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**Working Paper**

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AEI Economics Working Paper, No. 2021-14

**Provided in Cooperation with:**

American Enterprise Institute (AEI), Washington, DC

*Suggested Citation:* Warshawsky, Mark J. (2021) : The trouble with state and local government employee pension plans: The case of Connecticut, AEI Economics Working Paper, No. 2021-14, American Enterprise Institute (AEI), Washington, DC

This Version is available at:

<https://hdl.handle.net/10419/280645>

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# **The trouble with state and local government employee pension plans: The case of Connecticut**

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*American Enterprise Institute*

AEI Economics Working Paper 2021-14  
September 2021

# The Trouble with State and Local Government Employee Pension Plans: The Case of Connecticut

September 14, 2021

Mark J. Warshawsky<sup>1</sup>

## Abstract

This paper reviews the literature on the recent benefit and funding landscape of state and local government employee pension plans. Many plans, with generous benefit structures and inadequate funding, are in troubled financial shape. The state of Connecticut pension plans are a good illustration of this situation. I simulate the funded ratios and actuarially determined contributions for these plans in 2030 under historical investment returns, and show the substantial risk they represent to taxpayers. I then consider policy implications which include federal mandatory funding policy and closing the plans to new workers to cap that risk.

## Background on State and Local Government Employee Pension Plans

Defined benefit pension plans determine retirement payments according to a fixed formula based on salary, years of service, and age. It is common that benefits are based on a percentage of earnings averaged over a specified number of years at the end of a worker's career (or when earnings are highest), multiplied by the number of years of service recognized by the plan. Normal retirement is the specific age, length of service, or a combination of both, at which plan participants may retire and receive all accrued benefits without a reduction or penalty. In most plans, participants must satisfy a minimum service requirement to be vested in the benefits of the plan. Typical vesting requirements are five years of service for private sector workers, and sometimes longer (10 is common) for government workers. Early retirement is the age, length of service, or combination of age and length of service at which plan participants may retire and receive all accrued benefits, minus a reduction or penalty, according to various formula or actuarial calculations.

According to the Bureau of Labor Statistics (BLS), in 2020, only 15 percent of private sector workers had access to defined benefit (DB) pension plans, mainly in high-wage unionized sectors such as utilities; this access rate is down from 20 percent in 2010. Moreover, nearly a quarter of the workers nominally covered by DB plans are now in frozen plans where no new benefits are still accruing. It is rare for private DB plans to give cost of living adjustments to retirees and it is unusual for full retirement benefits to be available before traditional retirement ages like 65. All private sector workers pay taxes to and are covered by Social Security. About 12 percent of private sector workers have access to retiree health care benefits, although these are often partly or fully paid for by the retiree and not the employer.

In contrast, in 2020, 86 percent of state and local government workers had access to DB retirement plans, covering all wage levels and subsectors; this is up from 84 percent in 2010. Although a few plans are excluding new workers, none, except prospectively in Puerto Rico, are frozen. It is common for government DB plans to give cost-of-living adjustments, sometimes with minimums

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<sup>1</sup> Senior Fellow at the American Enterprise Institute. My appreciation goes to Kieran Allsop for excellent research assistance and to Tracy Miller and Jean-Pierre Aubrey for helpful conversations.

regardless of price inflation, but also sometimes capped at maximums. It is not unusual for full retirement benefits to be available at age 55. About a quarter of state and local government workers do not pay taxes to and are not covered by Social Security; non-coverage is more common among higher-wage workers. About 70 percent of government workers have access to retiree health care benefits.<sup>2</sup>

It is sometimes alleged that government workers need to get more generous retirement benefits in order to make up for their lower pay, that is, for reasons of fairness and for government employers to be competitive in the labor market. According to a careful study by Gittleman and Pierce (2012), using BLS data, however, after controlling for skill differences and costs of benefits, state government workers have compensation costs 3 to 10 percent higher than private sector workers. For local government, the overage is 10 to 19 percent. They found that this positive differential has increased over time, especially because of the rising cost of benefits.<sup>3</sup> These facts are relevant when equity considerations are raised in political and policy discussions about changing government worker pension benefits.

For private sector workers, the assurance of payment by DB plans is made through federal minimum funding requirements, extensive federal and strict private accounting disclosure requirements, legal liability on the plan sponsor to pay unfunded vested accrued benefits, and, subject to certain maximum levels, the backstop of a government insurance agency, the Pension Benefit Guaranty Corporation, if corporate bankruptcy occurs. By contrast, government DB plans have no national minimum standard for funding practices, less stringent accounting disclosures (as discussed below) and a patchwork of state laws regarding workers' rights to accruing benefits. In particular, there are varying degrees of rigidity to which government plan sponsors are bound to the terms of the plans, for various populations (retirees, all current workers, and older workers), provisions, time periods, and in various circumstances.

In general, though, government workers have stronger legal protections than do private sector workers on the accrual of benefits. For example, in most states, once a worker starts employment, the terms of the pension plan are fixed for the rest of her career with the government sponsor, whereas terms going forward are often changed in the private sector. In the common contract legal approach of most states, changes can be made only in dire circumstances where a vital public purpose is served. Some state courts have allowed reductions in cost of living adjustments and increases in employee contributions and premiums for retiree health plans when plan funding gets low but others have not. Universally, governments are legally allowed to change the terms of pension plans for new workers, by, for example, lengthening vesting periods, increasing retirement ages, cutting accrual percentages, and so on. But these changes are quite slow to reduce costs because initially few workers are affected and the savings only show up after many years. There are also practical constraints on top of the process including union bargaining and political influence which make any labor cost reduction difficult, even outside the four corners of the plan, such as slowing wage increases, layoffs, less vacation time, and so

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<sup>2</sup> The statements in this paragraph are based on statistics found in Bureau of Labor Statistics, National Compensation Survey – Benefits, various publications and years.

<sup>3</sup> See M. Gittleman and B. Pierce, "Compensation for State and Local Government Workers," *Journal of Economic Perspectives*, 26(1), February 2012, pp. 217 – 241.

on. In the rare experience of government bankruptcy, however, federal courts have allowed cuts in accrued pension benefits, even in payout status to retirees.<sup>4</sup>

### **Recent State and Local Government Pension Funding**

There is a regular stream of data and analysis on the funding of state and local government employee pension plans. It starts with the various actuarial and accounting reports required to be put out by government plan sponsors on a regular basis, often annually, and then there is a collection and organization of that data. But the analysis often goes beyond simple tabulations and creates other measures and indicators, in line with different views and methodologies, of the burdens and risks the plans represent to employers, employees, and retirees. Below, I divide the data and analytical stream into two – the conventional view represented by Boston College Center for Retirement Research which takes the actuarial assumptions as data, and works from there, and the alternative view, represented by Stanford Professor Joshua Rauh, which challenges a basic actuarial assumption on the discount rate nearly universally used in state and local government reporting, regarding it as misleading and incorrect.

#### *The Conventional View*

According to Boston College estimates as of May 2021, for 200 of the largest state and local government employee pension plans representing 95 percent of members and assets, the actuarial funded ratio in aggregate was 74.7 percent in 2021, up from 72.8 percent in 2020.<sup>5</sup> This level is still down from a decade earlier, 75.8 percent in 2010, and significantly lower than the ratios of just over 100 percent seen in 2000 and 2001. The recent improvement came from good asset returns, even as liabilities continued to rise. The actuarial funded ratio is the actuarial value of assets divided by actuarial pension liabilities. Actuarial value of assets result from a smoothing algorithm applied to market value, generally over five years.<sup>6</sup> Actuarial pension liabilities are valued using plan benefit provisions, and assumptions applied to them which take generally optimistic views of the discount rate based on expected investment returns on plan assets, as well as on expected wage growth, price inflation, and, in the most commonly used actuarial cost method, some future benefit accruals. Demographic matters are also key, like the number of covered workers and retirees, and expected future rates of retirement, disability, and death, as chosen by the actuary, based on plan experience.

This aggregate funded ratio hides a wide range of funding among plans. Boston College separated plans into funded ratio thirds. For 2021, the lowest third has funded ratios 15 to 66 percent, averaging 54 percent, the middle third 67 to 81 percent, averaging 74 percent, and the upper third 81 to 117 percent, averaging 93 percent. The calculations also show that over time this divergence in funded ratios has increased, with the bottom third falling continuously and seriously behind from an average 92 percent in 2001, while the upper third has improved slightly recently, although still down from 107

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<sup>4</sup> For a fuller discussion of these legal and practical issues, see Mark J. Warshawsky and Ross A. Marchand, “State and Local Public Pension Finances and Reform Proposals: Are Lump-Sum Payout Offerings a Solution?” *Journal of Retirement*, 4(2), Fall 2016, pp. 71 – 89.

<sup>5</sup> See Jean-Pierre Aubry and Kevin Wandrei, “2021 Update: Public Plan Funding Improves as Workforce Declines,” Issue Brief Number 78, June 2021, Center for Retirement Research at Boston College. It should be noted that the Boston College data base does not include Puerto Rico despite its large size -- \$32 billion pension liability and 250,000 participants in 2017.

<sup>6</sup> Actuarial value of assets is fairly close to market value except in years with big equity market movements up or down, like 2009 and 2021; see Appendix A in Aubry and Wandrei, op. cit.

percent in 2001.<sup>7</sup> An earlier Boston College analysis attributed the widening gap to particularly inadequate contributions by the lower third group, as well as slightly lower investment returns.<sup>8</sup>

Another conventional measure of plan funding and the burden it represents to government sponsors is the actuarially determined employer contribution rate. According to Boston College calculations, this rate increased from 21.3 percent of payroll in 2020 to an estimated 22.0 percent in 2021. The actuarial contribution rate is composed of two parts – the normal cost – the present value increase in employee’s accrued benefits in the year – and the amortization payment – the amount determined by the actuary needed to pay down the unfunded actuarial liability over 10, 20, 30, or more years, as guided by the government’s funding policy or law. The average normal cost across states has held steady over the years at around seven percent, while the average amortization payment has steadily increased in line with the decline in reported funded ratios. Note that employee contributions are not included in the actuarially required employer contribution rate. Although most governments fix employee contributions as a percent of pay, few plans explicitly share the burden of rising costs by formula with employees.

According to the Boston College researchers, using a lower investment return assumption equal to actual performance since 2001 of 5.5 percent instead of the 7.1 percent currently assumed, and using a more stringent amortization approach of the level dollar method, paying a larger portion of unfunded liabilities in earlier years instead of the more common level percent of pay method would result in an average actuarial contribution of 39.1 percent of payroll in 2021, or about double the actual. This may be viewed as a more realistic measure of the true burden on government plan sponsors of the cost of the pension plan, to be used in funding, investment, and plan design decisions. Of course, a lower discount rate and/or shorter amortization period would result in even higher required contributions. Also note that actuarially determined contributions are not always paid in full by the government plan sponsor (there are no federal penalties for such failures as exist with private pension plans). In tough economic times like the Great Recession, such payments fell to around 80 percent of required contributions; in 2020, actual payments were estimated to be 97.4 percent of the actuarial determination.<sup>9</sup>

In a 2020 analysis, Boston College researchers projected what would happen to the funded ratio of state and local plans, considered separately, from 2020 to 2025 if contributions followed the post-Great Recession pattern, and asset returns were zero through June 2021 and only 5.6 percent annually thereafter.<sup>10</sup> They find that for state plans, the funded ratio would decline from 72.4 percent in 2020 to 65.2 percent in 2025, while for local plans the ratio would decline from 70.8 percent to 61.7 percent. The corresponding ratio of assets to benefits being paid declines from 13.1 to 10.4 for state plans and from 12.1 to 10.3 for local plans; this measure of years of resources on hand to pay benefits is a rough indicator of plan solvency prospects. The ratio of net cash flow to assets would fall from -3.1 percent to -4.1 percent for state plans and from -3.2 percent to -4.8 percent for local plans. The negative cash flow

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<sup>7</sup> See Appendix B in Aubry and Wandrei, op.cit.

<sup>8</sup> See Jean-Pierre Aubry, Caroline V. Crawford and Kevin Wandrei, “Stability in Overall Pension Plan Funding Masks a Growing Divide,” Issue Brief Number 62, October 2018, Center for Retirement Research at Boston College.

<sup>9</sup> See Appendix C in Aubry and Wandrei, 2021, op. cit.

<sup>10</sup> See Jean-Pierre Aubry and Kevin Wandrei, “The Status of Local Government Pension Plans in the Midst of COVID-19” August 2020, Center for Retirement Research at Boston College and Center for State and Local Government Excellence.

ratios are an indication of the extent to which plans are dependent on asset returns. Also, the generally overall poorer ratios for local plans point to particularly vulnerable plans in Chicago, Providence, Dallas, and Omaha.

An earlier, but more elaborate and precise, projection model was created by Boston College that explicitly addressed the question of when plans would run out of money under various assumptions.<sup>11</sup> Looking at a set of 126 large state and local government pension plans in 2009, when the average ratio of assets to benefits had dropped to 13, the researchers projected benefit payments for current and future employees and assumed that normal cost contributions could be used to cover these payments, consistent with an on-going plan. Assuming a six percent investment return, lower than the then actuarially assumed eight percent return, they find that the average exhaustion date is 2025. By contrast, if the plans were closed, and normal costs were used just to cover future accruals in a new plan and assets were devoted to already accrued benefits in the old plan, the average exhaustion date would be 2023, again assuming six percent annual investment returns. Plans that would have become insolvent by 2021 under either of these assumptions included those of Alaska, Connecticut, Illinois, Kentucky, Louisiana, Michigan, Minnesota, New York City, Washington State, West Virginia, and Missouri. No amortization payments were considered, nor were increases in employee contributions or reduced benefits for new or existing employees or retirees, to the extent allowed by state or federal law (discussed above). Despite this 2011 projection, the only large local government plan bankruptcy and loss in benefits (elimination of COLA and small cuts in retiree benefits) we have actually seen over the last ten years is Detroit. Puerto Rico is the only state government plan insolvency, with a likely loss in benefits to some retirees, as unsecured creditors, but it is subject to a contentious bankruptcy process still underway. Government contributions have generally been larger than just the normal costs, and some plan changes have been made. Still, these simulations are helpful in identifying plans that are in funding distress, a growing burden to taxpayers and new employees, and that represent a risk of lost benefits to older employees and retirees through plan insolvencies and bankruptcies.

#### *An Alternative View*

As mentioned above, for funding purposes, states measure their pension liabilities using discount rates that reflect assumed expected returns on plan assets.<sup>12</sup> Professors Novy-Marx and Rauh challenged this practice based on sound logic – that is, the liability should not be measured by the rate of return on risky assets used to fund the liability because the asset allocation decision of the plan sponsor, and hence the level of risk and the expected rate of return, is independent of the value of the liability to the plan sponsor and participants.<sup>13</sup> Rather, it is appropriate to assume that the notional risk of default of promised pension payments is low or zero, as presented to and understood by taxpayers, workers, and retirees, and to use this consideration in the choice of the discount rate in measuring liability and funding. Novy-Marx and Rauh do this by revaluing the pension liabilities using a standard low risk rate, the yield on US Treasury securities. Even taking a conservative approach to liability

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<sup>11</sup> See Alicia Munnell, Jean-Pierre Aubry, Josh Hurwitz, and Laura Quinby, “Can State and Local Pensions Muddle Through?” Issue Brief Number 15, March 2011, Center for Retirement Research at Boston College.

<sup>12</sup> For accounting statement purposes, this practice is tempered when the plan is so poorly funded that asset returns cannot be expected to fund the plan; in those circumstances, currently applied in relatively few cases, a portion of the liability must be measured using the governmental unit’s municipal bond rate as the discount factor.

<sup>13</sup> See Robert Novy-Marx and Joshua Rauh, “Public Pension Promises: How Big Are They and What Are They Worth?” *Journal of Finance*, 66(4), August 2011, pp. 1211 – 1249.

measurement by not considering benefits arising from future accruals, from wage increases, or over more years of service (this is called the accumulated benefit obligation), by using US Treasuries as the basis for the discount rate, they calculate the aggregate state and local pension liability in 2009 as \$4.4 trillion; this is compared to the reported liability of \$3.1 trillion. With \$2 trillion of pension assets, this change in measurement reduces the aggregate funded ratio from 65 percent to 45 percent. Indeed, by the latter measure, 21 states are less than 40 percent funded, with Illinois, Connecticut, Rhode Island, and South Carolina around 30 percent funded.

It is worth noting that large single-employer corporate pensions generally have had funded ratios exceeding 80 percent and often higher in the last 20 years, even when using conservative discount rates and including an assumption of future wages increases (projected benefit obligation) and some added liability for intentionally unfunded executive plans. In 2020, the aggregate funded ratio for the largest 100 corporate plans was 88.3 percent using a 2.56 percent discount rate, based on then current yields on high-grade long-term corporate bonds.<sup>14</sup> As a parallel discount rate for state government plans, the current yield on taxable high-grade state government bonds could be used.<sup>15</sup>

Professor Rauh updated and expanded the analysis through 2017, as shown on the Hoover Institution website.<sup>16</sup> For 619 state and local plans, he found a mean reported 70.8 percent funded ratio in accounting statements, using an average 7.05 percent discount rate, but calculated a 48.2 percent funded ratio using duration-matched Treasury yields, based on a 2.50 percent discount rate. The five states with the lowest alternative funded ratios (around 30 percent) were South Carolina, Kentucky, New Jersey, Illinois, and Connecticut. Cities with the worst funded ratios (from just above 20 percent to just above 30 percent) were Chicago, Pittsburgh, Philadelphia, Fort Worth, and Omaha.

Rauh also reported on cash flows. Benefit payments totaled \$251.2 billion, while total contributions (employer, employee, and state subsidies combined) were \$185.5 billion; these contributions represented 8.0 percent of every dollar the governments raised in revenue, up from 4.9 percent in FY2015. Under the market valuation method based on Treasury discounting, an additional \$152.1 billion would need to have been contributed to prevent a rise in the unfunded liability. This total cost of \$337.6 billion amounts to 14.6 percent of state and local government revenue including from governments that do not sponsor pension plans, up from 12.7 percent of revenue in 2015. Again here, some states and cities were worse off. California would need to contribute nearly 25 percent of state revenues to prevent an increase in the unfunded market value liability, compared to its actual contribution of 12 percent. Nevada, Illinois, Kentucky, and Ohio similarly show alternative required contributions above 15 percent, compared to actual contributions significantly below those amounts. Similarly, despite making large current contributions as a share of revenues, Chicago, Milwaukee, Omaha, Los Angeles, San Francisco, and Fort Worth would need to at least double them to prevent a rise in market value unfunded liability. None of these calculations include amounts needed to pay down unfunded liabilities.

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<sup>14</sup> See Brendan McFarland, "WTW Pension 100: Year-end 2020 disclosures of funding, discount rates, asset allocations and contributions," Willis Towers Watson *Insider*, 31(5), May 2021.

<sup>15</sup> Taxable rates, and not the more common tax-free municipal bond yields, should be used because retirees pay income taxes on the benefits they receive from the pension plan.

<sup>16</sup> See [Hidden Debt, Hidden Deficits: The 2019 Update | Hoover Institution](#).



## *Summary*

Across all measures and analytical approaches, the funded status of plans has worsened and the cost burden on state and local governments (and taxpayers) of employee pension benefits has increased significantly in the last twenty years. If lower, more accurate, discount rates were used, these burdens would at least double. A significant share of plans are truly struggling even under current standards and represent risks to beneficiaries as costs rise rapidly, increasing taxes and crowding out other vital government services and benefits. A good case has been made that the funded status of plans is misreported and is actually significantly lower. While government plans may not need to be as completely funded as corporate plans because the risk of bankruptcy is lower, it is not zero, and moreover, prudent management argues for accurate measurement of cost and liability and adequate funding, particularly in locations where economic growth is slow. Further, as a matter of intergenerational fairness, it is appropriate that the citizens who received the government services that are compensated for, in part, through employee benefits, should pay for them during their lifetimes and not pass them along to future generations. This is particularly true if benefit levels were originally overly generous and there is some opportunity to recapture the excess at least partially through benefit changes. Hence the correct funded measures are important because they influence current decisions about the provision and design of pension benefits and the investment and funding decisions of plan sponsors. Certain states and cities appear on all lists and measures of trouble – Connecticut is one of them. But it is not unique; Connecticut’s situation is emblematic of many others who made poor choices, bad bargains, and demonstrated insufficient prudence in the past, in contrast to others who were more careful and forward-looking.

## **Background on State of Connecticut Pension Plans**

Connecticut sponsors six pension plans, three of which are large – the Teachers’ Retirement System (TRS), State Employees Retirement System (SERS), and Municipal Employees Retirement System (MERS). Table 1 reports on some key plan statistics, giving a short GASB 67 accounting history, for the three plans, from 2015 to 2020. As can be seen in all three plans, the funded ratios declined significantly (e.g. for SERS, from 39.2 to 35.8 percent) and the ratio of actuarially determined employer contributions to payroll increased substantially (e.g. for SERS, from 37.9 to 44.0 percent). Plan benefits have been, and still are, generous (with young retirement ages and full COLAs, also employee contribution rates were historically low, although changes are being made). The assumed discount rates used in calculating the pension liability (8.0 or 8.5 percent in 2015; 6.9 and 7.0 percent in 2020) were substantially and increasingly in excess of the relevant 30-year Treasury yields (3.11 percent on June 30, 2015 and 1.41 percent on June 30, 2020). During this short time period, the state generally extended amortization periods by changes in law, and retirees and vested deferred beneficiaries generally and increasingly outnumbered active workers contributing to the plan. The SERS plan in particular is in a weak and declining position, despite repeated legislative reforms over the years, including some successive cuts in benefits for new workers, and large increases in employee and especially employer contributions.

**Table 1 – State of Connecticut Pension Plans:**  
**Recent Accounting History**

	TRS		SERS		MERS	
	2015	2020	2015	2020	2015	2020
Retirees	47321	38540	45803	52498	6511	7933
Vested Deferred		10366	1457	2437	1258	1358
Active	51433	50951	49976	47662	8477	9459
<b>Total</b>	<b>98754</b>	<b>99857</b>	<b>97236</b>	<b>102597</b>	<b>16246</b>	<b>18750</b>
Market Value Of Assets*	16.120	18.282	10.667	13.249	2.455	2.749
Pension Liability*	27.092	37.128	27.193	36.971	2.648	3.862
<b>Unfunded Liability*</b>	<b>10.972</b>	<b>18.846</b>	<b>16.526</b>	<b>23.722</b>	<b>0.193</b>	<b>1.113</b>
<b>Funded Ratio</b>	<b>59.5%</b>	<b>49.2%</b>	<b>39.2%</b>	<b>35.8%</b>	<b>92.7%</b>	<b>71.2%</b>
Benefit Payments*	1.773	2.150	1.650	2.130	0.132	0.190
Total Contributions*	1.212	1.528	1.559	1.809	0.098	0.127
Employer Contributions Ratio To Payroll	24.13%	27.77%	37.91%	44.01%	16.14%	16.98%
Average Amortization Period (Years)	22.4	30	18	27.9	27	19
Discount Rate	8.5%	6.9%	8.0%	6.9%	8.0%	7.0%
Normal Retirement Age And Service	60/20 or ~/35		Varied 60/25		55/5 or ~/25	
COLA (Min/Max)	CPI/6%		2.0/7.5%		2.5/6.0%	

*Source: Plans' GASB Statement No. 67 Reports, as of June 30, 2015 and June 30, 2020*

*\* Billions of dollars*

In a report financially supported by the state of Connecticut, Boston College researchers looked further back into history for SERS and TRS and, as of 2014, attributed the poor condition of the plans to several factors.<sup>17</sup> The plans were essentially run on a pay-as-you-go basis (that is with no advance employer funding) into the early 1970/80s, contributions were inadequate even thereafter, actuarial experience was frequently negative (for example, retirements occurred earlier than assumed because of early retirement incentive programs), and investment returns did not meet expectations. All of these factors reflect choices and assumptions made by the state government and its actuaries, often as a result of negotiations with the relevant unions, with the approval of the legislature, and not external events. When the state was considering how to address the deteriorating situation in the mid-2010s, the Boston College researchers in their report recommended in 2015 that the state should extend amortization periods substantially, thereby avoiding large contribution increases, which advice, as we noted above, was actually adopted in these plans. The Boston College researchers gave a largely inapt equity rationale for their recommendations – some of the cost burden originating in the past should be placed on future generations. This rationale was put forward despite the presence of (older) citizens and retirees who received the benefits of past government service, for example, roads they drove on or schools to which their children attended or wages they earned. It is clear that in the 2016 reform

<sup>17</sup> See Jean-Pierre Aubry and Alicia Munnell, "Final Report on Connecticut's State Employees Retirement Systems and Teachers' Retirement System," Center for Retirement Research at Boston College, Working Paper, November 2015.

activity, the political and labor authorities wanted to avoid further immediate increases in already large employer contributions and significant reductions in benefits for older workers, to say nothing about reducing the expected cost-of-living-adjusted benefits of the growing number of recent retirees.

The Boston College researchers did advocate for a small reduction in the discount rate used in liability calculations. But even here, the recommendation was less robust than needed. Biggs and Miller (2020) calculate the aggregate liability and required employer contribution rate in 2016 across all Connecticut plans if the discount rate were changed to 4.1 percent – the pension liability would be \$97 billion (Table 4 in that paper) and the contribution rate would be 53.8 percent (Table 3 in that paper).<sup>18</sup> In spring 2021, the average yield on taxable high-grade long-term Connecticut-wide government bonds was 2.8 percent, based on data from FINRA.<sup>19</sup>

Professor Rauh has generously shared his unpublished funded ratio calculations, using duration-sensitive Treasury rates, for the three Connecticut plans; years 2015 and 2020 are shown in Table 2. As seen, by all measures, whether the actuarial pension liability (which includes future salary increases and some benefit accruals) or the accumulated benefit obligation (which does not) is the denominator in the funded ratio, using Treasury market rates as the discount factor, the funded situation is shown to be much poorer and to have deteriorated more than in reported statistics. For example, for SERS, the unfunded pension liability increased from \$39.2 to \$61.9 billion and the funded ratio declined from 21.4 to 17.6 percent.

**Table 2 – State of Connecticut Pension Plans:  
Measures Adjusted Using Treasury Discount Rates by Professor Rauh**

	TRS		SERS		MERS	
	2015	2020	2015	2020	2015	2020
Assets*	16.120	18.282	10.667	13.249	2.455	2.749
Pension Liability*	50.485	77.562	49.828	75.174	4.368	7.988
<b>Unfunded Liability*</b>	<b>34.365</b>	<b>59.281</b>	<b>39.160</b>	<b>61.924</b>	<b>1.913</b>	<b>5.240</b>
<b>Funded Ratio</b>	<b>31.9%</b>	<b>23.6%</b>	<b>21.4%</b>	<b>17.6%</b>	<b>56.7%</b>	<b>34.4%</b>
ABO*	43.930	67.491	42.780	64.540	3.598	6.580
Alternate Funded Ratio	36.7%	27.1%	24.9%	20.5%	68.2%	41.8%
Treasury Rate, Duration-Sensitive	2.5%	0.9%	2.6%	0.8%	2.6%	0.8%

*Source: Provided by Professor Rauh, unpublished data*

*\* Billions of dollars*

But some real and varied changes have been made to the provisions of the Connecticut plans in this recent period, for existing and especially new workers, especially in SERS, and not just accounting and actuarial adjustments. More specifically, MERS is increasing employee and employer contributions

<sup>18</sup> See Andrew G. Biggs and Tracy C. Miller. “An Analysis of Connecticut’s Public Employee Retirement Plans.” Mercatus Research Paper, Mercatus Center at George Mason University, Arlington, VA, July 2020.

<sup>19</sup> See <http://finra-markets.morningstar.com/BondCenter/Results.jsp>.

in 2019 through 2024, for SERS active members, salary increases were frozen in 2017 through 2019, the COLA was reduced and delayed for those retiring after July 2022, employee contribution rates, with an added element of sensitivity to investment returns, were increased, retirement ages were increased, and a less generous hybrid plan combining defined benefit and defined contribution elements was created for new workers, and for TRS, employee contributions were increased. Are these changes, according to projections by the plan actuaries, sufficient to improve the situation going forward a few years, that is, to improve funding and avoid large employer contribution increases, or do more plan changes need to be made? As shown in Table 3, for all plans, significant increases are projected by the actuary in the rate of employer contributions, even assuming all actuarial assumptions, including investment returns, are realized and that the count of workers remains constant. But usually there are actuarial losses, especially in SERS, and the investment assumptions, compared to current interest rates, are optimistic. Even assuming that everything comes in as expected, contribution rates increase. Again, SERS is the largest burden. The actuary does not go out far in his projections – hardly at all for TRS. Further analysis is clearly needed before drawing conclusions and making recommendations to inform the policy decisions of whether more plan changes are needed.

**Table 3 – State of Connecticut Pension Plans**  
**Actuarial Projections of Employer Contribution Rates (Percent of Payroll)**

	TRS	SERS			MERS			
	2021	2021	2022	2023	2021	2022	2023	2024
General Employee								
With Social Security	31.58	49.01	54.28	56.75	14.95	16.44	17.44	18.02
Without Social Security					16.39	19.02	21.16	23.30
Police and Fire								
With Social Security					20.95	22.45	23.46	24.48
Without Social Security					21.92	23.59	24.77	25.95

*Source: Reports of the Actuary on the Valuation Prepared as of June 20, 2020*

### **Stochastic Simulation Projections of Employer Contributions for Connecticut**

In order to do a more comprehensive analysis of the likely prospects of the three Connecticut pension plans, I perform stochastic simulations of possible investment returns for the next ten years, through 2030, based on the range of historical experience, and apply them to current plan conditions, as reported in the 2020 actuarial reports, and as projected forward, based on recent trends. In particular, I create a fairly simple “macro” model for each of the three plans, assuming optimistically that there are no actuarial losses (or gains) other than what is produced by stochastic investment returns, and no actuarial assumptions are changed. I use recent experience for each plan to extrapolate rates of increase in payroll and benefit payments for the next ten years. Based on the data in the latest actuarial reports, I assume constant normal cost rates (13, 10, and 14 percent for TRS, SERS and MERS, respectively) and employee contribution rates (7, 4.5, and 4.5 percent for TRS, SERS and MERS, respectively) as a percent of payroll, growth in benefit payments based on recent trends, use the plans’ funding policies of actuarial valuation (four-year smoothing for TRS, and five years for SERS and MERS), and new amortizations of unfunded liability (25 years for TRS and SERS, 20 years for MERS), and assume

all actuarially determined employer contributions (ADECs) are made.<sup>20</sup> This is all done from the current (2020) base of plan assets (market and actuarial values), plan actuarial liability, and recent amortizations. This approach folds all the various benefit tiers together and hence is an approximation of the operation of the plan as a whole; the impact of different tiers and the changing demographics of the plans would probably not be well projected over long time periods by this method, but over ten years seems reasonable.

The stochastic analysis is based on ninety-one historical rolling ten-year periods, from 1919 to 2020. I assume that the current broad asset allocation of the plans' trust fund, essentially a 67/33 stock/bond split, is kept fixed. I simulate how a repeat of the investment performance during the rolling ten-year periods since 1919 would impact required contributions for the three large Connecticut public-sector retirement plans. For plan years 2021 through 2030, I simulate the effect on annual required contributions if, instead of a steady 6.9 percent (7.0 percent for MERS) nominal investment return, returns followed the various historical patterns, including the Great Depression, the post-war boom, the malaise of the 1970s, the dot.com boom and bust, and so on. I estimate those returns on the basis of a portfolio consisting of 67 percent holdings in the S&P 500 index and 33 percent holdings in 10-year Treasury bonds, with a modest 20 basis investment management fee.<sup>21</sup> Results are shown in Table 4.

In the top panel A, the projected funded ratios, ADECs, and payrolls for each of the three plans on the presumption that all actuarial assumptions, including the investment return, are exactly and consistently realized. As expected, the funded ratios rise slowly but noticeably, as the high current rate of amortization pays down the actuarial deficit. The ADECs also increase in nominal dollar terms, although not as a percent of payroll. More interesting are the results in panels B (funded ratios) and C (ADECs) showing the range of possible outcomes in 2030 under various historical investment return scenarios. At the median, the funded ratios do improve from the present, but not as much as projected by current actuarial assumptions. Similarly, at the median of historical investment experience, the ADECs are about five percent (15 percent for MERS) higher than projected for 2030 by current assumptions. This is strong evidence that the current investment return assumption is too optimistic even as an even expectation. But if prudence were being employed, an even lower investment assumption should be used. At the 75<sup>th</sup> percentile, where historical investment returns are lower than the median but still quite in the thick of historical experience, the funded ratios actually decline by 2030 and are certainly lower than currently projected, and the 2030 ADECs increase substantially from projected levels, about 25 percent (60 percent for MERS). Moving to the outer bounds of experience, but still possible, at the 90<sup>th</sup> percentile, funded ratios crash and ADECs explode, at current actuarial assumptions. It is clear from these simulations how risk the taxpayer bears from these underfunded defined benefit pension plans for state and local government employees.

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<sup>20</sup> I do not model the recent introduction of employee contributions sensitive to investment experience in the most recent tier in SERS because it is not yet empirically significant.

<sup>21</sup> My assumptions about the asset portfolio of the Connecticut plans are a bit conservative because they do not account for foreign stock holdings, alternative investments, real estate, and so on; therefore the risk and return shown in the simulations may be somewhat lower than expected for the actual portfolio, although the investment management fees are much larger than assumed here.

**Table 4– State of Connecticut’s Three Largest Pension Plans:  
Current Projected and Stochastic Funded Ratios and ADECs, 2020 to 2030**

**A**

	Funded Ratio (Percent)		ADEC (\$ thousands)		Payroll (\$ thousands)	
	2020 Actual	2030 Projected	2020 Actual	2030 Projected	2020 Actual	2030 Projected
TRS	51.3	57.1	1,208,819	1,578,954	4,438,394	5,681,520
SERS	38.5	47.4	1,616,312	1,760,361	3,672,443	4,137,711
MERS	76.4	90.0	117,000	145,607	604,611	957,068

**B 2030 Stochastic Funded Ratios (Percent)**

	10%	25%	Median	75%	90%	Std. dev.
TRS	85	72	57	46	39	17
SERS	66	58	45	35	28	14
MERS	117	104	86	72	61	22

**C 2030 Stochastic ADECs (\$ thousands)**

	10%	25%	Median	75%	90%	Std. dev.
TRS	650,676	1,038,489	1,639,528	1,955,253	2,218,498	608,741
SERS	1,232,976	1,458,469	1,843,553	2,106,281	2,305,789	426,040
MERS	28,439	75,539	169,420	230,358	268,364	97,003

*Source: Author’s Calculations*

These stochastic results show a realistic view of the costs and risk that taxpayers bear when governments continue to sponsor defined benefit pension plans for employees when they are underfunded (also note the large standard deviations in Panels B and C). Even the upside of investment returns is no real benefit to taxpayers because then demands for plan benefit increases are made by employee unions and granted by the legislature and governors as funded ratios approach and exceed 100 percent; such benefit improvements consistently occurred in many states in past historical episodes following periods of strong investment returns.

**Policy Implications**

In Warshawsky and Marchand (2016), a reform proposal was put forward to improve the deteriorating situation of many state and local government pension plans and to avoid the adverse future consequences for taxpayers, creditors, retirees, government workers, and recipients of other state and local government services. Individual pension participants – both active workers and retirees below an older age – would be given a choice to take a funded-ratio-related present value lump-sum of their accrued pension benefits. In order for this voluntary offering to be well understood and evaluated, government sponsors of pension plans would be required to provide to all plan participants, in laymen’s language, information on the accurately measured funded ratio of their plan and projected required

contributions compared to current rates. These numbers would be calculated using more tightly controlled assumptions, including a conservative discount rate based on current taxable bond yields, a conservative funded ratio goal, and a reasonable amortization period.

Warshawsky and Marchand explain the equity, political, and practical justifications for the proposal, given conditions in 2016. They noted that, despite actual and threatened insolvencies, no government or multiemployer (union-industry-or-trade-specific) pension plans had been bailed out by the federal government, despite losses experienced or highly likely to workers and retirees. Hence the event of insolvency could expect to result in losses for government retirees. They noted the obvious fault of government plan sponsors, unions, investment firms, and others in the poor decision-making, logrolling, and profligacy of those involved with the failing plans. They noted the generally superior compensation of government workers. They observed that the wide range of funding indicated the potential for an unfair outcome – that bailouts would be received by a segment, but paid for by all, including those who were diligent in their own retirement planning, economizing on present consumption in order to fund adequately more modest retirement benefits. They noted the success of other lump-sum offering campaigns in the government benefit realm.

It must be acknowledged that this proposal has not been adopted, in whole or in part, since it was put forward in 2016, although some states have set up defined contribution plans and allowed employees, even existing ones, to begin to accrue new benefits there, as a one-time choice. More significant, however, is the recent precedent of multiemployer plans. The federal funding law passed in 2014 meant to resolve the segment of troubled multiemployer plans, including through increased contributions and benefit cuts, was essentially never implemented. Rather, in the rash of legislated pandemic spending in 2021 (the American Rescue Plan), those troubled multiemployer plans were bailed out by the federal government, at an estimated cost of \$86 billion, with no conditions made or give-backs demanded. Although this was passed on a strictly party-line vote, it was not strongly objected in public discussions as unfair, and therefore presumably noted by state government officials and plan participants as a future possibility for them. Voluntary discounted buyouts, to avoid the consequences of eventual bankruptcies, would be a much tougher sell if an eventual bailout of state and local government plans is thought to be in the offing. But of most relevance now, the moral hazard from state and local government action (giving more generous benefits) or inaction (failing to fund and resolve troubled benefit plans) has grown significantly. Hence, stronger countervailing policy action is needed, to avoid future losses to taxpayers and creditors.

I propose that in addition to stricter disclosure requirements to plan participants, as explained above, corresponding funding requirements on state and local government plan sponsors be put in place, by federal law, similar to ERISA's for private plans. The ERISA requirements were being successively strengthened since passage in 1974, until 2006 with the passage of the Pension Protection Act. In that Act, funding requirements were based on a conservative corporate bond yield curve and seven-year amortization, with benefit restrictions on poorly funded plans. Indeed, since then there have been few major private plan failures, and, importantly, no losses to taxpayers; the financial position of the PBGC single-employer insurance program is now positive. Behavior, in terms of funding, investments, provision of benefits, has been more responsible, overall and compared to the past in the private sector. Unfortunately, in the same recent legislation that bailed out multiemployer plans, the ERISA funding requirements for single-employer plans were weakened, with a higher discount rate allowed and the amortization period lengthened to 15 years. These changes undoubtedly increase risk

of future losses to the PBGC and retirees. Nonetheless, they are better than the original loose ERISA rules and the current funding practices of state and local government pension plans.

The details of a new funding regime on state and local government plans are important, but need to be modeled carefully and comprehensively, in order to produce a balanced, achievable, stable, and responsible proposal. In general, the funding rules should be consistent across plans, but poorly funded plans should be subject to benefit restrictions, as allowed by individual state laws, as well as increased required contributions, with the split between employers and employees determined by the usual bargaining and political process.

Focusing specifically on Connecticut, the next logical step in reform, to significantly reduce the risk to taxpayer in the long-run, is to close all three DB plans to new employees, and to create a DC only plan funded by employee contributions and an employer match at the rate of the current or a bit lower normal cost (seven percent each) and to offer that same package to existing workers. This offering would be popular with employees, would free up career choices efficiently, and would save the state money. The resulting total contribution rate of 14 percent would be sufficient, combined with Social Security, to produce a comfortable retirement for Connecticut government retirees.

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