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MISSOURI TRANSITION COSTS AND PUBLIC PENSION REFORM

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EXECUTIVE SUMMARY

Defined benefit (DB) pensions for public employees in recent years have generated high costs for state and local government budgets. In response, some elected officials have proposed shifting public employees to cash balance (CB) or defined contribution (DC) plans. One potential obstacle to such reforms are so-called "transition costs," which imply that shifting public employees from DB to alternate pension plans would increase costs, substantially and for an extended period, before any savings are realized. Claims of large transition costs have slowed reforms in a number of cities and states.

Public pension transition costs come in two types. First, accounting-based transition costs arise from perceived accounting requirements issued by the Government's Accounting Standards Board (GASB) that a closed defined benefit plan must accelerate the amortization of its unfunded liabilities that accumulated during prior years. This faster repayment of unfunded liabilities produces approximately a decade-long increase in pension costs.

However, this claim is weaker than it appears.

- GASB accounting standards are guidelines for disclosure; these guidelines are not intended to dictate funding policy. Recent reforms to GASB guidelines make clear that they are intended to measure pension liabilities, not determine how pension liabilities should be funded.
- It is very unlikely that ratings agencies or bond markets would punish a jurisdiction that enacted major pension reforms, even if it failed to make the higher "transition costs" amortization payments. Governments would not lower their amortization payments after a DB plan is closed; they would continue making the same payments as before.
- Plan sponsors that did choose to make more rapid amortization payments would reduce the accumulation of public debt, improving fiscal health and potentially lowering debt service costs.
- If a DC or CB plan were created as a new "tier" within the existing DB plan, even GASB standards would not imply higher amortization payments.
- There is no economic or policy reason to alter amortization schedules; government as a whole owes pension liabilities and neither government resources nor total employee payroll has changed.

Pension plans for state and local government employees have become increasingly underfunded in recent years, with total shortfalls nationwide ranging from approximately $1 trillion to more than $4 trillion…

The second claim for transition costs arises from the perceived need for a closed defined benefit plan to shift to more liquid, less risky assets as its participant population ages. The lower return on such assets would require higher average contributions.

However, this investment-based argument for transition costs ignores a number of key facts:

- There is no evidence that U.S. public plans currently target their investment portfolios to the age structure of their participant populations. In fact, most public plans have taken *more* risk as their participant populations have aged. Thus, the investment-based transition costs argument proposes an investment strategy that public employee systems do not themselves follow.
- Under a "fair market valuation" approach to pension accounting, which most economists and government agencies favor, the effect of a plan's closure on its liabilities would be very small. Under market valuation, public plans would value their liabilities using discount rates derived from low-risk investments such as government bonds, to match the low risk of DB pension benefits. Closing a DB plan would have only small effects on liabilities under this approach.
- A plan that chose to shift to safe investments would enjoy the benefit of lower risk and less volatility of contributions. Moving to a safer investment portfolio is not a "cost"; it is a trade between risk and return. Safer investments come with benefits, namely lower risk. Once the "cost of risk" is accounted for, shifting to a more conservative investment portfolio does not raise costs to the taxpayer.
- Increasing the liquidity of plan investments would have only small effects on expected returns. A closed plan's investments must be truly liquid only in the final years before true shutdown, which would be decades in the future. Moreover, illiquid alternative investments currently make up only a small portion of most plans' portfolios, meaning that portfolio changes to increase liquidity would be small. Moreover, research has found that public plans' investments in alternatives do not increase returns after adjusting for risk.
- If a closed DB plan and its sponsoring government wished to retain the plan's current high-risk investment portfolio, the government might offer a line of credit that the DB plan might call upon if needed. If investments in stocks are indeed low-risk over long time horizons, as many pension stakeholders appear to believe, such a line of credit would be low-risk to the sponsoring government.

Closing a DB plan to new participants does not erase the unfunded liabilities that the plan accumulated over the years, and these liabilities should be addressed through a responsible funding policy. But closing a DB plan also does not increase unfunded liabilities or require that they be repaid faster.

Most importantly, closing a DB plan does reduce or prevent the accumulation of *additional* unfunded liabilities. There are many reasons elected officials may favor or oppose shifting public employees out of traditional DB pensions into CB or DC plans. But concerns over so-called "transition costs" are largely mistaken and should not stand in the way of public employee pension reforms.

INTRODUCTION

Pension plans for state and local government employees have become increasingly underfunded in recent years, with total shortfalls nationwide ranging from approximately $1 trillion to more than $4 trillion, depending on how plan liabilities are measured. Annual required contributions have more than doubled over the past decade, and many plan sponsors were unable to make required contributions during the recession that began with the financial crisis of 2007 and the slow recovery that followed.

Many policymakers are exploring reforms to public plans, which range from incremental changes to contribution rates, retirement ages, or other plan parameters to more fundamental changes to the final earnings defined benefit approach, such as cash balance (CB) or defined contribution (DC) plans.

A cash balance plan is a form of a DB pension in which benefits are not based upon a final earnings formula. Instead, benefits are a function of contributions to a notional retirement account to which are credited interest earnings at some given rate. CB plans do not subject participants to market risk, as the interest formula is generally distinct from the returns on plan investments.[1] But CB plans allow for portability of benefits and a direct earnings-benefit link, which may be helpful in attracting and retaining quality public employees. A DC pension is similar to the 401(k) or 403(b) plans in which most private sector employees participate. Generally, both employers and employees contribute to a DC account. Employees allocate contributions between a range of investment options the employer chooses, and the employee is subject to any investment losses or gains. Unlike a DB plan, there is no guaranteed retirement benefit owed to workers at retirement, and there is no liability to plan sponsors beyond the initial employer contribution to the account. While a DC pension conversion will not eliminate current DB pension liabilities, DC plans will stem the accumulation of further unfunded liabilities.

There are many pros and cons to structural changes in public plans. However, one recent prominent objection to converting public DB plans to CB or DC structures are so-called "transition costs." These transition costs would temporarily raise the cost of supporting public plans, such that savings from reform would be delayed for a number of years. Higher costs in the interim may be seen as problematic, given that rising costs for current DB plans are a primary motivation for pension reforms.

However, it is important to clarify from the outset what is meant by transition costs in the public plans context. The phrase "transition costs" gained prominence in the debate about Social Security personal accounts, which would allow workers to divert a portion of their payroll taxes to defined contribution retirement accounts. Social Security is a "pay-as-you-go" program, meaning that current tax revenues are used to fund current benefit payments. As a result, the diversion of payroll taxes to personal accounts by current workers would deprive the program of a portion of its revenues, raising costs for the program until current workers with accounts began to retire. The higher costs during this period were often referred to as "transition costs."

At first glance, this issue should not arise with public sector pensions, which are – or are intended to be – fully funded. If a public plan is fully funded, that means

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that it has sufficient assets on hand to pay for all accumulated obligations. If future contributions instead are directed to CB or DC pension plans, this would have no effect on the ability of the DB program to pay what it owes: neither its assets nor its liabilities have changed.

The issue of transition costs arises in the public sector for different reasons. First, some argue that accounting standards promulgated by the Government Accounting Standards Board (GASB) require that a closed DB plan more quickly pay off – or "amortize" – its unfunded liabilities. Under current practice, plans may amortize unfunded liabilities over a period of up to 30 years. Faster amortization would mean higher payments, thereby raising plan costs over a period of time.

Second, it is argued that a closed DB plan should invest in a safer, more liquid portfolio as its participant population ages. Because safety and liquidity are accompanied by lower expected returns and public plan contributions are based on the expected return on plan investments, this would increase the funding cost of the current DB plan until the last DB participant passed through the system.

Both arguments for public plan transition costs have intuitive appeal. But both are based on misunderstandings of public plan accounting and investment practices that, once resolved, show transition costs not to be an impediment to public plan reforms. Advocates for current DB plans might oppose such reforms for other reasons, but transition costs would not stand in the way of shifting public pension provisions toward CB or DC structures.

As Costrell (2012) shows, claims of "transition costs" have been successfully cited in a number of states as a reason not to enact comprehensive public pension reforms.[2] For instance, Minnesota's three statewide plans published a study claiming that pension reform could generate transition costs of $2.8 billion over 10 years. Laurie Hacking, executive director of the Minnesota Teachers Retirement Association, called transition costs the most important point with regard to pension reforms.[3] Similarly, the National Institute for Retirement Security – an organization representing many public plan stakeholders, such as public employee unions, actuarial firms, investment advisors, and the plans themselves – issued talking points to members stating that "closing a DB pension can incur unfunded liability growth and large transition costs."[4]

Thus, arguments regarding transition costs are not merely academic abstractions. Rather, they have had and continue to have a concrete effect on policy initiatives in states and cities around the country. For successful pension reforms to be enacted, policymakers must understand what transition costs do and do not mean for plan sponsors.

ACCOUNTING-BASED ARGUMENTS

The accounting-based argument is relatively straightforward. It claims that when a public DB pension plan is closed, accounting standards require that the plan sponsor more rapidly amortize the plan's unfunded liabilities. A more rapid amortization schedule, therefore, raises required contributions significantly over a "transition" period. Thus, transition costs.

It helps to begin with background on how most public plans' annual required contributions (ARCs) are calculated. GASB Statement No. 25 (GASB 25) requires that

a plan sponsor calculate an ARC, which consists of two parts: the first is designed to cover the cost of new benefits accruing to employees in that year. This portion is referred to as the "normal cost" of the plan. The second payment is used to pay off unfunded liabilities from prior years, which might arise if the plan failed to make scheduled payments, if investment returns fell short of projections, or if benefit costs were higher than expected.

Plans use many different formulas to pay off unfunded liabilities, which differ in terms of how quickly the liability is paid off and how payments vary from year to year. It is common, however, for plans to pay benefits on a "level dollar" basis, meaning that it repays the same amount each year, or on a "level percent of payroll" basis, which means that amortization payments start small and rise each year at the same rate as employee wages.

Importantly, however, the level percent of payroll option is available only for open plans where

> . . . the wage base continues to grow. Closed plans, where the participant population is shrinking, generally account for amortization costs on a level dollar basis. This shift does not increase the total cost of amortizing unfunded liabilities. Rather, it merely means that initial amortization payments would be higher, and later payments lower, than under the level percent of payroll basis. These higher initial payments are termed the "transition cost."

However, there are a number of objections to the accounting-based argument for transition costs.

Response 1. GASB standards are for disclosure only. GASB statements do not dictate funding requirements and GASB does not have (and makes no pretense to have) the power to enforce how governments choose to fund their plans. This fact should be obvious, given the large number of plan sponsors in recent years that have with impunity failed to make their supposedly "required" contributions, contributions which *include* the amortization costs that transition-cost scare tactics claim are mandatory.

More importantly, jurisdictions that have reformed their pensions, such as Alaska, have maintained their prior amortization schedules. They are free to make precisely the same amortization payments as under the prior benefit plan. As Costrell shows, plan officials and public plan actuaries acknowledged this fact, albeit many times seemingly reluctantly.

However, GASB's 2013 updates to pension accounting standards – termed Statements No. 67 and 68 – should make clear that the organization's standards are for disclosure only. For instance, in a document titled "GASB's New Pension Standards: Setting the Record Straight," GASB addresses the question "Do the new GASB Statements establish requirements for how governments should fund their pensions?" GASB answers:

> No. In the past, the accounting and financial reporting standards were closely associated with the approach that many governments take to funding their benefits—that is, toward contributing sufficient resources to a defined benefit pension plan to finance benefit payments when they come due. Consequently, many governments have established funding policies based on the GASB's standards. However, after reexamining

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> the prior standards for pensions, the GASB concluded that approaches to funding are not necessarily the best approach to accounting for and reporting pension benefits. Therefore, the new Statements mark a definitive separation of accounting and financial reporting from funding.[5]

GASB goes on to reiterate that

> . . . the new pension Statements relate only to accounting and financial reporting, or how pension costs and obligations are measured and reported in external financial reports. How much governments actually contribute each year to a pension plan is a policy issue. Governments will likely report pension expense more quickly than under the prior standards; however, how or whether this information is used in assessing the amounts that governments will contribute to their pension plans is a public policy decision made by government officials.

Simply put, despite claims that GASB "requires" higher amortization payments from closed DB plans, the opposite is the case: GASB standards do not make any funding requirements. Funding is a policy decision. Proponents of the accounting-based transition costs argument make no policy argument why amortization payments should increase.

Response 2. It is very unlikely that ratings agencies or bond markets would punish a jurisdiction that enacted major pension reforms, even if it failed to make higher amortization payments.

Let's assume that GASB standards do require higher amortization payments when a DB pension is closed. And let's assume that the sponsoring government chose not to make those payments, judging the "transition costs" to be unaffordable. If that happened, what would be the cost to the government or taxpayers?

The answer: probably nothing. Bond rating agencies and financial markets should punish governments that commit financially irresponsible acts. These include, as the rating agency Moody's recently pointed out, accumulating large unfunded pension liabilities. Indeed, Moody's declared that it will no longer accept GASB figures as part of its calculations of public plan liabilities, arguing that these figures understate the true value of public plan liabilities.

Most governments considering a shift to defined contribution or cash balance plans do so as a means to control annual costs and prevent the accumulation of unfunded pension liabilities. It is difficult to understand why either rating agencies or financial markets would look askance at governments that enacted such reforms, even if these reforms included a technical underpayment of a non-binding accounting disclosure. If a pension reform improves the sponsor's financial standing in terms of economic substance, governments enacting such reforms could reasonably be expected to be rewarded with higher bond ratings and lower interest rates on bond issues.

Response 3. More rapid amortization payments would reduce the accumulation of public debt, improving fiscal health and potentially lowering debt service costs. This result comes about through a difference in the interest rate used to calculate pension liabilities and the interest rate on municipal bonds.

Most governments considering a shift to defined contribution or cash balance plans do so as a means to control annual costs and prevent the accumulation of unfunded pension liabilities.

Public plans calculate their liabilities using the expected return on the plan's investments, which is usually about 8 percent. Amortization payments, whether on a level percent or level dollar basis, are calculated using those same interest rates. Almost all economists, along with a number of government agencies and the rating agency Moody's, think this practice is wrong and understates public plan liabilities. But this argument, while important in other contexts, does not make much difference here.

What does matter, however, is that the expected return on public plan assets is significantly higher than the interest rates paid on government bonds, which reflects the cost of capital to state and local governments. This difference means that faster amortization not only repays public plan debts more quickly, it lowers their overall cost. An example illustrates this point.

Imagine a plan that had $1 million in unfunded pension liabilities, as calculated using the plan's 8 percent expected return on investment and that it planned on amortizing them over a 30-year period. If we assume that plan payroll rises by 4 percent annually, on a level-payroll basis, the plan could begin with a payment of $55,606 in year 1, rising to $57,830 in year 2, and so on. If the plan instead amortized on a level-dollar basis, payments would begin in year 1 at $82,248 and remain at that level thereafter.

Now, let's assume that the government borrows all the money it needs to make these amortization payments and must pay 4 percent interest on its borrowing. At the end of 30 years, the plan would have built up about $5.4 million in total debt under the level percent of payroll amortization schedule. Using the level-dollar schedule, however, the government would amass only $4.8 million in debt over the full period, a reduction of about 11 percent.

In substance, it does not matter whether the government actually borrows or not. The interest rate on government bonds is simply a measure of the sponsor's cost of capital and of the opportunity cost of spending or saving at a given time. But this example shows that the so-called "transition costs" claimed by reform opponents would, in reality, significantly reduce total public pension outlays.

Response 4: If a DC or CB plan was created as a new tier within the existing DB plan, even GASB standards would not imply higher amortization payments.

The GASB guidelines that dictate whether plans can report amortization on a level-dollar or level-payroll basis make this distinction based upon the *number* and *wages* of employees enrolled in the plan, not based upon whether all plan members have identical contribution and benefit provisions. A reformed plan could be created as a new "tier" within the existing DB plan. This would keep the DB plan open, maintain the plan's total payroll base, and therefore not trigger GASB amortization standards.

Many existing DB plans have multiple tiers, in which newly hired employees pay higher contributions or receive less generous benefits than older employees in previous tiers. New tiers are ways to alter the terms of the benefit agreement for new employees without creating an entirely new plan. There appears to be no reason that a reformed pension plan could not form a tier under the existing public employee pension system.

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of DB plans. The benefit formula for the new tier would simply state that benefits are based on accumulated contributions plus credited interest rather than being calculated as some percentage of final salary. But there is reason to believe that a DC plan could be created as a new tier as well. Utah now offers a Tier II that gives new hires the choice between a DC pension and a DB plan.

Similarly, Alaska shifted new hires to DC pensions but continues to calculate amortization payments based upon total employee payroll. The key requirement appears to be that employers participating in the new plan – meaning, government agencies or sub-divisions of government – would continue to pay their share of amortization costs based on *total* employee payroll, including new employees participating in the DC plan.

Response 5. There is no economic or policy reason to alter amortization schedules; the government as a whole owes pension liabilities and neither government resources nor total employee payroll has changed.

As noted earlier, unfunded pension liabilities are essentially a government debt, representing benefits owed to retirees from prior service. The government backs the debt and in almost all cases must be paid, regardless of how well funded the plan is or how current workers are earning new benefits for their current service. Converting current or newly hired employees to a different plan does not change the size of current benefit liabilities, nor the dates on which these benefits must be repaid. The government must decide for itself the best way in which to honor its benefit obligations, but the fact that new obligations are being earned in a different type of pension plan does not change those calculations.

Amortization payments are often calculated as a percentage of employee payroll, and as payroll shrinks, these payments would appear to rise. But this is an illusion: amortization payments are almost never charged to employees, so expressing them as a percentage of employee payroll is a matter of convenience. In nearly all cases, the plan sponsor — the government — makes all the payments for unfunded liabilities, and what matters to the sponsor is the dollar value of such payments.

If the sponsor had an appropriate amortization schedule pre-reform, that schedule is likely to remain good post-reform. Nothing of economic or policy substance has changed.

In summary, there is no pretense that there is an economic or policy reason for the sponsors of a closed DB plan to amortize unfunded liabilities more rapidly. Rather, accounting-based transition cost arguments are based merely upon technicalities of GASB accounting guidelines. But an accurate and up-to-date reading of GASB guidelines shows that even these technicalities do not actually apply. Thus, there is no accounting reason why reforms that close DB plans and enroll public employees in alternate pension structures should not be on the table.

INVESTMENT-BASED ARGUMENTS

There is a second and more recent claim regarding pension transition costs that has nothing to do with accounting rules or amortization of unfunded liabilities. Rather, the claim is based upon how a closed DB plan might change its investment strategy and how such changes would affect the cost of the plan.

The investment-based transition costs argument is that a closed plan with an older participant population must shift to a less risky and more liquid portfolio of investments to ensure that it has sufficient funds on hand to make benefit payments as they are due. An open-ended plan, it is argued, can rely on a more aggressive portfolio and thus reap the rewards of higher expected investment returns. Shifting to a lower-returning portfolio would increase the plan's liabilities, because, under GASB's (controversial) accounting standards, liabilities are calculated using the interest rate that is assumed for plan investments. Higher liabilities would increase the plan's unfunded liabilities and thereby raise the amortization payments needed to restore the plan's finances to balance.

Even as the accounting-based argument for transition costs has been discredited, this investment-based argument is becoming increasingly common. For instance, a study by the California Public Employee Retirement System (CalPERS) states that:

> As a closed DB plan ages, fewer contributions due to fewer active members, relative to retiree benefit payments, increases the need for more liquid assets. This creates a need to shift assets to investments that have a more predictable cash flow such as bonds. This generally has a negative impact on the fund and results in lower investment income. This lost investment income needs to be covered by additional contributions. These contributions may come from the employer, the employee or a combination of both.

Similarly, the actuarial firm Milliman argued that a closed plan should alter its investments and, based on GASB accounting rules, the discount rate it applies to its liabilities. In a letter to the Pennsylvania Public Employee Retirement Commission (PERC), the firm's actuaries said:

> [O]nce active membership in SERS and PSERS has significantly declined and retired members are the majority of each System's total membership, the Systems' should consider revising their investment policy. Each system may be inclined to invest assets in a more conservative manner resulting in a lower discount rate than current levels. This revision would result in a lower valuation interest rate, which would result in higher actuarial accrued liabilities.[6]

In a study regarding the Florida Retirement System, Milliman similarly argued with regard to reform proposals in Florida that:

> Over time, the State Board of Administration may lose the ability to invest with a long-term perspective as annual cash flow becomes more and more negative. Under a closed plan, as the active population shrinks and the retired population continues to grow, benefit payments will exceed the contributions made to the plan by continually increasing amounts. This will possibly necessitate future changes in asset allocation in order to provide sufficient sources of cash for benefit payments, which in turn could impact the rates of return earned by the Fund's assets...thereby putting upward pressure on costs.[7]

Likewise, the three Minnesota statewide retirement plans published a joint analysis of a potential conversion to DC plans. The authors state that:

. . . unfunded pension liabilities are essentially a government debt, representing benefits owed to retirees from prior service.

Once investment risk is accounted for – as it must be in any rational analysis of the economic costs of different policy approaches – the supposed costs of a lower-risk financing strategy disappear.

> Relative to an open ongoing DB plan, a closed DB requires higher cash outflow, meaning benefit payouts are high relative to contribution revenue. As a result, plan assets will be spent down and thus, must be invested in a lower risk investment allocation. The financial impact of these investment allocation changes would be significant and are not included in the cost estimates. Mercer estimates that if the investment earnings and interest assumption for the closed DB were lowered from 8.5 percent to 6 percent to reflect a more conservative asset allocation, the actuarial accrued liabilities would increase by approximately 30 to 40 percent and the unfunded actuarial accrued liabilities would more than double.[8]

Such calculations understandably make policymakers reticent to consider reforms that would close existing DB plans.

But these arguments come from a philosophical standpoint that holds that public pensions need not account for the risk of their investments. Once investment risk is accounted for – as it must be in any rational analysis of the economic costs of different policy approaches – the supposed costs of a lower-risk financing strategy disappear.

Response 1. There is no evidence that U.S. public plans currently target their investment portfolios to the age structure of their participant populations. Thus, the transition costs argument proposes a standard that public employee systems do not themselves follow.

Economists believe that a DB pension should tailor its investment portfolio to the characteristics of its employee population in order to "hedge" the risks that the plan faces in paying benefits. In this regard, active employees and retirees are somewhat different. Today's employees will earn benefits based upon their final earnings, meaning that the future value of these liabilities depends upon the growth rate of wages. If wages grow more quickly, for instance, future benefits will be higher. Over very long periods, stock returns tend to be correlated with the growth of wages. Thus, plans can hedge this risk in part by holding stocks in their investment portfolios.

Benefits owed to current retirees, however, have already been determined and do not vary with wage growth. These benefits are easily calculated and relatively stable over time, making them more "bond-like." Thus, a plan with a greater number of retirees could hedge these risks by holding more bonds.

None of this is to say any public plans should necessarily invest *heavily* in stocks. Both benefits for current workers and for current retirees are intended to be guaranteed, so a plan looking to "immunize" future taxpayers against unfunded liabilities would remain predominantly invested in safe assets such as bonds.[9] However, "younger" plans with greater numbers of active employees should hold more stocks than "older" plans.[10]

Research has shown that U.S. private sector pensions and public sector plans in Canada, the U.K., and the Netherlands follow these practices. As these plans mature, meaning that retirees make up a larger portion of their participants, they shift toward safer investments such as bonds. For instance, Andonov, Bauer, and Cremers (2013) show that for funds *other* than U.S. public plans, a 10 percent increase in the percentage of retired members is associated with a 1.2 percentage

point reduction in the plan's portfolio allocation to risky assets.[11]

However, there is no evidence that U.S. public plans follow the same approach. Rather, U.S. public plans have been taking *more* investment risk as they age, which is contrary to economic theory and good investment practice. For U.S. public pensions, a 10 percent increase in the percentage of retired members is associated with a 2.1 percentage point *increase* in the allocation to risky assets.

The difference, Andonov, Bauer, and Cremers (2013) suggest, derives from the unique accounting standards for U.S. public plans. In the U.S. private sector and for public employee plans in other countries, benefit liabilities must be valued (or "discounted") using a low interest rate to reflect the fact that these benefits are guaranteed. The discount rate used to value these liabilities usually is derived from government bonds or investment-grade corporate bonds. Importantly, the discount rate has nothing to do with the actual investment portfolio the plan holds: a private plan or overseas public plan does not alter how it values its liabilities when it changes its investments. Thus, these plans have the incentive to adopt the investment portfolio that best suits their needs, not a portfolio based on accounting rules.

However, as noted earlier, GASB standards allow U.S. public plans to discount liabilities using their assumed return on plan investments, usually about 8 percent. Using an 8 percent return rather than, say, a 4 percent yield from government bonds reduces measured plan liabilities by approximately half. The incentives for U.S. public plans to take excessive investment risk are obvious, and indeed the data show that U.S. public plans take substantially more investment risk than private pensions or public plans overseas.

Thus, while the investment-based, transitions-cost argument has merit, its practical effects are vastly exaggerated. The financial effects of closing a plan should be measured using an appropriate portfolio for a closed plan and an appropriate portfolio for an open plan. Comparing the expected returns on an *appropriate* portfolio for a closed plan with the *inappropriately* risky portfolios that open U.S. public plans currently choose is misleading.

Response 2. Under a "fair market valuation approach," the effect on liabilities of a plan's closure would be modest.

The so-called fair market valuation approach is favored by most professional economists and endorsed or adopted by government agencies such as the Congressional Budget Office,[12] the Bureau of Economic Analysis,[13] and the Federal Reserve.[14] Using it, public plans would value their liabilities using discount rates derived from low-risk investments such as government bonds.

The Fed's director of research and statistics, David W. Wilcox, summarized the case for market valuation:

> These [public pension benefits] happen to be really simple cash flows to value. They're free of credit risk. There's only one conceptually right answer to how you discount those cash flows. You use discount rates that are free of credit risk. This is one of those things where it just really is that simple.[15]

In 2013, the National Income and Product Accounts, which are the official ledger books of the United States economy, began measuring public pension liabilities using

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a market-based measure that captures the full economic cost of offering guaranteed pension benefits. These risk-adjusted figures now are published in the Federal Reserve's Flow of Funds Accounts, allowing the public a more accurate view of public pension funding adequacy.

But the market valuation approach also has importance for potential conversions of public employees from existing DB plans to CB or DC pensions.

For an open pension plan, the mid-point of the plan's liabilities usually lies around 15 years in the future, meaning that half of payments take place prior to 15 years and half after that time. Thus, we can approximate the discount rate for the pension's full series of benefit payments by looking at yields on safe investments with a duration of about 15 years. However, when a plan closes, the duration of the plan's liabilities would gradually shrink and thus a shorter-term discount rate would become appropriate. Because shorter-term investments generally have lower yields, this would lower the discount rate applied to a closed plan and thus raise the value of its liabilities.

However, these differences would be neither immediate nor dramatic, for three reasons. First, the difference in yields on appropriate investments are not that different over short and long durations. For instance, some economists value pension liabilities using the yield on Treasury Inflation Protect Securities (TIPS) to reflect the fact that most public plans offer inflation protection on their benefits.[16] The difference in yields between, say, five- and 20-year securities is only about 1.5 percentage points; between five- and 10-year TIPS, the yield difference is less than 1 percentage point.

Moreover, differences in the discount rate are most important for long-term liabilities, where a higher or lower discount rate compounds upon itself over many years. For instance, for a liability payable 30 years from now, shifting from a 4 percent to a 3 percent discount rate raises the liability's present value by about one-third. But for a liability payable 10 years in the future, a similar 1-percentage point reduction in the discount rate increases the present value by less than 10 percent. For a liability five years in the future, a similar reduction in discount rates raises the present value by less than 5 percent.

Third, discount rates would be lowered for a plan only gradually. If, for instance, a plan were closed to new entrants today, the duration of the plan's liabilities would shorten by a small amount each year and thus the appropriate discount rate would change only slowly. It would be incorrect to immediately assume a much lower discount rate for the plan in next year's valuation because very little about the plan's liabilities had changed.

In sum, under an economically rational valuation system, the difference in discount rates for a closed plan would be modest and the effect on the value of liabilities would be relatively small.

Response 3. Safer investments come with benefits, namely lower risk. Once the "cost of risk" is accounted for, shifting to a more conservative investment portfolio does not raise costs to the taxpayer.

The investment-based, transition-costs argument focuses on one disadvantage of a more conservative investment portfolio – lower returns – while ignoring the benefits of such a portfolio, namely lower risk. Risk has a cost, which is imposed on

plan sponsors (and sometimes employees) through fluctuating contribution rates. A lower-risk portfolio rewards plan sponsors with contribution stability that fully compensates them for any additional contributions they might make.

This can be shown in a straightforward way using financial products known as "options." Public plans offer participants guaranteed benefits, but these benefits are funded with risky assets such as stocks, private equity, and hedge funds. Thus, there is no guarantee that the investment made today will be sufficient to pay the benefit that has been promised. In fact, in most cases, there is a greater than 50 percent chance that even a "fully funded" plan will fall short of being able to pay promised benefits.[17] In these cases, the taxpayer will be called upon to increase contributions to the plan.

Economists sometimes describe such a taxpayer guarantee as an "implicit put option." A put option is a financial product that acts as insurance against low returns on some other investment. For instance, the public plan might purchase a put option that would make up any difference between the actual earnings on its investment and the amount it needs to pay full promised benefits. The purchase of such a put option would make the plan "truly fully funded," meaning that it could guarantee the benefits owed to public employees without any recourse to the taxpayer for additional funds. As it is, the costs of these "contingent liabilities" are shifted to taxpayers, though they are nowhere revealed in accounting disclosures.[18]

Here is the important point: the cost of a put option depends, among other things, upon the risk of the investment it is insuring. It costs a lot more to insure a risky investment than a safe one. So while it might appear that a pension plan could lower its cost by taking more investment risk, the higher expected returns on a risky portfolio are offset by the higher costs of the implicit put option that future taxpayers are unwittingly forced to provide.

Similarly, a plan that takes less investment is not made worse off. A safer portfolio has lower expected returns, but those returns are also much less risky. As a result, there will be less volatility in the pension contribution rates that governments and taxpayers must pay. Contribution volatility is important: because stock prices are correlated with the state of the economy, pension contribution rates will tend to rise at exactly the wrong time, when the economy is weak, tax revenues are low, and taxpayers' incomes have fallen.

Thus, while a closed plan might choose to hold safe, lower-returning assets, the cost of the implicit put option imposed on future taxpayers falls significantly. In fact, financial theory says that the value of these contingent pension liabilities falls by enough to fully compensate taxpayers for the lower expected return on the pension's investments.[19]

This highlights a broader point regarding the debate about public pension liabilities: the true, full cost of a pension plan is a function of the benefits the plan offers – how generous they are and how safe they are. The true costs of a plan have nothing to do with how the plan sponsor chooses to finance it. Whether a plan sponsor funds its liabilities with smaller contributions in risky, high-returning assets or larger contributions in safer, lower-returning assets is a financing *strategy*, not something that fundamentally alters the cost of the plan. Safe investments

Once the "cost of risk" is accounted for, shifting to a more conservative investment portfolio does not raise costs to the taxpayer.

[W]hile a closed plan might choose to hold safe, lower-returning assets, the cost of the implicit put option imposed on future taxpayers falls significantly.

have lower expected returns, but also present a smaller risk that taxpayers will be called upon to bail out the plan in the future. Changes to the financing strategy can alter the current contribution to the plan, but only by shifting offsetting costs onto future generations.

Response 3. Part of the investment-based, transition-costs argument is that a closed plan must hold more liquid investments, meaning investments that can easily be sold when needed to in order to pay benefits. Liquidity requirements would limit plans' holdings in "alternative investments" such as hedge funds and private equity, which often have restrictions on quick redemption. This, it is argued, would lower the returns plan investments might earn and thereby increase required contributions.

But liquidity concerns are easily overblown. First, a closed plan's investments must be truly liquid only in the final years before true shutdown, which for many plans could be decades in the future. Moreover, alternatives currently make up only a small portion of most plans' portfolios, and not all alternatives held by public plans are illiquid. Of those that are, plans could easily plan staged withdrawals, given the predictability of benefit payments over time.

Finally, even to the degree that plans did shift out of alternative investments, it is not clear that doing so would reduce the risk-adjusted returns to their investments. A study from economists at the Office of the Comptroller of the Currency, a federal bank regulator, found that alternative investments did not increase the returns that public employee plans earned after adjusting for risk.[20] Plans that held more alternatives had slightly higher average investment returns, with the difference due to high returns on alternatives over a single four-year period. However, these higher average returns were merely compensation for greater volatility of returns year-to-year. The authors state:

> We find that pension plans that invested in alternative assets, regardless of the size of the allocation, had significantly higher standard deviations in their returns over a five-year period relative to other pension plans. Measuring risk-adjusted returns with the Sharpe Ratio, we find no significant differences between pension plans that invested in alternative assets and those that did not.

Public plans' portfolios did not become more "efficient" by holding alternatives, they merely traded higher risk for higher expected returns. Reducing pension investment risk, therefore, would not impose true economic costs on plan sponsors.

Response 4. If stock investments are truly low-risk over the long term, as many public plan stakeholders appear to believe, the sponsoring government could grant a closed plan a line of credit to ensure payment of benefits when needed. The closed plan could retain an equity-heavy portfolio, which would repay the plan sponsor over time.

Many public pension stakeholders argue that, over the long term, plans' holdings in stocks and other high-returning investments carry little risk. To be clear, this belief is due to a misunderstanding of how equity risk evolves over time. The standard deviation of annual returns is a common measure of investment risk, and the standard deviation does decline as the holding period is extended. However, this lower standard deviation of annual

returns is trumped by the effects of being compounded over a larger number of years.

For instance, assume a pension investment portfolio with a mean return of 8 percent and standard deviation of 12 percent. Over a one-year period, an investor who received a return one standard deviation below the mean (that is, 8% - 12% = -4%) would end with assets worth 11 percent less than an investor who received the mean return. Over 10 years, the standard deviation of that portfolio falls to 3.8 percent, seemingly making the investments appear low-risk. But an investor who received 10-year returns one standard deviation below the mean would receive 41 percent end wealth than an average-return investor. Put another way, while the standard deviation of annual returns falls over long holding periods, the standard deviation of actual asset values increases. And it is the actual value of the plan's assets, not its annualized returns, which are used to pay benefits.

Nevertheless, many plan stakeholders appear wedded to the notion that investment risks eventually disappear for infinitely lived government institutions. If so, however, this presents an obvious "solution" to so-called investment-based transition costs. The closed plan would continue to hold its current equity-heavy portfolio, which would fluctuate in value over time. If the portfolio proved insufficient to pay benefits or fell below some specified level, the plan sponsor (the government) would supplement the fund as needed. Assuming the fund earned its projected return, it could eventually repay this line of credit with interest. While this repayment period might extend beyond the life of plan participants, if long-term stock investments are as low-risk as many plan stakeholders appear to believe, then repayment is practically assured.

Some might protest that such a line of credit inappropriately mixes the finances of the pension plan and its sponsor, which in certain respects are legally distinct. But the principal legal issue is that pension assets constitute a trust which may be used only for the benefit of plan participants, not siphoned off for other purposes. However, there is nothing prohibiting a line of credit from a plan sponsor to a closed plan. Moreover, such a line of credit does nothing more than formalize legal obligations that already exist. While plan assets may only be used to pay benefits or fund other plan purposes, the sponsor's obligation to pay benefits exists regardless of whether the fund itself is solvent. Governments nationwide already are making supplementary contributions to underfunded public plans. This line of credit approach would simply formalize a legal and practical structure that is already in place.

OTHER CONCERNS

Some argue that converting public employees to DC plans does not reduce unfunded liabilities. Combined with transition costs, this could permanently worsen pension liabilities. For instance, Gary Findlay, the executive director of the Missouri State Employee Retirement System (MOSERS), has written:

> It is well documented that participants in [DC] plans have nowhere near the amount that will be needed to provide anything close to a subsistence level of retirement income. The difference between what participants accumulate and what they need to survive is an unfunded liability that is going to fall on someone. Assuming the employers he mentioned have not determined a method for completely avoiding taxation, they will ultimately be on the hook for the financing of entitlement

Reducing pension investment risk . . . would not impose true economic costs on plan sponsors.

In Missouri, for instance, an average full-career state government employee retiring today would receive almost $24,000 annually in pension benefits, based upon the Missouri State Employee Retirement System's annual report, plus another $13,000 or so in Social Security benefits.

> programs needed to fill the gap. By any reasonable assessment, that is an unfunded liability.[21]

To begin, it is worth noting that academic research is mixed with regard to whether Americans face a crisis in saving for retirement. Some studies, such as the Retirement Risk Index published by the Center for Retirement Research at Boston College, find that a significant percentage of Americans are under saving by a significant amount. But other research finds a smaller and more manageable problem. For instance, Bruce Meyer, of the University of Chicago, and James Sullivan, of Notre Dame, use Consumer Expenditure Survey to show that as few as 4 percent of current seniors consume goods and services worth less than the government poverty threshold.[22] Likewise, John Karl Scholz, of the University of Wisconsin, and his co-authors find that about three-quarters of near-retirees have adequate savings to maintain their lifestyle in retirement and that savings shortfalls, where they occur, are not dramatic.[23] They conclude that "we see little… that leads us to think that households are making large, systematic errors in their financial preparation for preparation."

More importantly, however, is that Findlay mis-uses the word "liability." The *Oxford English Dictionary* defines "liability" as "the state of being responsible for something, especially by law," a definition that matches common usage of the word. For instance, a public pension plan is *liable* for the benefits it owes and must pay those benefits regardless of the level of assets it has on hand. By contrast, Social Security does *not* have liabilities. Under law, when the Social Security trust fund becomes exhausted, the plan will cut benefits to the level payable using current tax revenues. Thus, Social Security's actuaries and trustees refer to the program's "obligations," but specifically and deliberately do not refer to these as liabilities.

If the amounts that Social Security has promised are not liabilities, it is difficult to interpret personal savings shortfalls – in which a given person has under-saved for his or her own retirement needs – as a liability. This under saving is not a liability for the person involved, as she cannot be compelled to do or pay anything in response to it, nor is it a liability for any other party.

One might argue that if public pensions were reduced, the lower incomes of retired public employees would cause them to rely on public assistance, thereby transferring costs to the government. These payments would not be, of course, liabilities, but more important is that these payments are unlikely to be significant in any case. Full-career public employees in most states retire with benefits far exceeding any level at which public assistance would be payable. In Missouri, for instance, an average full-career state government employee retiring today would receive almost $24,000 annually in pension benefits, based upon the Missouri State Employee Retirement System's annual report, plus another $13,000 or so in Social Security benefits. Based upon U.S. Census data, such a public employee would have a retirement income greater than about 83 percent of new retirees in Missouri.

CONCLUSIONS

Public employee pensions in many cities and states require reform, both to maintain financing health and to better serve both

the employers who sponsor them and the employees and retirees who participate in them. While incremental reforms have taken place, policymakers in a number of states and localities have considered structural reforms that would shift public employees to cash balance or defined contribution pension plans.

However, concerns about so-called "transition costs" have held back reforms. These transition costs can derive from accounting standards, in particular, a perceived requirement that closed DB plans amortize unfunded liabilities more rapidly, or due to a closed plan choosing a safer and more liquid investment portfolio with lower expected rates of return. Both types of transition costs would potentially increase the costs of a reformed plan, undermining the goal of pension reform to reduce costs.

However, claims of transition costs are, at some times, overstated and, at other times, entirely mistaken. A closed DB plan most likely would choose a lower-risk investment portfolio, but differences between an appropriate portfolio for a closed plan and that for an ongoing system are exaggerated by the excessive risk-taking of most public DB plans. Using appropriate portfolios for each – or, alternately, relying upon so-called fair market valuation in which guaranteed public pension liabilities are valued using discount rates from low-risk investments – the effects of plan closure would be only modest and gradual.

Similarly, the claim that GASB accounting rules "require" closed plans to more quickly amortize unfunded liabilities is mistaken. GASB rules never imposed funding requirements on public plans, a fact that GASB made very explicit as part of a 2013 revision to its pension accounting standards. Plan sponsors are free to choose their own amortization schedules, and there is no economic or policy reason that a sponsor should alter its amortization schedule for a closed plan.

There are both pros and cons to structural reforms of public plans, and any cash balance or defined contribution plans proposed for public employees should be carefully designed to provide adequate protections in a cost-efficient manner. But concerns about so-called transition costs are almost entirely mistaken and should not stand in the way of public employee pension reform.

ABOUT THE AUTHOR

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Public employee pensions in many cities and states require reform, both to maintain financing health and to better serve both the employers who sponsor them and the employees and retirees who participate in them.

NOTES

[1] With the exception of unusually high investment returns, for which a bonus interest payment sometimes is credited to CB accounts.

[2] Costrell, Robert M. "'GASB Won't Let Me': A False Objection to Public Pension Reform." Policy Perspective, Laura and John Arnold Foundation, May 2012.

[3] Webster, Mary Jo. "Public pensions: Minnesota commission to review options." *St. Paul Pioneer Press*. Nov. 5, 2013.

[4] Oakley, Diane. "Sample Presentation. National Press Club." National Institute for Retirement Security. April 8, 2013.

[5] "GASB's New Pension Standards: Setting The Record Straight." Governmental Accounting Standards Board: Setting the Record Straight - Pension Fact Sheet. View online here: http://www.gasb.org/cs/ContentServer?c=Page&pagename=GASB%2FPage%2FGASBSectionPage&cid=1176160432178.

[6] "Letter from Timothy J. Nugent and Katherine A Warren, Milliman Company, to James L. McAneny transmitting an Actuarial Note on Senate Bill 566." Aug. 30, 2010.

[7] Dezube, Robert S. "Study Reflecting the Impact of Closing the Florida Retirement System Defined Benefit Plan to New Members Effective January 1, 2014 Including Projected Blended Rates for the next 30 Fiscal Years." Robert S. Dezube of Milliman to Dan Drake, Feb. 15, 2013. View online here: http://static-lobbytools.s3.amazonaws.com/press/53183_florida_s_pension_plan_requested_by_speaker_will_weatherford.pdf.

[8] "Retirement Plan Design Study." Minnesota Statewide Retirement Systems. June 1, 2011.

[9] For instance, see Pennacchi, G., and M. Rastad. (2011). "Portfolio allocation for public pension funds." *Journal of Pension Economics and Finance* 10 (2), 221{245.

[10] See Lucas, D. J., and S. P. Zeldes. (2009). "How should public pension plans invest?" *The American Economic Review* 99 (2), 527{532.

[11] See Andonov, Aleksandar, Rob Bauer, and Martijn Cremers. "Pension Fund Asset Allocation and Liability Discount Rates: Camouflage and Reckless Risk Taking by U.S. Public Plans?" (May 1, 2013). Presented to the Federal Reserve Bank of Cleveland, November 2013.

[12] Congressional Budget Office. "The Underfunding of State and Local Pension Plans." May 2011.

[13] Reinsdorf, Marshall B., and David G. Lenze. "Defined Benefit Pensions and Household Income and Wealth." Bureau of Economic Analysis. Research Spotlight. August 2009. Also see Lenze. "Accrual Measures of Pension-Related Compensation and Wealth of State and Local Government Workers." Bureau of Economic Analysis. April 2009.

[14] Kohn, Donald L. "Statement at the National Conference on Public Employee Retirement Systems Annual Conference." New Orleans, La., May 20, 2008.

[15] Wilcox, David. Testimony before the Public Interest Committee Forum sponsored by the American Academy of Actuaries. Sept. 4, 2008.

[16] For instance, see Novy-Marx, Robert, and Joshua Rauh (2011). "Public Pension Liabilities: How Big Are They and What Are They Worth?" *Journal of Finance* 66(4), 1207-1245. To the TIPS yields they add a premium for expected rates of inflation.

[17] The reason for this is that plans value their liabilities and plan their contributions using what is known as the "arithmetic mean" return for their portfolio, a value that is exaggerated due to the volatility of the plan's investments. The median or compound return, which represents the return that the plan will generate with a 50 percent probability, will be lower than the arithmetic mean return. As a result, most plan investments only have a roughly 40-45 percent chance of achieving their assumed returns.

[18] For more details, see Biggs, Andrew G. "Proposed GASB Rules Show Why Only Market Valuation Fully Captures Public Pension Liabilities." *Financial Analysts Journal*, March/April 2011, Vol. 67, No. 2: 18–22; and Biggs, Andrew G. "An Options Pricing Method for Calculating the Market Price of Public Sector Pension Liabilities." *Public Budgeting and Finance*, Fall 2011.

[19] This is due to the theory of "put-call parity."

[20] See Robertson, Douglas, and Ellen Wielezynski. (2008). "Alternative Assets and Public Pension Plan Performance." OCC Economics Working Paper 2008-2. Washington, DC: Office of the Comptroller of the Currency.

[21] Findlay, Gary. "Pension Transition Cost Myths." PensionDialog.com. May 24, 2012. View online here: http://pensiondialog.wordpress.com/2012/05/24/pension-transition-cost-myths/.

[22] Meyer, Bruce D., and James X. Sullivan. 2007. "Consumption and income poverty for those 65 and over." RRC Paper No. NB07-04. Cambridge, Mass.: National Bureau of Economic Research.

[23] Scholz, John Karl, and Anath Seshadri. "Are All Americans Saving 'Optimally' for Retirement?" Sept. 1, 2008. Michigan Retirement Research Center Research Paper No. 2008-189.

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