



# LEGACY DEBT IN PUBLIC PENSIONS: A NEW APPROACH

By Jean-Pierre Aubry\*

## INTRODUCTION

This *brief* – the second of two – takes a historical view of public pension underfunding to motivate a more transparent funding policy going forward. It builds on a key finding from the first *brief* – that some pension funds are still burdened by unfunded liabilities accumulated before modern actuarial funding.<sup>1</sup> This so-called “legacy debt” poses a different policy challenge than other sources of unfunded liability because it reflects the cost from an older way of managing promised retirement benefits. And, because it stems from a much earlier era, it does not fit well within the modern framework that is designed to allocate costs to the period when benefits were earned.

Given the challenges that legacy debt poses, this *brief* presents a new approach that separates the funding of legacy liabilities from other pension liabilities, while valuing liabilities in a manner more consistent with modern accounting and finance. Hopefully, the new approach provides a clearer way forward for government employers, employees, and taxpayers.

## A NEW APPROACH

The current approach for managing pension liabilities suffers from three problems:

1. *It does not recognize the unique aspect of legacy liabilities.* The current actuarial funding approach allocates the costs of pension benefits to the period when the benefit was promised/earned, which limits the spillover costs from one generation to the next.<sup>2</sup> Legacy liabilities do not fit this framework. Choosing any single future generation to bear the full cost of legacy liabilities is arbitrary because no future generation is more responsible for the legacy debt than another.
2. *It attributes the costs associated with historical liabilities to current workers.* Actuarially required pension contributions consist of two parts: 1) the cost of benefits earned due to continued employment (normal cost); and 2) the cost of unfunded benefits from the past (amortization payment).

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The first part is a variable cost; the second is a fixed cost. To improve resource allocation and decision-making, managerial accounting generally differentiates between fixed and variable costs. However, both the fixed and variable components of pension cost are often viewed as a single variable cost by government managers.

3. *It uses assumed investment returns to value future benefits.* Using the assumed return to value benefits understates their cost and pushes some of this cost onto future generations.<sup>3</sup> Modern finance theory contends that the value of a government’s promise to pay future benefits should resemble the value of other similar government promises to make future payments.<sup>4</sup> The obvious candidate is municipal bonds, under which issuing governments promise to make payments to bond holders.<sup>5</sup>

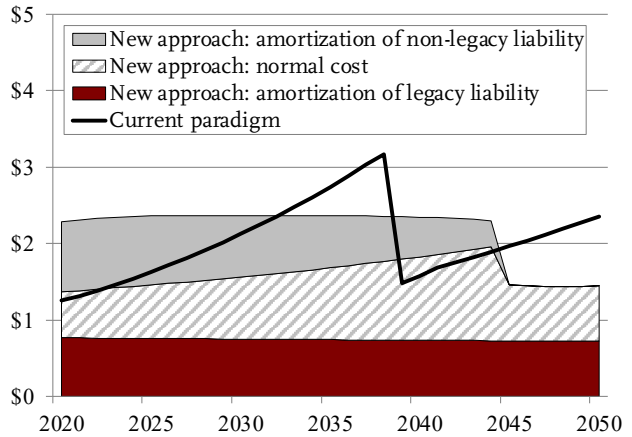
To address these issues, this *brief* suggests a new approach that:

1. separates legacy unfunded liabilities and spreads the costs over multiple generations;
2. treats unfunded liabilities and normal costs as fixed and variable costs, respectively; and
3. adopts modern finance techniques by using the average yield on investment-grade municipal bonds (after adjusting for the tax-exemption) to calculate liabilities and required contributions.<sup>6</sup>

At a high level, the new approach presents a trade-off. On the one hand, adopting modern finance techniques increases annual pension costs by appropriately valuing promised benefits to limit unintended generational spillover. On the other, it reduces the annual cost of legacy liabilities by spreading them over multiple generations. So, while the new approach involves a more rational allocation of costs, it is not obvious how it will affect costs overall.

To illustrate the potential impact of the new approach on the pattern of costs over time, Figure 1 compares required contributions for the Connecticut Teachers Retirement System (CT TRS) under the typical actuarial approach and the new approach.<sup>7</sup> The projection reveals that annual contributions under the new approach are initially higher but ultimately lower and much more consistent.<sup>8</sup>

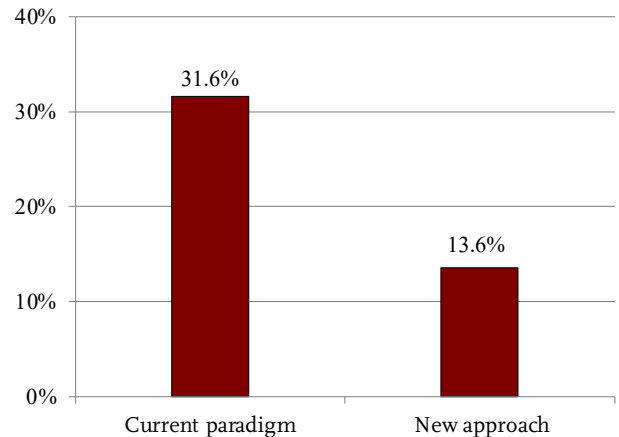
FIGURE 1. PROJECTED CONTRIBUTIONS FOR CT TRS, BY APPROACH, 2020-2050, IN BILLIONS OF DOLLARS



Source: Author’s calculations.

Separating fixed historical costs from ongoing variable costs also has important implications for how government agencies and the public view the cost of government workers. To illustrate, Figure 2 presents the perceived variable retirement costs for members of CT TRS under the current paradigm and under the new approach. Even though the cost of accruing

FIGURE 2. PERCEIVED VARIABLE RETIREMENT COST FOR CT TRS, BY APPROACH



Notes: Retirement cost under the current paradigm is equal to the employer normal cost plus a payment to amortize the UAAL based on the assumed return. Retirement cost under the new approach is equal to the total normal cost valued using a 4.5-percent discount rate, less employee contributions. Source: Author’s calculations.

retirement benefits (i.e., the normal cost) is higher under the new approach, excluding fixed historical costs appropriately reduces the retirement cost associated with the ongoing employment of government workers.

#### IMPLEMENTING THE NEW APPROACH IN PRACTICE

As noted in the prior section, a key feature of the new framework is clearly distinguishing between the fixed legacy cost from benefits earned in a much earlier era and the costs stemming from benefits earned by more recent cohorts. Structurally, the best way would be to break the existing retirement system into two separate entities – the “Legacy System” and the “Pension System.”<sup>9</sup>

Creating a totally separate government entity for managing the legacy liability would reduce the distorting effect of these liabilities on the policy discourse around benefit generosity and pension system management. Specifically, it would free the Pension System from constantly answering for a relatively intractable portion of the unfunded liability – allowing it to focus attention on the best way to manage the costs of ongoing liabilities. Second, it would make the distinction between fixed and variable costs clearer to government employers because they would be charged debt service payments from one government entity – the Legacy System – and a per-employee retirement cost from another – the Pension System.

Of course, the new approach presents a relatively dramatic shift in pension funding policy and would raise concerns for some. For example, the use of bond yields to value liabilities will increase reported liabilities, which some may take as an indication of worsening plan finances. But, in reality, little about the retirement system’s finances will have changed – the level of assets, the promised benefit payouts, and the contractual obligation to fulfill promised benefits are the same.<sup>10</sup> Additionally, the use of bond yields may suggest to some that retirement systems should invest only in bonds.<sup>11</sup> But, public pensions could still take risk in their investment portfolios under the new approach.<sup>12</sup> Even among the largest active private sector pension plans – which must use corporate bond rates to calculate liabilities and required contributions – equities still make up over half of the average investment portfolio.<sup>13</sup>

Finally, some may simply dislike the notion of deliberately lengthening the pay-down period for some pension liabilities. But, given that promised benefits must be paid and it is unrealistic to think unfunded liabilities can be paid down more quickly, this new approach provides a practical way forward. It relies on a rational definition and allocation of costs – recognizing the full cost of promised pension benefits while presenting a credible plan for managing it. So, while the new approach will increase annual costs somewhat in the short term, it will also produce improved intergenerational fairness, better resource allocation by government, and – ultimately – greater public credibility.

#### CONCLUSION

This *brief* – the second of two – takes a historical view of public pension underfunding to motivate a more transparent funding policy going forward. It builds on a key finding from the first *brief* – that some pension funds are still burdened by unfunded liabilities accumulated before modern actuarial funding. This so-called “legacy debt” poses a different policy challenge than other sources of unfunded liability, because it reflects the cost from an older way of managing promised retirement benefits. And, because it stems from a much earlier era, it does not fit well within the modern actuarial framework that is designed to allocate costs to the period when benefits were earned.

Given the challenges that legacy debt poses to current funding policy, this *brief* presents a new approach that separates the funding of legacy liabilities from other pension liabilities, while valuing liabilities in a manner more consistent with modern accounting and finance. Ultimately, the new approach presents a trade-off. It increases annual pension costs by appropriately valuing the government’s promise to pay future benefits in retirement. At the same time, though, it reduces a portion of the annual pension cost by appropriately spreading legacy liabilities over multiple generations. So, while the new approach will increase annual costs somewhat in the short term, it involves a more rational allocation of costs that results in improved intergenerational fairness, better resource allocation by government, and – ultimately – greater public credibility.

## ENDNOTES

1 See Aubry (2022).

2 Each year, government workers earn a higher promised retirement benefit because both their salaries (on which their benefit payouts are based) and their years of tenure in government (which determine the percentage of their salary they receive as a benefit payout) increase. Each year's normal cost represents the current value of that increase in promised future benefits to workers. In theory, paying the normal cost would result in each generation paying for promised benefits as they are earned. In practice, however, the value of future benefits is impossible to determine precisely and additional contributions are typically required in later periods to ensure the cost of benefits earned in prior periods does not spill over too far into other generations.

3 For more details, see Bronner (2008); Bader and Gold (2003); Gold and Latter (2008); Novy-Marx and Rauh (2009); and Arnott (2005).

4 In economics and finance, the analysis of choice under uncertainty identifies the discount rate for riskless payoffs with the riskless rate of interest. See Gollier (2001) and Luenberger (1997). This correspondence underlies much of the current theory and practice for the pricing of risky assets and liabilities, and the setting of risk premiums. See Sharpe, Alexander, and Bailey (2003); Bodie, Merton, and Cheeton (2008); and Benninga (2008).

5 Ideally, the discount rate would reflect the risk of the liabilities themselves, be based on fully taxable securities (because pension benefit payments are generally subject to individual federal income tax), and not have a premium for liquidity (because promised pension payouts cannot be easily traded on the open market).

6 Novy-Marx and Rauh (2011) employ a *state specific* taxable municipal bond rate based on the zero-coupon municipal bond curve. Their rationale is that states are equally likely to default on their pension obligations as on their other debt.

7 Please see [CRR reports](#) on how the new approach would affect costs for specific state-administered retirement systems in Connecticut, Illinois, Massachusetts, Ohio, Pennsylvania, and Rhode Island.

8 Under the typical actuarial approach, contributions are based on pension benefits valued using the actuarially assumed return. Amortization payments reflect a 25-year level-percent-of-payroll approach (assuming 2-percent payroll growth) that is closed initially and rolling afterward.

Under the new approach, contributions are based on pension benefits valued at a 4.5-percent discount rate (using an actuarial rule of thumb that every 1-percent reduction in the discount rate increases liabilities by 12.5 percent and normal costs by 22.5 percent). Amortization payments reflect a 4.51-percent interest payment on legacy liabilities (to pay a tiny fraction of the principal on the legacy debt each period), a closed 25-year level-dollar amortization of current non-legacy liabilities, and a 10-year level-dollar amortization of any new non-legacy liabilities.

In terms of investment performance, realized investment returns are assumed to be 5.5 percent annually. A higher return would lower costs under both the typical and new approaches but would not materially change the cost difference between the two. Importantly, the average annualized return for public plans since 2001 has been roughly 6 percent. Additionally, Aubry and Crawford (2019) suggest that some of the investment risk taken by public pensions is related to the fact that actuarial contributions are based on the expected return to the portfolio. Under the new approach that uses bond yields to value benefits, public pension asset allocation would likely be more similar to the average allocation of large active private sector pension plans. Based on a 2019 CAPM produced by Pension Consulting Alliance, such an allocation produces an average expected return and standard deviation of 5.5 percent and 7 percent, respectively.

9 The Legacy System would begin with no assets and all the legacy liability, while the Pension System would begin with all the retirement system assets and all the non-legacy liability. To pay down the legacy liability over as many generations as possible, government employers would make payments to the Legacy System that are only slightly greater than the annual interest accruing on the legacy liability. To fund non-legacy liabilities, normal costs plus amortization of non-legacy liabilities would be contributed to the Pension System. The current non-legacy liability could be amortized within roughly a generation's time – say, 25 years (the average amortization period in the *Public*

*Plans Database* is about 23 years). And, any future unfunded liabilities could be amortized over the average work life of plan members – currently, about 10 years. Finally, annual benefits to current retirees would be paid from the government contributions to the Legacy System first, and then from Pension System assets. Importantly, most of the basic management components of the original retirement system – e.g., the retirement board, actuarial staff, investment staff, member services staff, etc. – would transfer to the Pension System. The main purpose of the Legacy System’s board and staff would be to charge the government for legacy liability payments and then disburse those payments to pay annual retiree benefits.

10 At the same time, using bond yields may discourage the use of pension obligation bonds for “so-called” investment arbitrage.

11 The problem with this argument is that it assumes a most extreme degree of risk aversion. If sponsors of public plans were averse to all risk, they would require the pension funds to hold only Treasury securities. But, if sponsors are willing to take at least as much risk as the average investor, the premiums on stocks and bonds cover their cost of holding these investments. See Munnell et al. (2010) and Bader and Gold (2007) for further discussion on the implications of modern finance valuations for investment decisions.

12 Assets in the Pension System trust fund would likely be invested more like those of a large private sector pension plan, while the assets in the Legacy System would be held in cash or invested in short-term liquidity so that they could be used immediately to pay benefits.

13 Following modern finance theory, the discount rate used to value the liabilities of private sector pension plans is based on the yield for investment-grade corporate bonds. See Andonov, Bauer, and Cremers (2017) and Rauh (2009) for prior analyses on pension asset allocation.

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