inflation-rates/>>.

⁹⁰ Walsh, Mary Williams. "Padded Pensions Add to New York Fiscal Woes." *The New York Times*. May 20, 2010.

case, many public sector employees have taken to actively increasing their overtime hours during this window.

A 2010 study done by the New York State Attorney General's Office found that, as retirement approached, the amount of annual overtime hours worked by New York State employees increased by approximately 50%.⁹¹ In the case of Yonkers, many police officers had been submitting hours they worked as flagmen for a private contractor (while off duty) as overtime hours for purposes of pension benefit calculation.⁹² Even though the contractor picked up the cost of hourly wages, the officers' pension benefits swelled as a result of their overtime calculation.

Poorly Constructed Plans

Some public pension plans are simply poorly constructed or include specific benefits that are not realistically sustainable. New York City provides one such example of a specific payment provided within its police and firefighter pension benefits. Roughly four decades ago, New York City began investing some of its police and fire pension funds in stocks (in addition to the bonds in which pension funds were historically invested).⁹³ The change was made to generate extra income to pay increased pension benefits. To mitigate the risk posed to public pension beneficiaries, the city set up a system whereby any returns that the riskier investments generated over bond investments would be pooled into a variable supplemental fund. When this fund was stocked, the benefits were paid out to retirees in an annual lump sum around Christmas time (a "Christmas bonus").⁹⁴ When the fund was dry, no benefits were paid.

In the 1980s, the agreement was changed and the retiree payment became a fixed annual benefit to be paid regardless of market performance.⁹⁵ If the city earned investment income over the amount of the total fixed payment, it kept it. If it earned less income than the amount it owed toward the fixed payment, it made up the difference. Currently, the annual payment made to each retiree is roughly \$12,000. This one payment, currently received by about 50,000 New York City retirees, costs the retirement system \$600 million annually (with many more beneficiaries soon to retire).⁹⁶ New York City's Office of the Deputy Mayor for Economic Development projects that the city has seen 19.3% average growth in pension benefits since 2001 (projected through 2012).⁹⁷

Many public pension plans also include options for early disability retirement that can end up costing plan sponsors incredible amounts of money over decades-long retirements. Again using New York as an example, 13 police officers recently retired from the New York City Police Department at age 40 with annual pension benefits of more than \$100,000.⁹⁸ Nine officers recently retired in their 30s with annual

⁹¹ State of New York, Office of the Attorney General. *Pension Padding: We All Pay the Price*. Albany: State of New York, July 7, 2010: 6.

⁹² Walsh, Mary Williams. "Padded Pensions Add to New York Fiscal Woes." *The New York Times*. May 20, 2010.

⁹³ Baker, Al. "Police and Firefighters Vow to Fight Bloomberg's Plan to Cut a Retirement Benefit." *The New York Times*. February 9, 2011.

⁹⁴ Ibid.

⁹⁵ Ibid.

⁹⁶ Ibid.

⁹⁷ Steel, Robert K. *Making NYC's Pension System Sustainable*. New York City: Office of the Deputy Mayor for Economic Development, July 14, 2011.

⁹⁸ Walsh, Mary Williams. "Padded Pensions Add to New York Fiscal Woes." *The New York Times*. May 20, 2010.

payouts of more than \$100,000.⁹⁹ All of these officers retired with special disability pensions, which are 50% larger than ordinary police pensions.¹⁰⁰ While disability retirement is a necessity for dangerous occupations such as police work and firefighting, eligibility standards for disability retirement are often too loose, and the resulting costs are extraordinary.

Drop plans wreak further havoc with pension plan finances by allowing public employees to continue working past their retirement age while receiving both a full-time salary and a pension. While the “unretired” employee continues to work, his or her pension essentially kicks in and is deposited into a deferred account with a guaranteed rate of return.¹⁰¹ When the employee truly retires, he or she receives a lump sum payment; thereafter, the retiree receives monthly pension checks.¹⁰²

Changing Demographics

In 1980, 69% of Americans were under the age of 45; by 2009 that ratio had dropped to 61%.¹⁰³ The U.S. Census Bureau projects that by 2050 this ratio will drop to a rate of 57.4%.¹⁰⁴ These numbers indicate there are simply fewer U.S. citizens of working age available to support those already receiving retiree benefits (a shrinking support ratio). The U.S. Social Security system serves as useful proxy for an analysis of the overall American support ratio. Social Security has seen its worker-to-recipient ratio decline from 16.5 to 1 in 1950 to a current ratio of 2.9 to 1.¹⁰⁵ By 2027, Social Security’s support ratio is projected to decline to 2.2 to 1.¹⁰⁶

Bottom line, there will be an increasingly smaller number of workers and taxpayers available to support the number of public pension retirees receiving benefits. This problem is exacerbated by the propensity of governments to fail to make their annual required contribution or ARC (a problem explained in greater detail in Section 3). As noted previously, failure to pay ARC creates issues of intergenerational inequity. In essence, a public pension plan sponsor that fails to pay ARC obligates future generations of taxpayers to pay for labor being performed today. This violates the first costing principle listed in Section 3: “Costs should be apportioned over beneficiaries’ working lifetimes in a reasonable relation to the value of deferred compensation.”

The problem of intergenerational inequity grows more severe as a population ages. With greater burdens of cost being shifted to smaller populations of public employees and taxpayers, the already growing costs of public pension plans can become unsustainable.

⁹⁹ Ibid.

¹⁰⁰ Ibid.

¹⁰¹ Malanga, Steve. *Public Sector Inc.* April 25, 2011. <<http://www.publicsectorinc.com/forum/2011/04/getting-the-drop-on-pension-costs.html>>.

¹⁰² Ibid.

¹⁰³ U.S. Census Bureau. *2011 Statistical Abstract.* August 22, 2011 <<http://www.census.gov/compendia/statab/cats/population.html>>.

¹⁰⁴ U.S. Census Bureau. *U.S. Population Projections.* August 22, 2011 <<http://www.census.gov/population/www/projections/summarytables.html>>.

¹⁰⁵ Brouwer, Kurt. *The Wall Street Journal Market Watch: Is Social Security a Ponzi Scheme.* September 6, 2011. <<http://blogs.marketwatch.com/fundmastery/2011/09/06/is-social-security-a-ponzi-scheme/>>.

¹⁰⁶ Ibid.

Lack of Transparency

Government financial statements, to put it mildly, are not an easy read. Even those with experience in reading corporate financial statements can become lost among the maze of various funds listed on a statement of net assets. What is more, the assets and liabilities of public pension plans have historically been kept off the statements of net assets (or balance sheets) of public pension plan sponsors. A thorough reading of the (sometimes hundreds of pages of) footnotes will turn up an acknowledgement of how much a given plan sponsor has paid toward its pension fund in recent years (and whether that amount satisfied the ARC). For more extensive information, a reader must often locate and read another set of financial statements produced for the given public pension plan in question.

The net result of this system is that — historically — public pension plan sponsors have not had to report their pension liabilities on their financial statements (despite the fact that plan sponsors remain obligated to pay these liabilities). As noted in Section 4, this may be changing. The GASB's recent proposals indicate that public pension plan sponsors will soon be advised to report their net "pension liability equal to the difference between the total pension liability and the value of assets set aside in a pension plan to pay benefits."¹⁰⁷ In essence, this is a pension plan's unfunded liability. Ultimately, this reporting change, if mandatory, will make it more difficult for public pension plan sponsors to "kick the can down the road" when it comes to pension funding.

In sum, the combination of consistent pressure to increase public pension benefits during economic booms, an aging population and a lack of transparency has worked to exacerbate the underfunding of public pension plans over the past decade. Unless these problems are addressed, it will be difficult to slow (let alone address) the problems now facing many public pension funds.

Section 6: Legal Obstacles to Public Pension Reform

The diverse legal frameworks of state and local government retirement plans in the 50 states have contributed heavily to the precarious financial state of these programs. Simply put, these legal frameworks govern how (or whether) state and local pension plans can be amended.

Professor Amy Monahan of the University of Minnesota School of Law has written a comprehensive review of the legal frameworks that determine the manner in which public pension plans are approached. Her paper, "Public Pension Plan Reform: The Legal Framework," points out that though many states are similar in their treatment of government provided retirement plans, each of the 50 states ultimately has a unique combination of constitutional provisions, statutes and/or court decisions that dictate its legal approach to public pension plans and the benefits provided by these plans.¹⁰⁸ The reader is encouraged to seek out Professor Monahan's paper for further detail on the topics covered in this section.

¹⁰⁷ Government Accounting Standards Board (GASB). "Proposed Statement of the Government Accounting Standards Board: Plain-Language Supplement." 2011: 3.

¹⁰⁸ Government pension plans are exempted from the federal Employee Retirement Income Security Act of 1974 (ERISA). The only federal law that directly affects government pension plans is the Internal Revenue Code of 1986.

Some of the states' various legal approaches, along with their respective impacts, can be described as follows¹⁰⁹:

1. Public Pensions as Contracts

This approach includes states that have either a constitutional provision or statute that specifically provides that public pension plans create a contract between the state and the beneficiary. It also includes those states where courts have "inferred legislative intent" to create a contract through relevant judicial decisions. In those states that operate with an explicit or assumed contract approach, courts must analyze any proposed changes to public pension benefits under the U.S. Constitution's contract clause (or the relevant state contract clause).¹¹⁰ These clauses forbid a state from passing a law that impairs existing contracts (public or private).¹¹¹

At least seven states have constitutional provisions dedicated to the protection of public pension benefits. These constitutional provisions provide the most restrictive contractual pension relationships and, not coincidentally, the greatest barriers to substantive pension reform.

In practical terms, various legal conditions place many reform proposals in danger of being struck down by the courts. However, because states differ greatly on when contracts are deemed to have been created and what is included in the contracts, they also differ greatly on what types of pension reforms are permissible.

The following is a condensed summary (taken from the Monahan paper) of some of the specific approaches taken by those states that have adopted a contract-based format to public pensions. Each summary identifies several adopting states and specific constraints to pension reform. The following lists are not exhaustive:

- **Constitutional Protection of Past and Future Benefit Accruals (Alaska, Arizona, Illinois and New York):** The state constitution stipulates that state retirement plans "cannot be amended in any way that results in a participant receiving a lower retirement benefit than that which would be payable under the plan terms in effect as of the date the employee first became eligible to participate in the plan."¹¹² This approach protects not only accrued retirement benefits as measured on a given day but also all future unaccrued benefits. In essence, once an employee is in the system, all of his or her retirement benefits are locked in at a minimum standard by the state constitution. Even actuarial adjustments are forbidden under the state constitution if they diminish benefits for participants.
- **Constitutional Protection of Past Benefit Accruals (Michigan, Hawaii and Louisiana):** The state constitution protects retirement benefits that have accrued but not future retirement

¹⁰⁹ In addition to the legal approaches described in this paper, states also employ legal approaches known as "Gratuity", "Promissory Estoppel", and "Public Pensions as a Property Interest". See Professor Amy Monahan's paper, "Public Pension Plan Reform: The Legal Framework", for more detail.

¹¹⁰ Monahan, Amy B. "Public Pension Plan Reform: The Legal Framework." *Legal Research Paper Series* (2010): 5.

¹¹¹ *Ibid*: 6.

¹¹² *Ibid*: 7.

benefits that have not yet been earned. Prospective reforms are possible even for existing plan participants under this scenario.¹¹³

- **Non-Constitutional Contract Protection of Past and Future Benefit Accruals (California, Kansas, Massachusetts, Nebraska, Oregon, Vermont, Washington and West Virginia):** Past and future retirement benefit accruals are protected by statute or court interpretation of legislative intent.¹¹⁴
- **Non-Constitutional Contract Protection of Past Benefit Accruals (Arkansas, North Carolina and Oklahoma):** Past retirement benefit accruals are protected by statute or court interpretation of intent.¹¹⁵

Under the contract approach, once it has been determined that a contract has been formed between the employer (the government) and a beneficiary, it is critical to determine *when* that contract was formed. Some states hold that contractual protection does not actually start until the participant has retired and begun receiving benefits (or is eligible to retire).¹¹⁶ Other states recognize the contract as beginning at a point prior to retirement, but they have not indicated when that protection begins. Still other states protect retirement benefits from the time that employment begins.¹¹⁷

More detailed analysis of state legal protections of public pension benefits can be found within Amy Monahan’s excellent paper¹¹⁸ and at the website for the National Conference on Public Employee Retirement Systems (NCPERS). NCPERS produces a list titled, “State Constitutional Protections for Public Sector Retirement Benefits.”¹¹⁹ This list includes a comprehensive review of relevant constitutional provisions, laws and court decisions.

The Case for Legal Reform

The wide range of legal approaches to public pensions makes a one-size-fits-all solution to their problems unlikely. Instead, analysis of the legal frameworks in place indicates that some states would have to strongly consider amending their constitutions or rewriting their statutes to allow for changes to their public pension plans.

Even public pension plan sponsors in states with more flexible legal approaches recognize they are likely to face legal challenges to any legislative reform efforts. Nonetheless, two recent state court rulings in Colorado and Minnesota — both delivered on June 29, 2011 — upheld attempts at public pension reform at a time of heightened interest in states across the nation. Indeed, Minnesota’s and Colorado’s reform efforts are seen as potential models for other public pension plan sponsors and stakeholders.

¹¹³ Ibid: 11.

¹¹⁴ Ibid: 11.

¹¹⁵ Ibid: 11.

¹¹⁶ Ibid: 13.

¹¹⁷ Ibid: 13.

¹¹⁸ Professor Monahan’s paper, “Public Pension Plan Reform: The Legal Framework” can be found at the following link: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1573864

¹¹⁹ The NCPERS document, “State Constitutional Protections for Public Sector Retirement Benefits” can be found at the following link: <http://www.ncpers.org/Files/News/03152007RetireBenefitProtections.pdf>. The NCPERS executive director estimates that this document was last produced by NCPERS counsel in 2008 - 2009 and notes that the document is due to be updated within the near future.

Minnesota: Legislation in this state reduced retiree COLAs from a fixed 2.5% annual increase in pension benefits to between 1% and 2%, depending on the retiree's specific public pension plan. This decrease will remain in effect until the respective pension plan is deemed 90% funded by assets.¹²⁰

A group of Minnesota retirees already receiving benefits under older pension formulas sued the state in May, 2011, seeking class action status.¹²¹ However, Minnesota's Second Judicial District Court dismissed the plaintiffs' lawsuit, stating, "Statutes are not contracts absent plain and unambiguous terms that show an intent to contract."¹²² The court's dismissal clearly disputes the notion that a state legislature cannot adjust COLAs, even those previously granted to current retirees.

Colorado: In a case similar to Minnesota's, the Colorado District Court granted summary judgment to the state of Colorado and the Public Employees' Retirement Association (PERA) of Colorado. Spurred by an actuarial report that had indicated that the Colorado PERA's assets had declined by \$12 billion during 2008, the Colorado Legislature undertook public pension reform in 2010 that was eventually signed into law by the governor.¹²³

The portion of the law challenged in court focused on reducing the retirement fund's COLAs, including those granted to current retirees, from 3.5% to 2%.¹²⁴ The law did not affect the payments of accrued pension benefits. (A more detailed analysis of Colorado's pension reforms is found in Section 9: Progress Anecdotes.) In granting summary judgment to the defendants, the court held that it is "impossible to establish a contractual right to a particular COLA for life without change" when the plaintiffs had already seen the COLA formula for retirees change numerous times over the prior 40 years.¹²⁵

Section 7: Political Obstacles to Public Pension Reform

In addition to the legal obstacles that often impede or block public pension reform, there exists also a political hurdle. Public sector unions are often highly involved in raising funds and donating to the campaigns of political candidates, often with the goal of preserving the pension status quo. As will be discussed in Section 9, public unions do sometimes support beneficial pension reforms. That said, there are ample examples of public sector unions using their substantial political clout to protect the public pension status quo.

The state of Wisconsin provides an excellent and recent example of the influence that public sector unions can have on elections. In early 2011, Wisconsin Governor Scott Walker (R) proposed a budget

¹²⁰ National Conference of State Legislatures. *Pensions and Retirement Plan Enactments in 2010 State Legislatures*. November 23, 2010. July 24, 2011.

<http://www.ncsl.org/LinkClick.aspx?fileticket=v6KpQROK1ws%3d&tabid=20836>: 8, 9.

¹²¹ Merrick, Amy. "Case Tests Retirees' Pension Cuts." *The Wall Street Journal*. September 15, 2010.

¹²² *Swanson v. State of Minnesota, Public Employees' Retirement Association of Minnesota*, No. 62-CV-10-05285. State of Minnesota, County of Ramsey. June 29, 2011: 3.

¹²³ Cavanaugh, Thomas. *Colorado PERA 12/31/08 Actuarial Valuation Results and 30-Year Projections*. Actuarial. Kenesaw, Georgia: Canaugh Macdonald, LLC, 2009. Page 9.

¹²⁴ National Conference of State Legislatures. *Pensions and Retirement Plan Enactments in 2010 State Legislatures*. November 23, 2010. July 24, 2011

<<http://www.ncsl.org/LinkClick.aspx?fileticket=v6KpQROK1ws%3d&tabid=20836>>.

¹²⁵ *Ibid*: 9.

repair bill that, among other features, prohibited most public sector unions from collectively bargaining long-term benefits, such as retiree pensions and health care (while current wages can still be collectively bargained).¹²⁶ The bill also required that all members of the Wisconsin Retirement System (WRS) begin to pay for 50% of their annual pension fund contributions (previously, WRS beneficiaries had contributed little or nothing to the pension fund).¹²⁷ For 2011 onward, WRS employees will pay approximately 5.8% of their salaries toward their pension contribution.¹²⁸

After the bill passed, public sector unions and their supporters went on to trigger recall elections for six of the Republican state senators who voted in support of Walker's legislation.¹²⁹ Meanwhile, conservative activists and special interest groups triggered recall elections for three of the Democratic state senators who fled the state in opposition to the legislation.¹³⁰ In what can only be described as a shocking number, some reports place total recall campaign spending (by all candidates, party units and outside groups) at nearly \$40 million.¹³¹

This astronomical sum — spent on only nine state Senate recall elections — doubled total spending on all of Wisconsin's 116 state legislative races in 2010.¹³² Ultimately, two previously vulnerable Republican incumbent Senators who had voted for the reforms lost their recall elections, but Republicans maintained their majority in Wisconsin State Senate.¹³³ Public sector unions and their allies have since triggered recall elections for Governor Walker, Lieutenant Governor Rebecca Kleefisch (R), and four additional Republican state senators.¹³⁴ Those elections are due to take place sometime in summer, 2012.¹³⁵

While Wisconsin may be only one example among many public pension reform efforts, it shows the political consequences (on both sides of the aisle) for those who take up public pension reform (and those who refuse to do so). As important as it may be to take on the challenge, many lawmakers are still politically incentivized to maintain the status quo for as long as possible.

Section 8: Problem Anecdotes

The obstacles to reform listed in Sections 6 and 7 have left many governments in unenviable financial positions. Despite examples of progress, described later in Section 9, many state and local governments are dealing with enormous public pension burdens. Section 2 largely explains the size, scope and nature

¹²⁶ Green Bay Press Gazette. "Read Summary of Gov. Walker's Budget Repair Bill." *Green Bay Press Gazette*. February 16, 2011: <http://www.greenbaypressgazette.com/article/20110216/GPG0101/110216041/Read-summary-Gov-Scott-Walker-s-budget-repair-bill>.

¹²⁷ Ibid.

¹²⁸ Ibid.

¹²⁹ O'Brien, Brendan and Mary Wisniewski. "No Clear Winner in Wisconsin's Summer of Discontent." *Reuters*. August 17, 2011: <http://www.reuters.com/article/2011/08/18/us-wisconsin-recalls-idUSTRE77F2W820110818>.

¹³⁰ Ibid.

¹³¹ Ibid.

¹³² Spicuzza, Mary. "Wisconsin Recall Election Spending Shatters Records." *Post Crescent* (Appleton, Fox Cities Wisconsin). August 7, 2011.

¹³³ Ibid.

¹³⁴ Reuters. "Wisconsin Approves Recall Votes for More Republican Senators." *Reuters*. March 13, 2012.

¹³⁵ Ibid.

of the public pension problems across the United States. Nearly all states are facing a major financial challenge when it comes to funding their pension promises (see **Appendix Figure A** for greater detail).

Instead of listing a series of states and municipalities that are facing similar problems, this section will list two representative cases: one municipality and one state. They are among the worst examples with regard to the severity and scope of their respective pension crises. However, many other state and local governments are on course to (or already) face similar challenges. The sidebars that appear in this section also appear in previous sections. However, they have been repeated here as a reminder of the sheer size of the financial challenge faced by many state and local governments.

Prichard, Ala.: The city of Prichard, Ala., is widely acknowledged to be the first of any American municipality or state to default on its public pension obligations. Prichard's problems did not develop overnight; the town had previously sought bankruptcy protection on two separate occasions and was repeatedly warned that its public pension fund would be depleted by 2009.¹³⁶ In response, Prichard city leaders failed to take action. When the fund ran dry in 2009, Prichard simply stopped paying the city's pension beneficiaries.¹³⁷

The consequences for Prichard's public pension beneficiaries have been severe. As of 2010, Prichard had 150 retired workers who had once received pension checks. Since the city stopped paying, some of those retirees have reportedly filed for bankruptcy and/or come out of retirement. Others have died in destitution before the issue could be resolved.

Prior to striking a deal in May, 2011, Prichard failed to make pension payments to beneficiaries for a period of 20 months.¹³⁸ The deal that the city finally struck provides previous pension beneficiaries with partial payments but basically ignores the fates of current employees and those who left municipal

The 5 Cities with the Worst Pension Funding Problems*

	Net Pension Assets (\$B)	Liability as Stated (\$B) and % Underfunded	Liability Treasury Yield (\$B) and % Underfunded	Unfunded Liability per household (under Treasury Yield)
Chicago	\$21.8	\$46.3 (53%)	\$66.6 (68%)	\$41,966
New York City	\$92.6	\$155.8 (41%)	\$214.8 (57%)	\$38,886
San Francisco	\$11.9	\$16.3 (27%)	\$22.6 (47%)	\$34,940
Boston	\$3.6	\$7.4 (51%)	\$11 (67%)	\$30,901
Detroit	\$4.6	\$8.1 (43%)	\$11 (58%)	\$18,643

*Ranked on size of unfunded public pension liability per household. Calculations of liabilities performed in June, 2009.

SOURCE: Novy-Marx and Rauh. "The Crisis in Local Government Pensions in the United States." 2010.

¹³⁶ Ibid.

¹³⁷ Ibid.

¹³⁸ McClendon, Robert. "Prichard Pension Crisis: Deal Could Leave Current, Former Employees in the Cold." *Press-Register*. June 5, 2011.

employment between the time the pension fund was frozen during 2009 and the time the deal was struck.¹³⁹

Under the agreement Prichard has made with its previous pension beneficiaries, the city will henceforth place \$50,000 a month into a fund that will then be divided among approximately 140 surviving pensioners (each receiving roughly \$357 a month).¹⁴⁰ Prichard Mayor Ron Davis hopes to convert current employees and those retirees currently left in limbo to 457 plans, the government equivalent of a 401(k) defined contribution plan.

It is notable that since Prichard's pension default, the city of Central Falls, R.I. (discussed further in Section 9); Jefferson County, Ala.; Harrisburg, Pa.; and Boise County, Idaho, have all sought protection under Chapter 9 bankruptcy during 2011.¹⁴¹ Clearly, once-safe assumptions regarding the permanence and financial stability of governments are worth reconsidering in light of such occurrences. Arguably, no group should be more concerned about this reality than the beneficiaries of unsustainable public pension plans.

Illinois: As of Novy-Marx and Rauh's 2009 calculations (cited in **Appendix Figure A**) the state of Illinois held public pension fund assets of \$65.7 billion. Meanwhile, the state owed a total stated public pension fund liability of \$151.1 billion.¹⁴² Using a riskless discount rate, the total Illinois public pension liability grows to \$284.8 billion.¹⁴³ That liability constitutes 717% of Illinois' annual tax revenue and 36% of the state's gross state product (GSP).¹⁴⁴ (Using the Treasury rate, Illinois' unfunded liability is a total of \$219.1 billion.)

Five States with the Largest Unfunded Pension Liabilities

Liabilities based on government financial statements (\$billions and % underfunded)

1. California: \$154.2 (32% underfunded)
2. Illinois: \$85.4 (57%)
3. Ohio: \$75.3 (39%)
4. New Jersey: \$62.9 (51%)
5. Texas: \$53.7 (30%)

Liabilities discounted using Treasury yields (\$billions and % underfunded)

1. California: \$475.7 (59% underfunded)
2. Illinois: \$219.1 (77%)
3. Ohio: \$216.9 (65%)
4. Texas: \$188.2 (60%)
5. New York: \$166.4 (47%)

SOURCE: Novy-Marx and Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." 2009.

¹³⁹ Ibid.

¹⁴⁰ Ibid.

¹⁴¹ Corkery, Michael. "Softer Approach on Pension Problems." *The Wall Street Journal*. July 25, 2011.

¹⁴² Novy-Marx, Robert and Joshua Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." *Journal of Economic Perspectives* (2009): 198.

¹⁴³ Ibid.

¹⁴⁴ Ibid.

Illinois' overall negative financial situation, deeply exacerbated by its public pension liabilities, has already led to the state's general obligation bonds being lowered to a rating of A1, the lowest among all states.¹⁴⁵ Moody's, the credit rating agency, has released an analysis ranking Illinois among the five states with the highest combined debt and public pension funding requirements.¹⁴⁶

As explained in Section 6, Illinois' public pension problems are made worse by the fact that state legislators face a significant constitutional obstacle to any meaningful public pension reform efforts. Illinois' state constitution specifically identifies public pension plans as a contractual relationship and forbids any attempt to diminish or impair promised public pension benefits.¹⁴⁷

In 2010, Illinois instituted what the *Wall Street Journal* described as "baby steps" toward public pension reform.¹⁴⁸ Facing a budget deficit of \$6 billion and the above-listed public pension liabilities, Illinois increased the age at which a public employee can receive full benefits to 67, capped annual pension payments for the highest paid workers at \$106,800, and prohibited "double dipping" from public pensions and public salaries at the same time.¹⁴⁹ These reforms will apply only to newly hired public employees (and therefore did nothing to address the state's current pension liability, only its future growth), yet Illinois' public sector unions described these relatively limited revisions as a "pension slashing bill."¹⁵⁰

Clearly, Illinois' combination of a large unfunded pension liability and a constitutional guarantee of promised benefits place the state in particularly difficult position. However, the state should not be seen as an anomaly. Instead, various features of its overall problem are very representative of the pension challenges faced by states across the country. In addition to being in need of more substantive reform at home, Illinois also serves as a warning to other state governments.

Section 9: Progress Anecdotes

As large and complex as the state and local pension problem may be, and despite the fact that the path to reform is fraught with political friction and legal roadblocks, there exist a number of promising examples of state and local public pension sponsors that have recently succeeded in enacting reform.

The following example cases have the potential to provide pension reform roadmaps to struggling states and municipalities across the nation (see the sidebar found in this section entitled, "Reforms Implemented by Public Pension Plan Sponsors" for a concise summary of enacted reforms):

Rhode Island: Before enacting substantive pension reform in 2011, Rhode Island was in one of the most precarious positions relative to its looming pension obligations. In their 2011 calculations, Novy-Marx and Rauh listed the revenue demands of Rhode Island's public pensions as the second worst in the nation on a per-household basis (it would require the assessment of \$1,557.30 in additional taxes to

¹⁴⁵ Bergen, Kathy. "Moody's Puts Illinois in Top 5 in Debt, Pension Needs." *Chicago Breaking Business*. January 27, 2011.

¹⁴⁶ Ibid.

¹⁴⁷ National Conference on Public Employee Retirement Systems. *State Constitutional Protections for Public Sector Retirement Benefits*. July 24, 2011 <<http://www.ncpers.org/Files/News/03152007RetireBenefitProtections.pdf>>.

¹⁴⁸ *The Wall Street Journal* Editorial Board. "In Praise of Illinois." *The Wall Street Journal*. April 8, 2010.

¹⁴⁹ Ibid.

¹⁵⁰ Ibid.

each Rhode Island household for a period of 30 years before the state's public pension plan could be fully funded).¹⁵¹

In work published in 2009, Novy-Marx and Rauh point out that Rhode Island's public pension liability (discounted at a risk-free Treasury rate) is 765% of the state's annual tax revenue and constitutes 45% of Rhode Island's gross state product.¹⁵² Rhode Island has previously listed the liability of its public pension plans at \$12.4 billion, while Novy-Marx and Rauh calculate the same liability as \$27.1 billion using a risk-free discount rate. To offset this liability, Rhode Island has \$6 billion in pension assets.¹⁵³

In May 2011, Rhode Island's state retirement board unanimously approved a \$266 million annual increase in the amount that taxpayers must pay to fund the state's public pensions, beginning in 2012.¹⁵⁴ Municipal leaders throughout the state immediately criticized the move and warned of the possible negative economic implications of such a large tax hike. Public sector union leaders further opposed Governor Lincoln Chafee's suggestion to impose a temporary increase in public employee contributions to their own pension fund (raised to 11.75% of salaries).¹⁵⁵

While this debate took place, the taxpayer contribution made to Rhode Island's pension fund grew — from \$330 million in 2010 to a projected \$650 million in 2011.¹⁵⁶ Rhode Island's State Treasurer Gina Raimondo (D) waded into this problem with the intent to work with the state's public sector unions and explain that Rhode Island's current pension plans are unsustainable. Noting that public pension problems are a drain on resources that can hamper schools and economic growth, Raimondo advocated a rollback in the state's pension COLAs.¹⁵⁷

From the outset, Raimondo's efforts were underscored by the fact that, in addition to the state-level issues, Rhode Island municipalities are further burdened by their own underfunded public pension plans. On August 1, 2011, in a highly unusual step, Central Falls, R.I., declared bankruptcy.¹⁵⁸ The city's appointed receiver, Robert G. Flanders, sought Chapter 9 bankruptcy as a last resort for a city that had been unable to secure major concessions from retirees or public sector unions.¹⁵⁹

Against this backdrop, Treasurer Raimondo and other Rhode Island state leaders were able to enact some of the most substantive pension reform legislation in the nation during 2011. Rhode Island's recently passed General Assembly Retirement Security Legislation accomplishes the following:¹⁶⁰

- Suspension of new COLAs to retirees' benefits until the state's system is better funded (does provide for an intermittent COLA every five years until 80% funded);

¹⁵¹ Novy-Marx, Robert and Joshua Rauh. "The Revenue Demands of Public Employee Pension Promises." 2011: 37.

¹⁵² Novy-Marx, Robert and Joshua Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." *Journal of Economic Perspectives* (2009): 198.

¹⁵³ Ibid: 198.

¹⁵⁴ Parker, Paul. "Public Pensions in RI to Cost Taxpayers \$266 Million More." *Providence Journal*. May 12, 2011.

¹⁵⁵ Ibid.

¹⁵⁶ Corkery, Michael. "Softer Approach on Pension Problems." *The Wall Street Journal*. July 25, 2011.

¹⁵⁷ Ibid.

¹⁵⁸ Niedowski, Erika. "Cash-Strapped RI City Files for Bankruptcy." *AP*. August 1, 2011.

¹⁵⁹ Ibid.

¹⁶⁰ State of Rhode Island. *The Rhode Island General Assembly Retirement Security Legislation*. n.d. December 22, 2011 <<http://www.pensionreformri.com/>>.

- Moves all but public safety employees to hybrid pension plans;
- Increases the minimum retirement age for most employees not already eligible to retire;
- Preserves accrued benefits earned through June 30, 2012; and,
- Begins to address independent local plan solvency issues.

Rhode Island's state leadership estimates that the legislation will reduce "the state's (current self-calculated) unfunded liability of nearly \$7 billion by over \$3 billion" and prevent "future erosion of the state's pension system."¹⁶¹ The reform legislation also targets an 80% funding level for all of Rhode Island's pensions systems.¹⁶²

Rhode Island's ability to enact substantive pension reform legislation has been heralded as a notable success story by observers across the nation. Key to the reform legislation's potential for success is the fact that it shifts future risk to public employees through the installation of a new hybrid plan that incorporates both a DB and DC plan.¹⁶³ The adoption of a hybrid plan is a consistent theme among many successful public pension reform efforts.

Utah: Along with Rhode Island, the state of Utah is widely viewed to be one of the few states that have enacted substantive public pension plan reform. Utah, as a result of the leadership of State Senator Dan Liljenquist (R), replaced its DB public pension plan with a DC retirement plan for new state and municipal employees in 2010.¹⁶⁴

When Senator Liljenquist requested an actuarial analysis determining the financial condition of Utah's public pension fund, he and other Utah officials were alerted to the fact that Utah's public pension fund faced insolvency if projected returns on investment failed to materialize. Utah had been discounting its future pension liabilities using a projected annual return rate of 7.75%. If actual return on investment dropped to 6%, Utah's pension fund would have been insolvent.¹⁶⁵ The Utah Constitution caps total state debt at 1.5% of "the value of all property in the state"; Utah's unfunded pension liability

Utah's Requested Actuarial Report

- Before 2008, Utah's public pension system was fully funded. The financial crisis "blew a 30% hole in the pension system," according to Utah State Senator Dan Liljenquist.
- With a \$6.5 billion unfunded pension liability, Utah requested that state actuaries project out pension costs for 40 years into the future.
- The report requested the following sensitivities:
 - Projections considering market returns of 6%, 7%, 7.75% and 8.5%
- Modeled scenarios included:
 - Standard option (increase contribution rates)
 - Do-nothing option (freeze contribution rates at existing levels)
 - Delay options (freeze contribution rates for 3 or 5 years, then increase contribution rates)
- Regardless of what scenario actuaries ran, the data showed the state could not simply "grow out of its problem".

SOURCE: Utah State Senator Dan Liljenquist and "Utah: A Case Study for Pension Reform", *The Pelican Post*. 2010.

¹⁶¹ Ibid.

¹⁶² Ibid.

¹⁶³ Ibid.

¹⁶⁴ *The Wall Street Journal*. "Utah Pension Model." *The Wall Street Journal*. January 19, 2011.

¹⁶⁵ Ibid.

Reforms Implemented by Public Pension Plan Sponsors

	Utah	New Jersey	Colorado	Atlanta	Detroit	Fed Gov't	Rhode Island
Reduce, Suspend or Eliminate COLA		X	X			X	X
Creation of Hybrid DC/DB	X			X		X	X
Creation of Just DC Plan	X				X		
Closing DB Plan to New Employees	X			X		X	
Push Back Normal Retirement		X	X				X
Push Back Early Retirement (or Penalize)		X	X				
Increase Employee Contributions	X		X	X		X (Optional)	
Increase Employer Contributions		X	X				
Creation of Target Funding Ratio		X					X
Decrease Benefit Calculation (Smaller Final Average Compensation or Multiplier)			X		X	X	

was already 1.5 times as great as the total constitutional debt limit.

While Utah’s constitution provides no “explicit constitutional protection for public pension benefits,” Utah’s courts have interpreted a contractual relationship on the basis of the “impairment of contract principles.”¹⁶⁶ The result is that Utah’s legislature “may not provide for the termination of a retirement system unless a substantial substitute is provided.”¹⁶⁷

With the financial challenges clear and the constitutional limits to reform clarified, Utah closed the defined benefit plans of the Utah State Retirement System to new participants and subsequently replaced those plans with the new public employees’ tier II contributory retirement plans.¹⁶⁸ Utah’s new plans included a DC plan and a hybrid option (one having both DC and DB features). Employees hired on or after July 1, 2011, will now choose between the DC and hybrid plans (although state legislators and Utah’s governor must enroll in the DC plan).¹⁶⁹

Utah’s DC plan provides state and municipal employees with accounts “to which employers will contribute 10% of employee compensation for public employees, legislators or the

¹⁶⁶ National Conference on Public Employee Retirement Systems. *State Constitutional Protections for Public Sector Retirement Benefits*. July 24, 2011 <<http://www.ncpers.org/Files/News/03152007RetireBenefitProtections.pdf>>. Page 9.

¹⁶⁷ Ibid.

¹⁶⁸ National Conference of State Legislatures. *Pensions and Retirement Plan Enactments in 2010 State Legislatures*. November 23, 2010. July 24, 2011 <<http://www.ncsl.org/LinkClick.aspx?fileticket=v6KpQROK1ws%3d&tabid=20836>>. Page 19.

¹⁶⁹ Ibid.

governor.”¹⁷⁰ Employers contribute 12% for public safety officials and firefighters. Employees are not required to contribute, but they may do so.¹⁷¹ Employer contributions are vested after four years of employment, while any employee contributions are immediately vested.¹⁷²

The state of Utah will contribute 10% of compensation toward the DB component of the hybrid plan on behalf of those employees who opt to participate. Employees must “contribute any additional amount required to make up the actuarial requirement” (ARC) necessary to keep Utah’s DB pension funded.¹⁷³ Defined benefits may not be increased until “all plans created in the bill reach 100% of their actuarial funding requirement.”¹⁷⁴

Utah’s public retirement plans are now in less danger of becoming insolvent, and its public workers’ retirement benefits are more secure. Granted, there still exists an element of intergenerational risk transfer, as discussed in Section 3. However, Utah’s situation is better than most. Still, the state’s pension reforms faced stiff opposition from some quarters before passage. Public sector union leaders fought the plan and held rallies “threatening to defeat any legislator who dared to vote for (the reform legislation).”¹⁷⁵

Ultimately, the reform legislation was passed and signed, while all the Republicans who voted for the reform legislation went on to win their election (Utah Republicans— the primary supporters of the reforms — went on to pick up more seats in 2010 following passage of the legislation).¹⁷⁶ Polls indicated that Utah voters supported the pension reform efforts, finding that they viewed the changes as “fair and financially imperative.”¹⁷⁷

Utah’s successful reforms were predicated on a stark actuarial assessment, comprehensive legislation and public understanding of a complicated problem. Utah benefited from the fact that the state’s pension fund had been nearly 100% funded in 2007 but fell to 70% funded by 2009.¹⁷⁸ The unfunded liability was indeed large at \$6.5 billion, but many states are in much worse shape.¹⁷⁹

Despite political opposition, Utah’s legislature was able to implement meaningful public pension reform that greatly bettered the financial standing of the state for the foreseeable future. Utah’s reforms face no current legal challenge.

Senator Liljenquist notes that before his request, the state’s actuaries simply had not been asked about the extent of Utah’s problems. The answer he received to his request and the subsequent reform that it spurred is an example of the difference that a concerned leader can make.¹⁸⁰

¹⁷⁰ Ibid.

¹⁷¹ Ibid.

¹⁷² Ibid.

¹⁷³ Ibid: 20.

¹⁷⁴ Ibid.

¹⁷⁵ *The Wall Street Journal*. "Utah Pension Model." *The Wall Street Journal*. January 19, 2011.

¹⁷⁶ Ibid.

¹⁷⁷ Ibid.

¹⁷⁸ Ibid.

¹⁷⁹ Ibid.

¹⁸⁰ Liljenquist, Dan. *Utah State Senator*. Kevin Nicholson. August 19, 2011.

New Jersey: On June 28, 2011, New Jersey Governor Chris Christie (R) signed into law significant public pension and health benefit reform legislation. As of June 30, 2010, New Jersey's total public pension unfunded liability had reached \$53.861 billion (discounting future liabilities at a rate of 8.25% and resulting in a funding level of 62%, using the actuarial value of assets).¹⁸¹ Governor Christie's office estimates that New Jersey's public pension reform legislation will provide a nominal savings to New Jersey taxpayers of more than \$120 billion over the next 30 years.¹⁸²

New Jersey's bipartisan pension reform legislation aims to reduce total New Jersey public pension underfunding to \$37 billion by 2041 (which would make the plan 88% funded).¹⁸³ Joshua Rauh states that by enacting its public pension reforms, "New Jersey moved itself from the top of the list of the most-troubled states to a state in the top third, but not a standout."¹⁸⁴ Rauh further stated that were New Jersey to rely on employee contributions alone to achieve full funding for its public pension plans, it would have to withhold 31% of employees' pay.¹⁸⁵ New Jersey's very sizeable public pension problems have been reduced but not eliminated by recent reforms.

Most notably, however, New Jersey's pension reform legislation suspends statutory COLAs for all of New Jersey's public pension plans. Plans may not reinstitute COLAs until they reach their target fund ratio (TFR) — 75% funded by assets within seven years of the reform legislation taking effect, 80% thereafter.¹⁸⁶ Even once the TFR is achieved, plans may not institute any changes that reduce their funded ratios on the basis of a 30-year projection.¹⁸⁷ Rauh notes that the COLA provision alone could "potentially solve 40 percent of the unfunded-liability problem."¹⁸⁸

The legislation also made a number of other changes to shore up the state's financial outlook. The legislation established a normal retirement age of 65 years for two of its pension plans.¹⁸⁹ The reforms further adjusted the early retirement penalty to 3% each year (which still represents an employer-paid subsidy) and increased eligibility for early retirement to 30 years of service.¹⁹⁰ Reforms also increased current employee contribution rates for each of New Jersey's public pension retirement plans.¹⁹¹

As noted above, New Jersey's public pension reform legislation was a bipartisan effort. Governor Christie gave ample credit to Democratic New Jersey Senate President Steve Sweeney and Democratic Assembly Speaker Sheila Oliver, both of whom bucked their party's majority to pass the reform legislation. New Jersey's public sector unions mounted heavy pressure on state Democrats to reject the

¹⁸¹ New Jersey Office of the Treasurer. *Funding Status, NJ Pension Fund Actuarial Liabilities and Assets*. June 30, 2010. July 24, 2011 <<http://www.state.nj.us/treasury/pensions/pdf/financial/gasb-25-27-comparison-2010-2009.pdf>>.

¹⁸² Office of the Governor of New Jersey. *Governor Christie Signs Into Law Bold, Bipartisan Pension and Health Benefits Reform*. June 28, 2011. July 24, 2011. <<http://www.state.nj.us/governor/news/news/552011/approved/20110628B.html>>.

¹⁸³ Ibid.

¹⁸⁴ Ward, Judy. "New Jersey Pension Reforms Are Only The Beginning." *Institutional Investor*. July 6, 2011.

¹⁸⁵ Ibid.

¹⁸⁶ Ibid.

¹⁸⁷ Ibid.

¹⁸⁸ Ward, Judy. "New Jersey Pension Reforms Are Only The Beginning." *Institutional Investor*. July 6, 2011.

¹⁸⁹ Office of the Governor of New Jersey. *Governor Christie Signs Into Law Bold, Bipartisan Pension and Health Benefits Reform*. June 28, 2011. July 24, 2011.

¹⁹⁰ Ibid.

¹⁹¹ Ibid.

reforms.¹⁹² After the vote, Sweeney would state that he worked to save public pensions over the long run while leveraging a better deal out of Governor Christie. He was nonetheless vilified by public sector unions, which have already filed a suit against the changes.¹⁹³

New Jersey indicates the possibility for (sometimes grudgingly) bipartisan legislation aimed at shoring up underfunded public pension plans.

Colorado: Colorado's public pension situation was already discussed earlier in this paper (Section 6: Legal Obstacles). The reform legislation that first spurred the lawsuit discussed in Section 6 began with a June 19, 2009, actuarial report produced for Colorado's Public Employee Retirement Association (PERA), indicating that the pension plan's assets had declined by \$12 billion in market value during 2008 (dropping from a market value of \$41.1 billion in 2007 to a market value of \$29.3 billion at the end of 2008).¹⁹⁴ On December 17, 2009, the executive director of PERA, Meredith Williams, testified to the Colorado Legislature's Joint Budget Committee. In that testimony, he stated, "We project we will run out of money in the lifetime of most of our members, including our retirees."¹⁹⁵ These two events got the attention of Colorado's state leadership.

By January 26, 2010, Colorado's Senate Finance Committee had passed a legislative solution to PERA's troubles known as Senate Bill 1 or SB1.¹⁹⁶ Most beneficiary opposition to SB1 was centered on the bill's plan to eliminate PERA's COLA during 2010 and the plan to reintroduce a reduced COLA of 2% in 2011 (down from a previous rate of 3.5%). SB1 was eventually passed by a Democratic Senate and a Democratic House and was signed by Governor Bill Ritter (D) on February 23, 2010.¹⁹⁷ A lawsuit that was filed in opposition to the reduction in PERA's COLAs was dismissed by a Colorado District Court in June 2011.

The Colorado pension reform legislation had support from most Democratic lawmakers, public sector unions and a handful of Republicans. Republicans opposed SB1 because they viewed it as an inadequate fix for Colorado's public pension funding problems. A group of Colorado Republican House members advocated switching to a DC plan and noted the problems associated with PERA's use of an unreasonably high 8% discount rate.¹⁹⁸

Atlanta, Ga.: Atlanta was the first large American city to take on major public pension reform (the city's story is also referenced in Section 5). As of June 2011, Atlanta was faced with a \$1.5 billion unfunded

¹⁹² Reuters. "New Jersey Union Sues Over Pension Fund Payments." *Reuters*. June 22, 2011.

¹⁹³ *Ibid.*

¹⁹⁴ Cavanaugh, Thomas. *Colorado PERA 12/31/08 Actuarial Valuation Results and 30-year Projections*. Actuarial. Kenesaw, Georgia: Cavanaugh Macdonald, LLC, 2009. Page 9.

¹⁹⁵ Goodland, Marianne. "State Retirees Ready to Pounce On PERA Fix." *The Colorado Statesman*. January 15, 2010.

¹⁹⁶ Engdahl, Todd. "PERA Compromise Wins Panel Support." *Denver Times*. January 26, 2010.

¹⁹⁷ National Conference of State Legislatures. *Pensions and Retirement Plan Enactments in 2010 State Legislatures*. November 23, 2010. July 24, 2011

<<http://www.ncsl.org/LinkClick.aspx?fileticket=v6KpQROK1ws%3d&tabid=20836>>.

¹⁹⁸ Goodland, Marianne. "State Retirees Ready to Pounce On PERA Fix." *The Colorado Statesman*. January 15, 2010.

liability for its pension funds. Mayor Kasim Reed (D) advocated legislation intended to phase out the city's DB plans and replace them with a DC plan that also placed city workers into Social Security.¹⁹⁹

Reed projected that his plan would save Atlanta \$20 million a year while reducing the annual required contribution of public pension plans that had swelled from \$51 million in 2000 to \$119 million in 2010.²⁰⁰ This rapid increase in ARC was not simply a matter of demographic change. Rather, votes by the Atlanta City Council in 2001 and 2005 "dramatically increased the value of pension benefits for city workers."²⁰¹ The city's liabilities swelled, but Atlanta failed to increase contributions to its pension funds. As a result, the city's police pension fell from being 96% funded in 2000 to being only 64% funded in 2011.²⁰² Likewise, the firefighters' pension fell from a funded ratio of 92% in 2000 to only 61% in 2011.²⁰³

City workers and Atlanta's public sector unions bitterly fought Mayor Reed's initial plan. Ultimately, the city produced a compromise reform similar to that of Utah. Atlanta's new public retirement plan makes "no changes to the benefits of retired employees."²⁰⁴ The reforms require that current Atlanta employees "contribute an extra five percent of their compensation to keep their existing DB benefits," but current employees are allowed to stay in their DB plan (active employees hired before 1984 are excluded from the increased contributions).²⁰⁵ New Atlanta employees will be "placed into a hybrid plan composed of both a reduced traditional pension and a 401(k)-type plan."²⁰⁶

The vote approving Atlanta's public pension reforms was unanimous (15-0); the city's public workers also signed on to the final plan. Initial projections state that Atlanta will save approximately \$25 million a year now that the reforms are in effect.²⁰⁷ Prior to the reforms, some projections indicated that, if left unaltered, Atlanta's liabilities would have grown to \$4.5 billion within a decade.²⁰⁸ The city's pension had already been consuming 20% of its annual budget.²⁰⁹

Detroit, Mich.: Detroit lost 25% of its population over just the past decade (nearly 238,000 residents).²¹⁰ Detroit's 2010 population of 713,777 was its lowest since 1910.²¹¹ Yet Detroit is still burdened by the physical and financial infrastructure and obligations of a much larger city.

Novy-Marx and Rauh rank Detroit's unfunded public pension liability as fifth worst among all local governments in the nation on a per-household basis (\$18,643 per household).²¹² According to Detroit's

¹⁹⁹ McWhirter, Cameron and Belkin Douglas. "New Front in Benefits Fight, Atlanta May Drop Pensions." *The Wall Street Journal*. June 22, 2011.

²⁰⁰ Ibid.

²⁰¹ Ibid.

²⁰² Ibid.

²⁰³ Ibid.

²⁰⁴ City of Atlanta. *Mayor Kasim Reed and the Atlanta City Council Unanimously Reach Landmark Agreement on Sweeping Pension Reform*. June 29, 2011. July 25, 2011

<http://www.atlantaga.gov/media/nr_pensionreform_062911.aspx>.

²⁰⁵ Ibid.

²⁰⁶ Ibid.

²⁰⁷ Suggs, Ernie. "Atlanta Unanimously Approves Pension Overhaul." *Atlanta Journal-Constitution*. June 29, 2011.

²⁰⁸ Ibid.

²⁰⁹ Ibid.

²¹⁰ Seelye, Katharine Q. "Detroit Census Confirms a Desertion Like No Other." *The New York Times*. May 22, 2011.

²¹¹ Ibid.

²¹² Novy-Marx, Robert and Joshua Rauh. "The Crisis in Local Government Pensions in the United States." 2010: 29.

own financial statements, its pension plans are 43% underfunded; using the Treasury rate to discount liabilities, Detroit's pension plans are 58% underfunded (an unfunded obligation of \$6.4 billion).²¹³

While Detroit's problems remain severe, the city has made some recent progress in addressing them. In August, 2011, for the first time in 30 years, Detroit ratified a collective bargaining agreement with its police and firefighter unions that was not imposed by an arbitrator.²¹⁴ The compromise freezes current pensions and reduces the multiplier used to determine future retirement benefits. The deal also creates a new defined contribution plan for new employees.²¹⁵

Given Detroit's financial problems and its historical inability to negotiate compromises with its public unions, this is a significant development for a city that still has a lot of work to do. Few anticipated Detroit generating a story of pension reform and public union compromise, but it has done just that.

The Federal Government as an Example of Pension Reform:

In 1986, the Federal Employees Retirement System (FERS) was enacted into law.²¹⁶ FERS supplemented Social Security with both a basic annuity plan (defined benefit) and a thrift savings plan (defined contribution) for all federal employees hired after 1983. The older Civil Service Retirement System (CSRS) remained in effect as a pension for those federal employees hired before 1984 that chose not to switch to FERS.²¹⁷ Those that argued for the replacement of CSRS pointed to the plan's low retirement ages, overly generous COLAs and underfunded liabilities. Those who argued on behalf of CSRS claimed that compensation packages for federal workers were already below comparable private sector compensation (and failing to keep up with inflation). Both sides had actuarial reports to support their claims.²¹⁸

²¹³ Ibid.

²¹⁴ Finley, Allysia. "The Motown Model." *The Wall Street Journal*. August 8, 2011.

²¹⁵ Ibid.

²¹⁶ Schreitmueller, Richard G. "The Federal Employees' Retirement Act of 1986." *Transactions of Society of Actuaries* (1988): Volume 40, Part 1: 554.

²¹⁷ Ibid: 555 – 6.

²¹⁸ Ibid: 547.

The Federal Government as an Example of Pension Reform: CSRS and FERS Comparison

	Civil Service Retirement System (CSRS)	Federal Employees Retirement System (FERS)		
Employee Contribution Rate	Civil servants employed continuously from December 1983 contribute 7% for retirement and are not covered by Social Security. (Some select groups are covered by Social Security, while others contribute at higher rates.)	Year	Retire on total basic pay	For SS, on pay over earnings base
		1987	1.3%	5.7%
		1988-9	.94%	6.06%
		1990+	.8%	6.2%
Basic annuity formula (per year of service)	Based on high three-year average pay: 1.5% for first five years, 1.75% for next five years, and 2% for years over 10. Unused sick leave credited.	1% of high three-year average salary, except 1.1% at retirement after age 62 and with 20 years of service. Unused sick leave not credited.		
Cost-of-living adjustments (COLAs)	Annual COLA equal to full increase in Consumer Price Index (CPI).	Annual COLA goes to regular retirees over age 62 and to all disabled employees and survivors:		
		CPI Increase	COLA %	
		Up to 2%	Same as CPI increase	
		2% to 3%	2%	
		3% or more	CPI Increase minus 1% point	
Contributions to thrift savings plan (tax deferred under the rules for a 401(k) arrangement)	Employee may contribute up to 5% of pay; no employer contribution	Employer automatically contributes amount equal to 1% of pay. Employee may contribute up to 10% of pay with matching as follows:		
		Contribution	Employer Match	
		First 3% of pay	\$1.00 per \$1.00	
		Next 2% of pay	\$.50 per \$1.00	

SOURCE: Schreitmüller, "The Federal Employees' Retirement Act of 1986".

Ultimately, an innovative compromise was reached. As referenced in the sidebar to the left, the new FERS included a thrift savings plan (or DC plan) that would supplement a smaller pension and Social Security. This thrift savings plan would allow federal employees to invest in private sector securities. This investment in the private sector — never before authorized by a government retirement plan — was seen as offering the dual benefits of increased return for investors and increased capital for American firms.²¹⁹ FERS also set minimum retirement ages (MRAs) and specified the amount of "creditable federal service" necessary before a retiree can draw benefits from the FERS annuity.²²⁰

Federal unions first opposed any attempt to enroll federal workers in Social Security. Union leaders eventually came to cooperate when Senate and House leaders from both parties made clear their intention to get a bill through to conference committee in 1985. Thereafter, unions were cooperative.²²¹ A bipartisan House/Senate conference committee essentially wrote the final FERS legislation from scratch in 1986.²²² Before passage, the FERS Act was projected to reduce the budget by \$8.4 billion over five fiscal years.²²³ FERS remains

²¹⁹ Ibid: 564.

²²⁰ Ibid: 558.

²²¹ Ibid: 551.

²²² Ibid: 553.

²²³ Ibid: 557.

notable for its bipartisan support and innovative hybrid design (one now being used by states such as Utah and cities such as Atlanta, Ga.).

Section 10: Potential Solutions

To provide policymakers and other public pension plan stakeholders with choices that can help to improve the financial health of public pension plans, this section suggests a series of potential pension plan policy changes and their anticipated impact on unfunded liabilities. We believe these changes represent the most effective tools available to policymakers as they seek to fund their pension plans at optimal levels.

First, however, it's helpful to understand how a typical public pension plan is designed.

Typical Public Pension Plan Eligibility

Participants are eligible to retire under the following circumstances:²²⁴

- At the age of 60 with eight years of credited service.
- At any age when a participant's age plus years of service equal a total of 85 (known as the Rule of 85).
- Between the ages of 55 and 60 with 25–30 years of credit service (reduced one-half of 1% for each month under the age of 60).

Regular Retirement Formula

The calculation of benefits for a participant is as follows:²²⁵

- Retirement benefits are based on final average compensation (FAC) and years of credited service. The maximum benefit is 75% of FAC.
- FAC is calculated by taking the last 12 months of salary.
- If a participant is covered by Social Security, he or she receives 1.67% of FAC for each year of service.
- If a participant is not covered by Social Security, he or she receives 2% of FAC for each year of service.
- A participant receives a 2.5% annual COLA effective on January 1 following the first full year of retirement.

²²⁴ State Employees' Retirement System of Illinois. *Regular Retirement Formula*. August 27, 2011 <http://www.state.il.us/srs/SERS/retireben_sers.htm>.

²²⁵ Ibid.

Solutions: Sensitivity Analysis

This subsection will analyze the potential impact of pension reform on the above-described typical pension plan. We propose two types of potential solutions to the public pension problem:

- A. Those intended to address pension plan design issues.
- B. Those intended to address the current precarious state of pension finances.

A. Potential Benefit Design Changes

1. Eliminate legislative end runs around the collective bargaining process (i.e., sweeteners). Benefits would be either negotiated or legislated, but not both.
2. Eliminate final-salary plans in favor of final average compensation (FAC), career average or hybrid (e.g., cash balance) designs.
3. Reduce/eliminate postretirement cost-of-living adjustments, or make them subject to affordability (possibly conditioned on funded status).
4. Tighten up eligibility for heavily subsidized benefits, such as disability and early retirement.
5. Tighten up eligibility for overtime hours to reduce opportunities for pension padding.
6. Raise the age of eligibility for full retirement benefits. When early retirement is offered, it should be actuarially fair (i.e., the PV of benefits received under early retirement must be equal to the PV of benefits that a retiree would have received if he or she had delayed receipt of benefits until normal retirement age).
7. Reduce benefit accruals (i.e., use lower percentages of compensation to calculate benefit accruals).
8. Combine pensions with Social Security participation.
9. Raise employee contributions.

To illustrate the cost effect of these potential design changes, consider the formula of the typical pension plan described in the previous subsection: 2% of FAC per year of service (i.e., benefit accrual without Social Security eligibility), payable as a life annuity beginning at age 60 and subject to annual COLAs. As seen in **Figure 9** below, when a worker is hired at age 30, the cost of providing this benefit is 22.5% of payroll. That is, the cost of building up an amount sufficient to fund this benefit by the time the worker reaches age 60 is 22.5% of each year's pay.

Modifications to this benefit can have significant financial effect. (Before modifications listed below, assume a retirement age of 60, a FAC of one year, no employee salary contribution toward pension cost and inclusion of a 2.5% COLA.)

1. Increasing the final-salary-averaging period to five years lowers the cost of funding by 1.3% of payroll, for an overall cost reduction of 5% for taxpayers.²²⁶

²²⁶ This undoubtedly understates the savings because our assumptions do not allow for pension padding, which sharply raises final-salary retirement benefits.

2. Changing to the practice of averaging pay over the course of a career lowers the cost by 7.4% of payroll, for an overall cost reduction of 33% for taxpayers.
3. Raising the retirement age to 65 lowers the cost by 5.7% of payroll, for an overall cost reduction of 25% for taxpayers.
4. Eliminating the COLA lowers the cost by 5.3% of payroll, for an overall cost reduction of 24%.
5. Each employee contribution totaling 1% of salary lowers taxpayer cost by 1% of payroll (e.g., a 5% employee contribution lowers taxpayer cost by 5%).
6. Changes 2, 3 and 4 (in combination), along with a 5% employee salary contribution, lower the cost of the pension plan by 19.1% of payroll (from 22.5% of payroll to 3.4% of payroll), for an overall cost reduction of 85% for taxpayers.

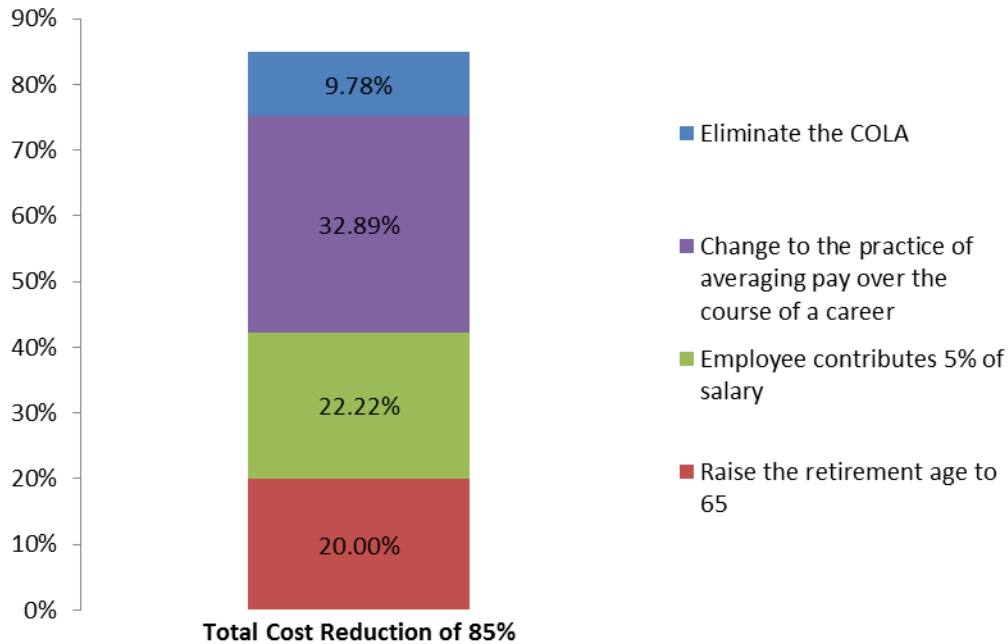
Figure 9: Cost of Retirement Benefits for Worker Hired at Age 30²²⁷

Cost of Retirement Benefits for Worker Hired at Age 30								
(Value of 2% Benefit Accrual Calculated as % of Pay)								
Unreduced Ret. Age	Without Indexation (No COLA)				With Indexation (COLA of 2.5%)			
	Final Average Compensation (FAC) Period				Final Average Compensation (FAC) Period			
	1	3	5	Career	1	3	5	Career
50	23.7%	23.0%	22.4%	18.2%	33.1%	32.2%	31.3%	25.4%
51	23.2%	22.5%	21.8%	17.5%	32.1%	31.2%	30.3%	24.3%
52	22.6%	21.9%	21.3%	16.8%	31.1%	30.2%	29.3%	23.2%
53	22.0%	21.3%	20.7%	16.2%	30.1%	29.2%	28.4%	22.1%
54	21.3%	20.7%	20.1%	15.5%	29.0%	28.2%	27.4%	21.1%
55	20.7%	20.1%	19.5%	14.8%	28.0%	27.2%	26.4%	20.1%
56	20.0%	19.4%	18.9%	14.2%	26.9%	26.1%	25.4%	19.0%
57	19.3%	18.8%	18.3%	13.5%	25.8%	25.1%	24.3%	18.0%
58	18.7%	18.1%	17.6%	12.9%	24.7%	24.0%	23.3%	17.1%
59	17.9%	17.4%	16.9%	12.2%	23.6%	22.9%	22.3%	16.1%
60	17.2%	16.7%	16.2%	11.6%	22.5%	21.8%	21.2%	15.1%
61	16.5%	16.0%	15.5%	10.9%	21.4%	20.7%	20.2%	14.2%
62	15.7%	15.2%	14.8%	10.3%	20.2%	19.7%	19.1%	13.3%
63	14.9%	14.5%	14.1%	9.7%	19.1%	18.6%	18.0%	12.4%
64	14.1%	13.7%	13.3%	9.0%	18.0%	17.4%	16.9%	11.5%
65	13.3%	12.9%	12.6%	8.4%	16.8%	16.3%	15.9%	10.6%
66	12.5%	12.2%	11.8%	7.8%	15.7%	15.2%	14.8%	9.8%
67	11.7%	11.4%	11.0%	7.2%	14.6%	14.2%	13.7%	9.0%
68	10.9%	10.6%	10.3%	6.6%	13.5%	13.1%	12.7%	8.2%
69	10.1%	9.8%	9.5%	6.1%	12.4%	12.0%	11.7%	7.5%
70	9.3%	9.0%	8.8%	5.5%	11.3%	11.0%	10.7%	6.7%

²²⁷ **Figure 9** makes the following assumptions: a discount rate of 5%, inflation of 2.5%, a full-inflation COLA when applicable, pay raises of inflation plus 0.5% and a benefit accrual of 2% of pay per year of service for a participant beginning work at age 30 (i.e., ineligibility for Social Security under the benefit formula described in the previous subsection).

Figure 10 below compares the overall cost reduction of each of the above-listed modifications (1 through 6) to the modeled typical pension plan:

Figure 10: Overall Cost Reduction Contribution of Each Potential Benefit Design Change²²⁸



To be sure, these changes cannot be applied to every pension plan. Not every plan offers COLAs, and many have already moved to averaging periods designed to eliminate pension padding. However, many such changes are possible in nearly every system. Other modifications, such as moving to a DC plan, can set the employer’s financial commitment at a fixed amount (with respect to future benefits). A cap on employer contributions (as exists in the case of Utah’s reformed DB plan and explained in Section 9) turns the cost variability onto participants rather than employers.

Those jurisdictions with constitutional protections of pension benefits (either only accrued or accrued and future) will see only a minimal immediate financial impact (as current plan members and beneficiaries are essentially locked in to their current benefits). Many other jurisdictions will have to effect difficult changes in statutes to institute the changes listed above. However, regardless of the challenge, such changes represent the clearest path toward a reduction in public pension costs.

²²⁸ Before modifications to “typical pension plan,” assume a retirement age of 60, a FAC of one year, no employee salary contribution toward pension cost and inclusion of a 2.5% COLA.

B. Potential Financing Changes

1. Reduce the intergenerational risk transfer. For a fully funded plan, this would mean investing assets covering former employees' liabilities in matching assets (when possible), and changing the actuarial return assumption to reflect this policy. For less mature public pension funds, this might not involve substantial changes in asset allocation (due to the fact that less mature public pension funds have fewer employees near retirement or already retired).
2. In keeping with the previous item, annual required contributions (ARC) calculations could be based on:
 - A risk-free rate used to discount liabilities postemployment
 - A discount rate reflecting the asset allocation invested to match the liabilities during employment

This will ensure that the target liabilities associated with current retirees are set assuming no risk taking for services already performed, while the liabilities associated with current workers are discounted at a rate in accord with their pension assets' likely rate of growth during their work lives.

3. Require amortization of deficits over reasonable periods. On the basis of an individual participant, amortization should not last much longer than an employee's remaining work life.
4. Make contributing the ARC a legal requirement. This would require federal legislation for the state plans and federal or state legislation for plans sponsored by local governments.
5. Control and monitor the size of a pension plan's funding ratio. In other words, as a plan's assets and liabilities grow relative to the size of the plan sponsor and its economy, do not automatically allow the overall level of asset/liability mismatch to increase without examining whether it truly is affordable in case of poor investment outcomes. The funding ratio should be monitored through required stress testing in actuarial valuations.

The financing changes listed above require a modification in the manner that public pension plan sponsors (and possibly the U.S. Federal Government) treat public pension plans. Fundamentally, these potential changes move plan sponsors and other stakeholders toward funding public pension plans with a constant eye on the 5 costing principles first discussed in Section 3:

Five Costing Principles of Retirement Plans

1. Costs should be apportioned over beneficiaries' working lifetimes reasonably in relation to the value of the deferred compensation.
2. Risk must be explicitly priced across time periods.
3. All benefits will be payable when due.
4. There must be a 'catch-up' mechanism for costs not met;
5. There must be a 'catch-up' mechanism for experience different than assumed.

If public pension plan sponsors can exhibit the fiscal discipline demanded by these principles, their pension plans will experience much greater levels of financial health. Public pension plans need not be fully funded by assets to be financially healthy (optimal funding ratios vary by plan and by plan sponsor). However, plans should be funded in accordance with the true nature of their growing liabilities.

In the case of nearly all the public pension plans in the U.S., the optimal level is certainly higher than the current funding ratio because current calculations of funding ratios inherently transfer risk from one generation's delivery of services to the next generation. To eliminate this risk transfer, the change in discounting methodology would raise plan liabilities and lower calculated funded ratios.

Section 11: Conclusions

The problem of unfunded state and local pension plan liabilities is large and growing. Indeed, the public pension problem manifests itself hundreds of times across the United States, in all 50 states and in numerous municipalities. Total unfunded public pension liabilities are estimated at sizes ranging from a conservative \$730 billion²²⁹ to an enormous \$4.4 trillion,²³⁰ and some analysts estimate that they have grown by a magnitude of six over the past decade.²³¹ The problem is also complex, caused and sustained by an interwoven array of financial, legal and political intricacies. Partially as a result of these complexities, public pension reforms are often most strongly opposed by those who stand to benefit most from their implementation: public sector workers.

As referenced in Section 2, the problem of public pension underfunding has been generated by more than a recent fall in the value of portfolio assets. Underfunding problems are intrinsically linked to the outsized nature of the promises made to public pension beneficiaries.

As described in Section 4, changes proposed by the GASB could soon bring hundreds of billions of dollars in unfunded liabilities on to the financial statements of public pension plan sponsors.

²²⁹ Wilshire Consulting. *2012 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation*. Santa Monica, CA: Wilshire Associates Incorporated, 2012: 3.

²³⁰ Novy-Marx, Robert and Joshua Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." *Journal of Economic Perspectives* (2009): 198.

²³¹ Wilshire Consulting. *2012 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation*. Santa Monica, CA: Wilshire Associates Incorporated, 2012: 3.

The increasing formal recognition of the financial threat posed by unfunded pension liabilities serves to underscore the time-sensitive nature of pension reform measures. The case of Prichard, Ala., discussed in Section 8, attests to the fact that public pension plan sponsors should move to address underfunding issues sooner rather than later.

Accurate information is critical when attempting to first estimate the size of a pension-underfunding problem and then determine how best to solve it. As the cases of Utah and Colorado illustrate, sometimes a simple actuarial report can go a long way in educating and realigning political interests. Policymakers must seek out such information regarding their own public pension plans to generate the necessary momentum for substantive pension reform in their own jurisdictions.

The financial outlook for many public pension plans is bleak, but solutions do exist. Section 10 outlines a series of benefit design and financing-oriented policy changes that will significantly boost the financial health of beleaguered state and local pension plans. We have described in this paper a number of public pension plan sponsors that were able to make progress in addressing their unfunded liabilities through significant reform. Clearly, every day that reform is delayed, liabilities mount and the journey toward meaningful change becomes that much harder.

Appendix

Appendix Figure A. State Pension Assets, Liabilities and Unfunded Liabilities (\$Billions)²³²

A. State	B. Plan Assets	C. Plan Liabilities (as stated on Financials)	D. Amount Underfunded Using Stated Liabilities	E. Plan Liabilities (discounted using Treasury rate)	F. Amount Underfunded Discounting with Treasury Rate
Alabama	\$22.3	\$41.0	\$18.7	\$78.8	\$56.5
Alaska	\$11.7	\$14.5	\$2.8	\$24.3	\$12.6
Arizona	\$25.0	\$40.6	\$15.6	\$85.1	\$60.1
Arkansas	\$8.1	\$20.8	\$12.7	\$38.3	\$30.2
California	\$330.0	\$484.2	\$154.2	\$805.7	\$475.7
Colorado	\$29.3	\$55.6	\$26.3	\$105.4	\$76.1
Connecticut	\$20.4	\$42.8	\$22.4	\$80.7	\$60.3
Delaware	\$6.2	\$6.9	\$0.7	\$12.0	\$5.8
Florida	\$97.2	\$124.1	\$26.9	\$213.7	\$116.5
Georgia	\$53.7	\$75.2	\$21.5	\$137.3	\$83.6
Hawaii	\$8.3	\$16.6	\$8.3	\$28.1	\$19.8
Idaho	\$8.1	\$11.9	\$3.8	\$21.0	\$12.9
Illinois	\$65.7	\$151.1	\$85.4	\$284.8	\$219.1
Indiana	\$15.5	\$36.4	\$20.9	\$62.4	\$46.9
Iowa	\$18.1	\$24.5	\$6.4	\$42.3	\$24.2
Kansas	\$10.3	\$20.1	\$9.8	\$36.0	\$25.7
Kentucky	\$21.6	\$43.6	\$22.0	\$74.5	\$52.9
Louisiana	\$17.7	\$35.7	\$18.0	\$61.4	\$43.7
Maine	\$8.3	\$13.7	\$5.4	\$24.0	\$15.7
Maryland	\$27.8	\$50.2	\$22.4	\$88.2	\$60.4
Massachusetts	\$37.8	\$55.4	\$17.6	\$96.7	\$58.9
Michigan	\$43.4	\$69.9	\$26.5	\$118.4	\$75.0
Minnesota	\$36.2	\$57.9	\$21.7	\$109.9	\$73.7
Mississippi	\$15.1	\$29.3	\$14.2	\$51.8	\$36.7
Missouri	\$27.0	\$51.3	\$24.3	\$88.6	\$61.6
Montana	\$5.9	\$8.6	\$2.7	\$15.4	\$9.5
Nebraska	\$5.4	\$7.9	\$2.5	\$14.1	\$8.7
Nevada	\$17.8	\$24.0	\$6.2	\$44.0	\$26.2
New Hampshire	\$4.4	\$7.8	\$3.4	\$14.2	\$9.8
New Jersey	\$60.5	\$123.4	\$62.9	\$204.8	\$144.3
New Mexico	\$16.2	\$26.7	\$10.5	\$45.0	\$28.8
New York	\$189.8	\$227.0	\$37.2	\$356.2	\$166.4
North Carolina	\$59.1	\$68.7	\$9.6	\$117.0	\$57.9
North Dakota	\$2.9	\$3.6	\$0.7	\$6.7	\$3.8
Ohio	\$115.6	\$190.9	\$75.3	\$332.5	\$216.9
Oklahoma	\$12.0	\$32.3	\$20.3	\$54.7	\$42.7
Oregon	\$46.1	\$56.6	\$10.5	\$90.4	\$44.3

²³² Novy-Marx, Robert and Joshua Rauh. "The Liabilities and Risks of State-Sponsored Pension Plans." *Journal of Economic Perspectives* (2009): 198.

A. State	B. Plan Assets	C. Plan Liabilities (as stated on Financials)	D. Amount Underfunded Using Stated Liabilities	E. Plan Liabilities (discounted using Treasury rate)	F. Amount Underfunded Discounting with Treasury Rate
Pennsylvania	\$70.9	\$104.1	\$33.2	\$190.5	\$119.6
Rhode Island	\$6.0	\$12.4	\$6.4	\$27.1	\$21.1
South Carolina	\$21.8	\$39.7	\$17.9	\$68.4	\$46.6
South Dakota	\$6.0	\$7.1	\$1.1	\$13.6	\$7.6
Tennessee	\$25.8	\$34.7	\$8.9	\$58.1	\$32.3
Texas	\$125.3	\$179.0	\$53.7	\$313.5	\$188.2
Utah	\$18.6	\$20.4	\$1.8	\$38.5	\$19.9
Vermont	\$2.4	\$3.8	\$1.4	\$6.7	\$4.3
Virginia	\$41.3	\$61.6	\$20.3	\$100.1	\$58.8
Washington	\$44.3	\$58.9	\$14.6	\$101.1	\$56.8
West Virginia	\$6.6	\$12.3	\$5.7	\$19.1	\$12.5
Wisconsin	\$62.2	\$82.9	\$20.7	\$153.3	\$91.1
Wyoming	\$4.8	\$7.0	\$2.2	\$12.3	\$7.5
Total	\$1,936.5	\$2,974.7	\$1,038.2	\$5,166.7	\$3,230.2

Appendix Figure B. Projected State and Local Tax Increases Needed to Fully Fund State and Local Pensions^{233 234}

A. State	B. 2009 Total State and Local Per Capita Taxes Paid	C. Per Capita Income	D. Required Contribution Increase per household for Full Funding, No Policy Changes	E. Per Capita Conversion of Column "D" figure (based on US household size of 2.6)	F. Percentage Increase in Total State and Local Per Capita Taxes Required to Fully Fund
Alabama	\$2,967	\$34,911	\$868	\$334	11.3%
Alaska	\$2,973	\$46,841	\$1,356	\$522	17.5%
Arizona	\$3,140	\$36,228	\$608	\$234	7.4%
Arkansas	\$3,281	\$33,238	\$534	\$205	6.3%
California	\$4,910	\$46,366	\$1,994	\$767	15.6%
Colorado	\$4,011	\$46,716	\$1,739	\$669	16.7%
Connecticut	\$7,256	\$60,310	\$1,459	\$561	7.7%
Delaware	\$4,091	\$42,688	\$1,210	\$465	11.4%
Florida	\$3,897	\$42,146	\$813	\$313	8.0%
Georgia	\$3,350	\$36,738	\$803	\$309	9.2%
Hawaii	\$4,399	\$45,725	\$1,288	\$495	11.3%
Idaho	\$3,276	\$34,973	\$737	\$283	8.7%
Illinois	\$4,596	\$46,079	\$1,907	\$733	16.0%
Indiana	\$3,396	\$35,767	\$329	\$127	3.7%

²³³ Tax Foundation. *State-Local Tax Burdens, All States 2009*. August 2, 2011

<http://www.taxfoundation.org/files/sl_burdens_byyear_1977-2009-20110223.pdf>.

²³⁴ Novy-Marx, Robert and Joshua Rauh. "The Revenue Demands of Public Employee Pension Promises." 2011.

A. State	B. 2009 Total State and Local Per Capita Taxes Paid	C. Per Capita Income	D. Required Contribution Increase per household for Full Funding, No Policy Changes	E. Per Capita Conversion of Column "D" figure (based on US household size of 2.6)	F. Percentage Increase in Total State and Local Per Capita Taxes Required to Fully Fund
Iowa	\$3,688	\$38,688	\$861	\$331	9.0%
Kansas	\$3,911	\$40,302	\$1,197	\$460	11.8%
Kentucky	\$3,059	\$32,959	\$1,260	\$485	15.8%
Louisiana	\$3,037	\$37,109	\$1,118	\$430	14.2%
Maine	\$3,832	\$37,835	\$761	\$293	7.6%
Maryland	\$5,218	\$52,130	\$818	\$315	6.0%
Massachusetts	\$5,316	\$53,029	\$1,057	\$407	7.6%
Michigan	\$3,565	\$36,880	\$1,386	\$533	15.0%
Minnesota	\$4,651	\$45,220	\$1,928	\$742	15.9%
Mississippi	\$2,678	\$30,689	\$1,127	\$433	16.2%
Missouri	\$3,425	\$37,853	\$1,264	\$486	14.2%
Montana	\$3,216	\$36,784	\$872	\$335	10.4%
Nebraska	\$3,960	\$40,349	\$881	\$339	8.6%
Nevada	\$3,311	\$44,241	\$884	\$340	10.3%
New Hampshire	\$3,765	\$46,828	\$1,010	\$388	10.3%
New Jersey	\$6,751	\$55,303	\$2,475	\$952	14.1%
New Mexico	\$2,997	\$35,780	\$1,756	\$675	22.5%
New York	\$6,157	\$51,055	\$2,250	\$865	14.1%
North Carolina	\$3,583	\$36,650	\$784	\$302	8.4%
North Dakota	\$3,892	\$41,088	\$1,042	\$401	10.3%
Ohio	\$3,652	\$37,600	\$2,051	\$789	21.6%
Oklahoma	\$3,259	\$37,464	\$850	\$327	10.0%
Oregon	\$3,761	\$38,527	\$2,140	\$823	21.9%
Pennsylvania	\$4,190	\$41,672	\$1,550	\$596	14.2%
Rhode Island	\$4,647	\$43,372	\$1,576	\$606	13.0%
South Carolina	\$2,742	\$33,954	\$1,186	\$456	16.6%
South Dakota	\$3,042	\$40,082	\$776	\$298	9.8%
Tennessee	\$2,752	\$36,157	\$837	\$322	11.7%
Texas	\$3,197	\$40,498	\$1,271	\$489	15.3%
Utah	\$3,349	\$34,596	\$538	\$207	6.2%
Vermont	\$4,181	\$41,061	\$1,163	\$447	10.7%
Virginia	\$4,392	\$48,210	\$1,066	\$410	9.3%
Washington	\$4,408	\$47,361	\$1,371	\$527	12.0%
West Virginia	\$3,034	\$32,299	\$600	\$231	7.6%
Wisconsin	\$4,427	\$40,321	\$1,522	\$585	13.2%
Wyoming	\$4,205	\$53,931	\$2,080	\$800	19.0%
Source of Columns B & C: Tax Foundation calculations based on data from the Bureau of Economic Analysis, the Census Bureau, the Council on State Taxation, the Travel Industry Association, Department of Energy, and others.			Source of Column D: Robert Novy-Marx and Joshua Rauh, "The Revenue Demands of Public Employee Pension Promises"		

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