

Towards Fair Value Accounting for Public Pensions:  
The Case for Delinking Disclosure and Funding Requirements

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## 1. Introduction

What is the conceptually right rate for discounting the future benefits promised by public pension plans? This seemingly technical question has been the subject of a passionate debate among actuaries, accountants and economists that has been raging for decades. And no wonder, how it is answered swings estimates of aggregate underfunding of public pension plans by trillions of dollars. In the face of low asset returns and severe fiscal pressures on plan sponsors, valuing liabilities realistically is more important than ever.

In this paper I revisit the logical and practical arguments for taking a fair value approach to valuing pension plan liabilities for the purpose of financial reporting, and make the case for delinking that accounting change from funding rules as a way to build consensus for reform.

A well-known implication of the fair-value approach is that accrued benefits should be discounted at high quality bond rates. That conclusion is at odds with the long-standing practice, unique to U.S. state and local public pension accounting, of discounting liabilities at rates largely based on the expected return on plan assets. According to Rauh (2017), using market valuation techniques the true unfunded liability in 2015 owed to workers based on their current service and salaries is \$3.846 trillion, whereas official estimates report unfunded liabilities of \$1.378 trillion.

A fair value approach aims to base valuations on market prices, and prescribes procedures for estimating market values when market prices are unavailable or unreliable. Proponents of fair value accounting believe that it would improve the transparency and decision-relevance of the financial disclosures of public pension plan sponsors. Specific advantages include: (1) consistency with widely accepted valuation principles; (2) consistency in the reporting basis for assets and liabilities that delivers a timely and clearly interpretable measure of underfunding; (3)

replacement of discretionary estimates of expected returns with observable bond yields; (4) greater consistency with private sector pension accounting standards; and (5) reduced incentives for over-investment in risky plan assets.

While the case for adopting fair value accounting for financial disclosure is straightforward, there are legitimate disagreements about what constitutes optimal funding rules and targets. Considerations include intergenerational equity, expectations about future economic growth, optimal tax policy, fiscal constraints and political incentives. There may be circumstances where it makes sense to base funding rules at least in part on expected asset returns, and full funding may not always be the right target. Economists overstep the limits of economic reasoning when they insist otherwise.

Part of the resistance to the adoption of a fair value approach is presumably that it could trigger considerably higher required contributions by plan sponsors because measured underfunding would increase. However, higher required contributions are not a necessary outcome of accounting reform. Funding rules could be changed at the same time so as to undo the effect of the discount rate change on required contributions. In fact, if there is agreement that existing funding guidelines are appropriate, then any change in accounting rules that altered required contributions should be offset by a rule change that restores those originally optimal funding levels.

The case for delinking liability measurement for disclosure and funding purposes follows from these observations. To summarize, the accuracy of financial disclosures would improve significantly by adopting a fair value approach to liability measurement. More accurate information is essential for all interested parties--policymakers, workers, unions and taxpayers--to realistically assess the adequacy of proposed reforms and the probability of significant

shortfalls under the current system. However, more accurate liability measurement would result in considerably higher levels of underfunding than what sponsors currently report. Unless contribution rules were modified at the same time, the accounting change would trigger higher contribution requirements that many sponsors would find prohibitively costly or ill-advised. While there are strong arguments to change financial reporting, it is not clear that required contributions should move in lock step. Explicitly neutralizing the impact of changes to disclosure rules on contribution requirements could soften some of the resistance to change.

Of course delinking a change in liability measurement from funding rules would not end opposition to accounting reform. Some might anticipate that higher reported underfunding would increase pressures for tightened funding requirements or benefit cuts down the road, or that it would bring with it other pressures and constraints. Others would continue to reject the fundamental idea that the change is for the better. Nevertheless, it is reasonable to expect that delinking the two issues could increase the likelihood of accounting reform.

The idea of delinking has an important recent precedent. Starting in 2014, a new directive from the Government Accounting Standards Board, GASB 67, took a small step in the direction of fair value reporting for pension liabilities. It proscribed the use of a blended rate for discounting promised benefits, based on valuing the funded portion of the liability using the expected return on plan assets and valuing any unfunded portion of the liability based on the yields on high grade tax-exempt municipal bonds. It also eliminated the smoothing of asset values over time, effectively putting reported asset values on a fair value basis. Notably, the regulation delinked these accounting changes from required contributions, which continue to be based on the assets and liabilities using the old GASB 25 standard.

It is fair to say that GASB 67 was a major disappointment for proponents of accounting reform. As well as perpetuating the idea that the return on plan assets is relevant to liability measurement, it left plan sponsors with discretion over how to determine expected returns and how to define what constitutes an unfunded liability for purposes of discount rate determination. In practice it has had only a small effect on the average rate used to discount promised benefits. As Aubrey et. al. (2017) and Weinberg and Norberg (2017) document, many significantly underfunding plans have continued to use a discount rate based entirely on projected asset returns, although some sponsors have adopted much lower rates in response.

Despite its shortcomings, GASB 67 deserves credit for opening the door to accounting reform. The previous directive on public pension accounting, GASB 25, had been left in place for two decades in the face of widespread resistance to change. A benefit of GASB 67 is that it is creating data to test the proposition that separating disclosure and funding guidance will allow plan sponsors to disclose significantly higher liabilities without damaging repercussions. If that proves to be the case, perhaps a more meaningful reform of pension accounting will be achievable in the not too distant future.

The rest of this paper is organized as follows: Section 2 reviews the theoretical and practical case for using a low-risk interest rate for discounting pension liabilities and discusses considerations in choosing rates; Section 3 explains why establishing an optimal funding rule is an elusive goal; Section 4 reviews the evidence on plans that have switched to lower discount rates on GASB 67; and Section 5 concludes.

## 2. Accounting for pension liabilities

The logic and practical advantages of switching to fair value accounting for public defined benefit pension obligations have been written about extensively.<sup>1</sup> Those ideas are briefly recapped here, along with recent estimates of how such a change would affect reported underfunding. Perhaps less familiar is how wage uncertainty, liquidity, taxes, and the intended use of the information should affect discount rates; those issues are also discussed as they've engendered some debate about precisely which discount rates to require.

### 2.1 Valuation basics

Pension liabilities are measured by discounting to the present the stream of projected future benefit payments to current workers and retirees. As such, they represent the value in today's dollars of a future promised benefit stream. Those estimates depend on the benefit formula and on the many demographic and economic assumptions that go into projecting benefits. They are particularly sensitive to the choice of discount rates because of the long time horizons involved.

In general, the rates of return required by investors depend on the timing and risk of an investment's cash flows. The pure effect of time value is reflected in the term structure of interest rates, which relates discount rates to the maturity of safe cash flows. There appears to be no debate about the importance of maturity in the choice of discount rates, hence that aspect of discount rate choice is taken as a settled issue here.

The main difference between the calculation of liabilities under current and past GASB guidelines and under a fair value approach is primarily in the risk premium component of

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<sup>1</sup> See for example Babbel et. al. (2015), CBO (2011), Lucas (2012), and Novy-Marx and Joshua Rauh (2009, 2011).

discount rates. GASB67 directs the use of a “blended discount rate” based on two components: (1) the expected return on assets for the portion of liabilities that is projected to be covered by plan assets; and 2) the return on high grade municipal bonds for any portion that is to be covered by other resources.

The fair-value approach aims to measure the market value of an asset or liability. Importantly, the market value of an expected future cash flow depends on the priced risks that are associated with it.<sup>2</sup> For example, a Treasury security that promises to pay \$1 million in 10 years has a higher market value than a risky stock with the same expected payout of \$1 million in 10 years because investing in the stock entails market risk. In terms of discount rates, which are implied by prices and move inversely to them, the market discounts the expected cash flows from risky stocks at higher rates than it discounts expected cash flows from safe bonds.

For pension liabilities, the discount rate under a fair value approach reflects the fact that the cash flows associated with accrued liabilities carry little risk; it is very unlikely that the obligations will not be honored. The strength of those contractual and legal obligations suggests that the appropriate discount rate should be based on the yields on high quality bonds that have similarly low default risk.

The fair value approach to valuing pension liabilities also can be thought of as answering the question, what would a highly rated private insurance company operating in a competitive market charge as a one-time upfront fee to assume responsibility for those obligations? That thought experiment is instructive because it makes clear that the pricing would mirror the cost of

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<sup>2</sup> Financial theory emphasizes that not all risk is priced: Risk that is easily avoided by diversification does not earn a risk premium. Time horizon, liquidity and taxes also affect discount rates. The relationship between time and discount rates is known as the term structure of discount rates.

hedging the pension obligations. That is, to make sure it could honor its promises the insurer would need to buy high quality bonds whose cash flows matched the timing of the insured pension benefits. Abstracting from transaction costs, the price of that hedge portfolio of bonds would equal the price charged for the insurance, and hence it also represents the fair value of the promised pension benefits.

By contrast, under the GASB approach, the discount rate used for liabilities is largely unrelated to the risk of the liabilities. Rather, it reflects the greater risk and higher average returns associated with a pension funds' assets, which include sizeable holdings of risky equities and alternative assets. The result is liability estimates that are systematically lower than those found with a fair value approach, as discussed below.<sup>3</sup>

How can one interpret the resulting GASB liability estimates? Certainly they cannot be given the standard interpretation of a pension liability: as the value in today's dollars of future promised benefits. Instead, the rule is sometimes described as implicitly and counterfactually assuming that the risk to workers that states and localities will fail to pay future retirement benefits is the same as the risk that returns on the plan's assets will fall short of what is needed, or that those risky returns are as certain as benefit payments, at least in the long run.

A more charitable interpretation of the GASB rule is that it is being used to create estimates that answer a distinctly different question, which is: How much has to be set aside today so that on average investment returns cover projected benefit payments? It implicitly assumes that the right funding policy is to hold an amount of assets that on average will be sufficient to meet

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<sup>3</sup> The directive to use muni bond rates to discount unfunded liabilities implicitly treats those obligations at an approximation to fair value. However, the use of a muni rate without tax adjustment imparts a downward bias to the discount rate.

obligations over time, while allowing that other sources of government revenue may have to be redirected if returns prove to be inadequate. As discussed in Section 3, this may or may not be a reasonable funding rule. However, using this calculation to represent the present value of liabilities is clearly misleading.

## 2.2 Practical advantages of a fair value approach

A switch to a fair value standard for reporting pension liabilities has a number of practical advantages over GASB procedures. Consistency and interpretability would be improved in several dimensions:

- It would create conformity with the widely accepted valuation principles described above.
- Because assets are required to be reported at market value, it would put reported assets and liabilities on a consistent basis.
- That in turn makes underfunding clearly interpretable as the value of additional assets that would have to be set aside to fully cover promised benefits.
- It would create consistency with private sector pension accounting, which under FASB requires projected benefits to be discounted at high grade bond yields.
- It would comply with the directive of the International Public Sector Accounting Standards Board (IPSASB) that public sector accounting for defined benefit plans calculate liabilities using a discount rate based on the time value of money without a risk premium (IPSASB, 2016).

The switch would also largely curtail the discretion plan sponsors currently have over the choice of discount rates. For many years 8 percent was typically assumed as the expected return on plan

assets despite wide variations in portfolio holdings and changing market conditions. More recently, the typical rate has fallen to 7.5 percent, which is substantially in excess of what most market experts believe will be achievable (Rauh, 2017). Adopting a fair value standard would also eliminate the discretion over discount rates introduced by GASB 67, which permits plan sponsors to choose the portion of liabilities to treat as uncovered for the purposes of computing a discount rate. Evidence discussed in Section 4 suggests that discretion has been widely abused, with many severely underfunded plans making no rate adjustment.

Finally, a switch to fair value reporting would reduce incentives for plans to over-invest in risky assets in order to justify discounting liabilities at higher rates. Current GASB policy potentially penalizes managers that choose low-risk portfolios with commensurately lower expected returns, and heavily discourages the strategy of asset-liability-management which would reduce the volatility of underfunding over time by increasing the portfolio allocation to bonds.

### 2.3 Effects on reported underfunding

Following Novy-Marx and Rauh (2008), a number of authors have estimated the effect on liabilities and underfunding of switching to a more realistic discount rate. Table 1 reproduces the results for 2016 reported in Aubrey et. al. (2017), where 7.6% is the current average discount rate. The lowest discount rate that they consider, 4 percent, is close to the current 20-year high quality corporate bond rate that I suggest below is a natural reference for fair value calculations. By those estimates, a switch to fair value would decrease average reported funding levels from 72 percent to 43 percent.

Table 1: Aggregate Pension Measures under Traditional GASB Standards Using Alternative Discount Rates, FY 2016, in Trillions of Dollars

Measure	Discount Rate				
	7.60%	7.00%	6.00%	5.00%	4.00%
Actuarial liability	\$4.80	\$5.50	\$6.20	\$7.00	\$8.00
Actuarial assets	3.5	3.5	3.5	3.5	3.5
Unfunded liability	1.4	2	2.8	3.6	4.5
Percent funded	72	63	56	49	43

Source: Aubrey et. al. (2017)

2.4 More on choosing discount rates

A decision to require liabilities to be reported on a fair value basis would not in itself resolve the issue of the most appropriate rule for choosing discount rates. Often-mentioned candidates include Treasury rates, high grade corporate bond rates, and high grade municipal bond rates adjusted to remove the effect of tax exemptions. For broader liability measures that incorporate projected wage growth and service length, theory suggests using somewhat higher discount rates that account for the priced risks introduced by those assumptions.

The right choice of discount rates depends on the precise question being answered. One view is that future promised payments should be treated as if they are entirely risk-free obligations. That perspective underscores the legal and contractual strength of the commitments, and is endorsed by the IPSASB among others. In that case discounting at maturity-matched Treasury yields, possibly adjusted upward to account for liquidity, would be a natural choice. Some would argue a liquidity adjust is necessary because Treasury bonds are worth more than other default risk-free bonds, and more than pension promises, because of their superior liquidity. However, others

would counter that the only way to make pension obligations perfectly safe would be to defease them with the purchase of Treasury bonds, in which case discounting with unadjusted Treasury discount rates would value the liabilities at the cost of a defeasance strategy.

Using high-grade corporate bond rates or a high-grade tax-adjusted municipal bond rates answers the question of the value of the obligations assuming that the risk of non-payment is similar to that of other high priority obligations of the state or municipality. Proponents believe this choice would provide a more accurate picture of the value of benefits to recipients, and the cost to taxpayers, than a measure that abstracts completely from the small risk of less-than-full payouts. Even in jurisdictions with constitutional protections for benefits, court decisions or legislative changes could result in less than full payments in the event of severe financial distress, a possibility that is recognized by these choices. Those rate also implicitly incorporate some liquidity adjustment relative to Treasury's, although probably less than what would be needed to fully reflect the illiquidity of pension benefits.

Some favor using muni rates over corporate bond rates because the pensions are government obligations. However, once liquidity and tax differences are properly accounted for, high grade corporate and municipal bonds should have similar yields. If a muni rate is used as the starting point, an adjustment must be made for the higher value and hence lower yields on munis because of their exemption from state and local taxes.<sup>4</sup> Although the algebra to make the adjustment is straightforward given an assumed tax effect on price (Novy-Marx and Rauh, 2008), tax effects vary across jurisdictions with different tax rates and over time with demand conditions in the muni market, and may not be easy to agree upon. Muni bonds also tend to have a narrower

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<sup>4</sup> GASB 67 does not require an adjustment for the portion of the blended rate that depends on muni yields, which has the effect of overstating the cost for that portion of liabilities.

investor base and lower liquidity, making accurate prices harder to obtain. A further disadvantage of requiring adjusted muni rates instead of corporate bond rates is that it establishes a different rule for government plans than for otherwise similar private sector plans, reducing comparability that can be useful for evaluating best practices.

A further theoretical consideration in choosing discount rates is how broadly future benefits are measured. The above discussion pertains to discounting retiree benefits and to narrow accrual measures based on current wages and current years of service for current workers. However, many state and local plans incorporate expected wage growth and service length into their liability calculations for current workers. Future wages are risky, and over long horizons they entail market risk because wage growth is stronger when overall economic growth is stronger. Theory therefore suggests using somewhat higher discount rates to value wage-linked benefit projections. (See Lucas and Zeldes (2006) and Geanakoplos and Zeldes (2012) for applications of this idea to the valuation of private defined benefit pension and social security obligations). Whether or not benefits are inflation-linked also affects the appropriate discount rate. While it may be premature to suggest an adjustment rule to account for these effects, taken together they suggest that a corporate bond rate that captures some of the same risks is more appropriate than a Treasury rate.

In sum, a high-grade corporate bond rate is arguably the best reference rate in terms of consistency with private sector practices, simplicity of choice and application, and what it communicates about assumed risk. However, any of the leading candidate rates--Treasury, tax-adjusted muni, or corporate--would lead to similar conclusions about the value of liabilities. With any of those choices, reported underfunding would be more than double what is reported under current GASB guidelines.

### 3. The indeterminacy of optimal funding rules

What constitutes the best guidance on funding is elusive. Unlike liability measurement, first principles do not provide a clear answer. Rather, policies that strike the right balance between competing priorities are likely to vary over time and across jurisdictions. In this section I support that proposition by laying out a simple economic model that uses a balance sheet approach to track the implications of alternative funding rules. It demonstrates why, as a first approximation, the degree to which a pension system is funded makes no difference. Proponents of full funding have made a strong case for its advantages, but there are also good reasons to deviate from that policy. The arguments on both sides are briefly summarized.

When a state or local government (henceforth “government”) employs an incremental worker, it incurs a contractual obligation to pay current compensation and deferred benefits. It is important to recognize that it is at the point of contractual commitment that the government must evaluate whether the value of the contracted services justifies the total costs incurred, including whether the deferred benefits will ultimately be affordable. This is the reason for, and consistent with, the budgetary principle of recognizing obligations at the point at which they are incurred. A largely separable issue is the funding decision, which involves deciding on the best combination of current and future tax increases or spending cuts, and borrowing and investment decisions, to cover total contractual costs.<sup>5</sup>

It is instructive to flesh out that idea by looking at the evolution of the notional balance sheets of the government and of its citizens around the employment of an incremental worker. For

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<sup>5</sup> Consistent with this principle, federal budgetary accounting does not consider the “means of financing”—whether an incremental expenditure is paid for with debt or taxes—as having any effect on its budgetary cost. However, total interest expense appears as a budgetary cost.

simplicity we'll assume that the worker's entire compensation is in the form of deferred pension benefits, and that the contract is just for the current year.

Figure 1 summarizes the relevant portions of the government's and its citizen's balance sheets prior to the incremental worker being hired. The government has a tax asset equal to the present value of the stream of current and future tax revenues it will receive. It has a liability equal to the value of its debt outstanding. The government also has a defined benefit pension plan with accrued pension liabilities and pension assets that both are consolidated onto its balance sheet, along with its other assets and liabilities. Correspondingly, the citizen's balance sheet includes the present value of deferred retirement benefits and of government debt held as an asset, and the present value of tax obligations as a liability. It is convenient to subdivide the tax liabilities between the portion of revenues that will be used to repay the debt and the portion that will be used for other purposes to underscore that the debt has no effect on aggregate net worth. Citizens' other assets, and governments other liabilities, implicitly include the value of future government spending.

Figure 1: Government and citizen balance sheets

Government		Citizens	
Assets	Liabilities	Assets	Liabilities
Current Taxes	Current Spending	Current Spending	Current Taxes
PV(Future Taxes)	PV(Accrued Pension Benefits)	PV(Accrued Pension Benefits)	PV(Future Taxes to Pay for Non-Debt Expenses)
PV(Pension Assets)	PV(Gov't Debt)	PV(Gov't Debt)	PV(Future Taxes to Repay Gov't Debt)
PV(Other Assets)	PV(Other Liabilities and Owners Equity)	PV(Other Assets)	PV(Other Liabilities and Owners Equity)

How do those balance sheets change when an incremental deferred pension obligation is added? The answer depends on whether or not the incremental obligation is funded, and whether there is any offsetting change in the rest of the government’s tax and spending policies. Figure 2 shows the effects when there is full funding, but current tax collections and the planned path of other spending remains unchanged. In order to fund the purchase of additional pension assets without raising taxes or cutting other spending, the government has to issue additional debt. Buying pension assets funded with debt is a zero NPV transaction, which is reflected in the identical increase in assets and liabilities. To actually cover the cost of the new accruals, denoted by “ $\Delta(\text{Accrued Pension Benefits})$ ,” the present value of future tax collections has to increase by an equal amount. From the collective perspective of citizens, the increase in the value of debt held equals the increase in tax liabilities to repay that additional debt; this is the classic results that government debt has no effect on net wealth. The increase in accrued pension benefits, which is an asset for citizens, is equal to the increase in tax liabilities to pay for those benefits.

Figure 2: Government and citizen balance sheets with fully funded incremental pension benefits and no immediate change in tax collection or other spending

Government		Citizens	
Assets	Liabilities	Assets	Liabilities
Current Taxes	Current Spending	Current Spending	Current Taxes
PV(Future Taxes) + $\Delta(\text{Accrued Pension Benefits})$	PV(Accrued Pension Benefits) + $\Delta(\text{Accrued Pension Benefits})$	PV(Accrued Pension Benefits) + $\Delta(\text{Accrued Pension Benefits})$	PV(Future Taxes to Pay for Non-Debt Expenses) + $\Delta(\text{Accrued Pension Benefits})$
PV(Pension Assets) + $\Delta(\text{Accrued Pension Benefits})$	PV(Gov’t Debt) + $\Delta(\text{Accrued Pension Benefits})$	PV(Gov’t Debt) + $\Delta(\text{Accrued Pension Benefits})$	PV(Future Taxes to Repay Gov’t Debt) + $\Delta(\text{Accrued Pension Benefits})$

Figure 3 shows the balance sheet effects when the additional pension accrual is unfunded, and again there is no change in current taxes or the planned path of other spending. Now there is no purchase of additional pension assets but also no increase in government debt. As in the funded scenario, the present value of future taxes increases by the increase in pension accruals.

Figure 3: Government and citizen balance sheets with no incremental prefunding of pension benefits and no immediate change in tax collection or other spending

<b>Government</b>		<b>Citizens</b>	
Assets	Liabilities	Assets	Liabilities
Current Taxes	Current Spending	Current Spending	Current Taxes
PV(Future Taxes) + $\Delta$ (Accrued Pension Benefits)	PV(Accrued Pension Benefits) + $\Delta$ (Accrued Pension Benefits)	PV(Accrued Pension Benefits) + $\Delta$ (Accrued Pension Benefits)	PV(Future Taxes to Pay for Non-Debt Expenses) + $\Delta$ (Accrued Pension Benefits)
PV(Pension Assets)	PV(Gov't Debt)	PV(Gov't Debt)	PV(Future Taxes to Repay Gov't Debt)

To the extent that balanced budget laws prevent governments from borrowing to pay for pension contributions and a workaround like pension obligation bonds is not available, the scenario in Figure 2 may be infeasible. At the same time, many would view the Figure 3 scenario of funding future benefits with future tax revenues as unwise. The alternative to those scenarios is to fund asset purchases by raising current taxes or cutting other current spending. Figure 4 shows the balance sheet effects when funding is paid for with a cut in other current spending. As in the other scenarios, citizens have an additional asset in the pension benefit accrual. In this case the incremental asset is paid for immediately through a reduction in current services rather than through future tax payments, so through a reduction in other assets. The story would be similar if the assets were purchased using current tax revenues.

**Figure 4:** Government and citizen balance sheets with fully funded incremental pension benefits and an immediate change in other spending

Government		Citizens	
Assets	Liabilities	Assets	Liabilities
Current Taxes	Current Spending - $\Delta(\text{Accrued Pension Benefits}) + \Delta(\text{Accrued Pension Benefits})$	Current Spending - $\Delta(\text{Accrued Pension Benefits})$	Current Taxes
PV(Future Taxes)			PV(Future Taxes to Pay for Non-Debt Expenses)
PV(Pension Assets) + $\Delta(\text{Accrued Pension Benefits})$	PV(Accrued Pension Benefits) + $\Delta(\text{Accrued Pension Benefits})$	PV(Accrued Pension Benefits) + $\Delta(\text{Accrued Pension Benefits})$	PV(Future Taxes to Repay Gov't Debt)
	PV(Gov't Debt)	PV(Gov't Debt)	

Consideration of the scenarios laid out in Figures 2, 3 and 4 underscores a general conclusion: Whether or not a plan is funded, and whether or not borrowed funds are used for the asset purchases, the cost of pension accruals is ultimately paid for through current or future tax increases and/or reductions in other spending. The cost, which is firmly incurred at the signing of the employment contract, is as a first approximation unaffected by which funding scenario transpires.

Another way to show that the funding decision is irrelevant in a frictionless market is to demonstrate that whichever scenario the government chooses, individual citizens can use financial markets to replicate an alternative policy that they prefer. For example, if a citizen prefers the government to prefund but it doesn't, he or she can prefund on their own account by saving more today and investing in financial assets whose earnings will in expectation cover their higher future tax liabilities. Or if the government chooses to fund the accruals with higher current taxes but a citizen would prefer to defer those tax payments, he or she could borrow or short sell assets to pay the higher tax bill. This is essentially the famous Modigliani-Miller

theorem on the irrelevance of capital structure applied to the financing of pension plans. In a similarly frictionless setting and using closely related logic, it can be shown that the asset allocation decision—how much of the pension fund to invest in high versus low-risk assets—is also neutral (Lucas and Zeldes, 2009).

This chain of reasoning is notably different than the characterization in some of the literature (e.g., Rauh, 2017) that underfunding is effectively borrowing from workers, and therefore that it forces them to take more risk than if the plan were fully funded. By contrast, and consistent with the legal protections granted to public pensioners, I assume that taxpayers are ultimately on the hook to pay promised benefits. It is taxpayers that bear the cost of higher future taxes when a plan is underfunded, and taxpayers that absorb the investment risk of plan assets.

Of course, the world is not frictionless and funding decisions have real consequences.

Considerations affecting the best choice of funding rules include intergenerational equity, expectations about future economic growth, optimal tax policy, transparency, fiscal constraints and political incentives.

Advocates of full funding observe that:

- It is consistent with balanced budget rules because it forces the cost of current labor services to be paid for out of current revenues.
- It promotes equity between generations because it forces the recipients of current services to pay for those services.
- It improves transparency by making the full cost of government commitments more apparent.

- It makes it harder for politicians and unions to agree to unaffordable levels of deferred compensation in return for lower current wages.
- It benefits workers by potentially putting more desirable compensation packages that are less back-loaded on the table and by making promised benefits safer.
- Putting the payments off will in some jurisdictions necessitate sharp increases future tax rates or service cuts that will damage communities and distort incentives to work and save.

Others offer reasons why full funding can be suboptimal:

- Jurisdictions that are temporarily distressed or that expect higher future growth rates may prefer to keep current tax rates low and maintain current services in anticipation that higher taxes will be more affordable in the future.
- For similar reasons, the majority of taxpayers may have a preference for deferring higher tax payments. It may be less expensive for the government to borrow to delay those payments than for individuals to borrow on their own because of financial market frictions.
- The issue of intergenerational equity is not clear cut. Children are the beneficiaries of public education and other government services. It is fair for them to pay for a portion of those expenses, particularly if overall economic growth makes it likely they will be wealthier than their parents.
- There is concern about the efficiency of the government acting as a financial manager. Taxpayers do not get a refund if a plan becomes over-funded, and asset management is costly. Taxpayers may prefer to control the funds until they are needed. This debate played out over the idea of prefunding social security and putting the money in a lockbox.

- Even if it is optimal to fully fund newly incurred obligations, managing legacy underfunding is challenging. For many governments closing the gap quickly is clearly infeasible as it would force a combination of sharp tax rate increases and cuts to essential services that could exacerbate fiscal problems by causing population loss.

Such concerns are presumably part of the reason that in practice the enforcement of funding guidelines and targets has historically been, and continues to be, lax.

Turning back to the relation between funding requirements and liability measurement, it may make sense to base funding targets to some degree on expected asset returns. As emphasized above, taxpayers ultimately bear the full cost of pension accruals whether or not they are funded, and independent of the risk/return profile of plan assets. Nevertheless, the risk/return profile of plan assets can affect welfare when the tax system is distortionary. Lucas and Zeldes (2009) show that an advantage of a higher-risk higher-return investment strategy for plan assets is that it causes distortionary tax rates on average to be lower. I conjecture here that in some circumstances higher expected investment returns would imply lower optimal funding levels, for instance if overfunding has significant costs. However, formally modeling such effects is left for future research.

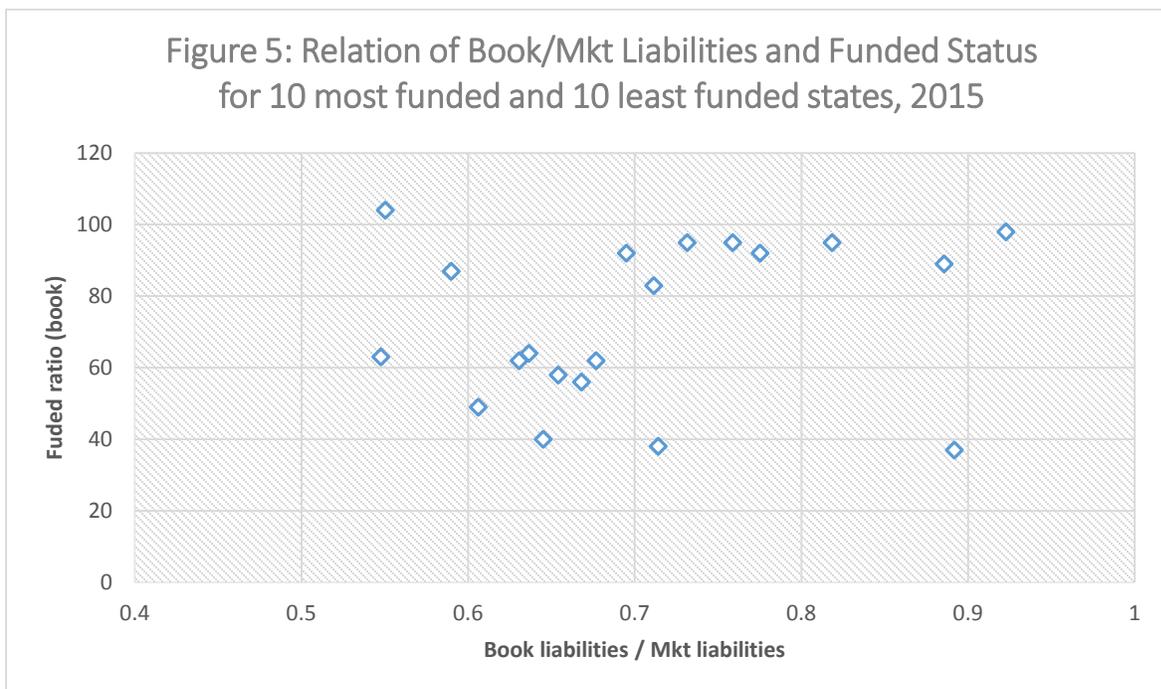
#### 4. Plans' response to GASB 67

Aubry et. al. (2017) consider the effects of GASB 67 and conclude that few plans have changed their reported liabilities as much as would be expected had the new guidance on discount rates been followed. A simple calculation here reinforces the conclusion that the discretion plans have under GASB 67 in choosing discount rates has been widely abused. Aubry et. al. (2017) report that the traditional discount rate averaged 7.6 percent across public plans in 2016, while the

blended discount rate used for the new GASB standard averaged 7.3 percent. Plans are roughly 70 percent funded, and 20-year high grade muni rates are around 3 percent. Weighting expected asset returns of 7.6 percent by the funded ratio and muni returns of 3 percent by the unfunded share suggests that if the rule were interpreted reasonably the blended discount rate would be about 6.2 percent, over a percentage point lower than the average observed.

If the new guidance were being followed even to a limited extent, one would also expect that the ratio of reported to market liabilities would be higher on average for more underfunded plans.

Using data from Pew on state plan funding ratios for 2015, and taking reported and market underfunding from Rauh 2017, I derive estimates of reported liabilities versus market liabilities for 2015. Figure 5 plots the funded ratio against the ratio of ratio of reported (or book) liabilities to market value liabilities for the 10 states with the highest funded ratios and the 10 states with the lowest funded ratios. The predicted downward slope is not at all apparent in the data.



## 5. Conclusions

Debates over whether GASB should impose fair value accounting for liabilities on public pension plans often conflate misrepresentation of the dollar amount of underfunding with the need to reduce it. In this paper I have explained why those two issues can be separated, and why doing so could be helpful in achieving accounting reform. Whereas there are compelling theoretical and practical reasons to report liabilities on a fair value basis, including that current GASB rules prevent decision-makers and the public from having the most basic information they need to realistically evaluate policy alternatives, there is considerable ambiguity about what funding rules ought to look like. By holding plans harmless in terms of their funding requirements, the opposition to the adoption of fair value for liability reporting purposes may be weakened.

GASB 67 provides a precedent for that separation, which may have been an underappreciated reason that some reform in valuation rules was feasible. However, because the regulation allows enormous discretion in the choice of discount rates and few states appear to be taking the new guidance seriously in their liability estimates, it is difficult to evaluate whether that dimension of flexibility has had much practical value. The very limited effect of GASB 67 on discount rates suggests that the standard needs to be revised yet again, and hopefully that will provide an opportunity to meaningfully improve liability measurement.

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