Financing State and Local Pension Obligations:

Issues and Options

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I. Introduction

Many states and municipalities are struggling to fund defined benefit pension plans for their employees. Between 2009 and 2013, in order to improve their pension status, almost every state implemented some combination of lower benefit accruals and higher employer or employee contributions.[2] Numerous cities made changes as well for similar reasons.[3]

But underfunding problems have not disappeared, and they are likely to become more difficult in the future, putting pressure on other state and local spending programs and taxes.[4] Under discount rate assumptions used by the plan sponsors, the estimated unfunded liabilities of state and local government defined benefit pension plans are in the neighborhood of $1 trillion.[5] Under assumptions that adjust for the risk properties of pension payments – namely for the fact that courts have ruled in almost all cases that accrued benefits cannot be cut and thus should be treated essentially as guaranteed payments – the estimated unfunded liabilities exceed $3

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[2] Martel and Petrini (2015); Snell (2009, 2010, 2012, 2013).

[3] Davey and Walsh (2015); Campbell (2016); Fletcher (2014).

[4] Government Accountability Office (2015).

[5] Pew Charitable Trusts (2013); Munnell and Aubry (2016a); Rauh (2016); Cembalest (2016).

trillion.[6] Paying down the unfunded liabilities would require steep increases in contributions or reductions in benefits. However, even if the goal is not to pay down the unfunded liabilities, just keeping them from rising would still require substantial increases in contributions or reductions in benefits.[7] These aggregate figures obscure considerable heterogeneity in situations across states and municipalities.[8] For example, pension funding problems in Illinois, New Jersey, Detroit (MI), and Stockton (CA) are well publicized, but many other states and cities are doing quite well.

Those state and local governments that do face pension problems possess a limited number of options in dealing with this problem, none of which are attractive. In principle, they could cut the benefits promised through currently existing pension plans, though legal constraints may well preclude that option in many cases. Alternatively, they could raise employee contributions or raise government (employer) contributions.

None of these options, however, is a complete solution in itself. Cutting benefits or raising employee contributions will reduce the value of the compensation package offered to government workers. This will, under plausible conditions, reduce the quality of the state and local government labor force. If governments want to retain work force quality, they would have to raise wages or other parts of the compensation package. Likewise, raising government (employer) contributions would require tax increases or cuts in other government spending. Beyond the simple arithmetic of cutting benefits or raising contributions, additional structural pension reform may be needed to facilitate and justify future changes, even given the many

[6]Biggs (2016); Munnell and Aubry (2016a); Rauh (2016).

[7] Rauh (2016).

[8] Munnell and Aubry (2016b) emphasize this point.

recent policy changes that have occurred.

This policy brief provides background on public pensions and discusses different ways to bring the poorly-funded systems into balance. We conclude that the legacy costs of these pension plans should be covered by some combination of overall tax increases and spending cuts, while the new costs that would otherwise accumulate could be mitigated by judicious reform proposals.

II. Background

As of 2014, state and local governments sponsored nearly 4,000 pension plans that covered almost 20 million retirees, employees, and former employees who have not yet claimed benefits. Given that local governments are smaller and more numerous than state governments, it should not be surprising that most of the plans are sponsored by local governments, but most of the beneficiaries come from state plans.[9]

The vast majority of full-time state and local government employees participated in a defined benefit pension plan offered by their employer in 2015.[10] In such plans, annual pension benefits are typically determined by a formula based on the employee's salary history and years of service. For example, if a plan offered annual payouts equal to 1 percent of a worker's final salary times the number of years of service and the worker had a final salary of $60,000 after 30 years of service, the pension benefit would equal $18,000 per year, for the rest of the worker's life. (Some plans also include survivor benefits and some have either ad hoc or systematic adjustment for inflation.)

Public pension benefit payments come from dedicated trust funds, not from governments' general operating budgets. Generally, the change in trust fund balances over time is the sum of

[9] United States Census Bureau (2015a).

[10] Bureau of Labor Statistics (2015).

employee contributions, government (employer) contributions, and the investment returns on prior contributions, less benefit payments and administrative costs. Between 1985 and 2014, investment returns accounted for 64 percent of public trust fund revenue, employer contributions for 25 percent, and employee contributions for 11 percent.[11] The share of trust fund revenue coming from investment returns has generally been increasing over time.[12]

Public employees typically contribute 4 to 8 percent of their pay to the defined benefit pension funds.[13] However, employees under various plans in states such as Arizona, Hawaii, Kentucky, Nevada, and Ohio contribute more than 10 percent of their pay. Nationally, the ratio of public employee contributions to pension funds divided by total salaries and wages for all public employees has generally increased over the last few decades, from 4.1 percent in 1977 to 5.3 percent in 2013.[14] Nevertheless, since 1977, the share of total revenue for the plans attributed to employee contributions has generally declined.[15]

Government employer pension contributions were 4.1 percent of state and local direct general expenditures (all spending in the general government sector as defined by the Census Bureau, except intergovernmental transfers) in 2013, ranging across states from 1.6 percent to almost 8 percent.[16] Over time, these employer pension contributions have varied within a fairly narrow range. They comprised 3.4 percent of direct general expenditures in 1993, falling to 2.3

[11] National Association of State Retirement Administrators (2016).

[12] United States Census Bureau (2015b). Investment returns were negative in some years. Munnell and Aubry (2016a).

[13] National Association of State Retirement Administrators (2015, 2016).

[14] United States Census Bureau (2015b, 2015c); State & Local Government Finance Data Query System (2016). The wages and salaries in the Census data take into account state and local employees who are not participating in defined benefit pension plans.

[15] United States Census Bureau (2015b).

[16] United States Census Bureau (2015b, 2015c); National Association of State Retirement Administrators (2016).

percent by 2002, before rising steadily to 4.1 percent by 2013 (Figure 1).[17]

The Actuarially Determined Employer Contribution (ADEC) measures the amount that governments should be contributing in order to keep the pension plans on a sustainable path. Created by the Governmental Accounting Standards Board (GASB) via Statement 67, which became binding on states for fiscal years starting after July 2014, the ADEC is designed to measure the present value of newly accrued benefits during a given year plus an amount that would be sufficient to amortize existing unfunded liabilities over the next 30 years. It replaced the Annual Required Contribution (ARC), which had a similar intent. Empirically, the two measures are not very different.[18]

For state and local pension plans, these measures have risen steadily and substantially over the last fifteen years, from 6.7 percent of payroll in 2001 to 18.6 percent by 2015 (Figure 2). One reason for the increase is that asset values dropped during the Great Recession, which raised unfunded liabilities. Another reason why required contributions rose is that some states and cities have not consistently made the contributions indicated by the ADEC (or ARC), which further raises unfunded liabilities. State and local government pension contributions averaged 88 percent of the ARC from 2001 to 2015. On average, sponsors paid just under 100 percent of the ARC in 2001, but their contributions fell to just 85 percent by 2006, rose through 2008, and then – with the onset of the Great Recession – fell below 81 percent by 2012 (Figure 3).[19]

Governments' required contributions are determined by many factors, including laws and

[17] State & Local Government Finance Data Query System (2016); United States Census Bureau (2015b, 2015c).

[18] Munnell and Aubry (2016a). One difference is that the ADEC is more flexible in terms of calculation assumptions compared to the ARC. However, Munnell and Aubry (2016a) find that the differences between the ARC and ADEC "do not appear to be consequential." Like the measurement of unfunded liabilities, estimates of the ARC and ADEC depend critically on the discount rate assumptions used. Using risk-adjusted discount rates would raise the required contributions.

[19] Munnell and Aubry (2016a).

court cases, and, in some cases, collective bargaining agreements. The contribution limits created by these factors may or may not correspond to the ADEC (or the ARC in the past). Munnell et al. find that in 2006, more than two-thirds of the plans that did not make the ARC were legally prohibited from doing so. Separate laws determined the public employer's contribution rate at levels that were lower than those implied by the ARC.[20] In general, government sponsors contribute larger portions of their ARC when the plans are associated with strong contribution agreements.[21] Also, in many cases, the decision not to make the required contribution may have been in order to spare cuts in other spending.

III. The Problem

Required contributions are likely to rise in the future, absent policy changes. Estimates of unfunded liabilities that discount plan liabilities at interest rates used by plan sponsors imply that unfunded liabilities are in the neighborhood of $1 trillion.[22] These assumptions, however, do not take into account the guaranteed nature of the pension payments. As noted below, courts have upheld the need for states to pay accumulated benefits and in many cases have also ruled out reductions in benefit accruals for current workers. Estimates that use risk-adjusted discount rates find unfunded liabilities between $3 trillion and $4 trillion.[23] Assuming that the wage base

[20] Munnell et al. (2008).

[21] Brainard and Brown (2015). For additional discussion, see Schieber (2011).

[22] Munnell and Aubry (2016a) estimate unfunded liabilities of $1.2 trillion in 2015 for state and local pension plans using the pension plans' average assumption of a 7.6 percent discount rate. Rauh (2016) estimates an aggregate unfunded liability of about $1.2 trillion, using discount rate assumptions that are employed by the pension plans themselves and that average 7.4 percent per year. Pew Charitable Trusts (2015) uses the pension plans assumptions about discount rates and obtains an estimate of $968 billion in unfunded liabilities as of 2013 for state (as opposed to local) government retirement systems.

[23] Rauh (2016) estimates the unfunded liability to be about $3.4 trillion, when discounting at Treasury rates that offer a similar level of guarantee and duration as the pension obligations. Munnell and Aubry (2016a) estimate unfunded liabilities of $4.1 trillion in 2015 using a discount rate of 4 percent. See also Hoops, Smith, and Stefanescu (2016).

is not changing significantly – a reasonable stipulation – implies that contributions will have to rise as a share of wages to meet these obligations.

Another way to demonstrate pension shortfalls is to calculate the implicit annual deficits that states and cities are generating in their pension plans, using changes in the value of pension liabilities over the course of a year.[24] Under the pension plans' discount rate assumptions, plan contributions fell short of keeping net pension liabilities constant by about $28 billion in 2014. Under risk-adjusted discounting, the plans fell short by more than $150 billion, an amount that represents 17.5 percent of the own-source revenue in 2014 of state and local governments included in the analysis. Their actual contributions in 2014 were just 7.3 percent.[25] Thus, *just to keep unfunded liabilities from growing* would require increases in contributions of 10.2 percent of own-source revenue (or equivalent-sized reductions in benefits).

Novy-Marx and Rauh undertake a more stringent calculation – rather than just aiming to hold pension liabilities constant over time, they estimate required contributions *to reach fully funded status in 30 years.*[26] Using 2009 data, they find that contributions were 5.7 percent of own-source revenues and that contributions would need to rise immediately to 14.1 percent to achieve a fully funded system in 30 years. There are many ways to fund such an obligation. For example, Novy-Marx and Rauh report that it could be funded by an immediate, permanent tax increase of $1,385 per household. This tax increase would fund an increase in employer contributions from 16.3 percent of payroll in 2009 to 40.4 percent. They estimate that about half of the costs are "legacy" costs – unfunded liabilities that have already accrued. The other half

[24] Rauh (2016).

[25] Own-source revenue includes all revenue sources except those from insurance trusts and intergovernmental transfers (Rauh 2016).

[26] Novy-Marx and Rauh (2014).

are costs that will be incurred in the future, through either continued service and salary increases for current workers, or through the hiring of new workers.

Even when using discount rate assumptions employed by the sponsors, almost all states have required contributions that are higher than actual contributions. However, there is an important element of heterogeneity across state and local pension plans. It is decidedly not the case that all of them are in trouble. Many are doing quite well. Figure 4 shows that the required government contribution to prevent a rise in unfunded liabilities varies widely by state. New Jersey, for example, has a gap of more than 10 percent of own-revenue. On the other hand, several states – including Connecticut, Michigan, and North Dakota – contribute nearly the entire amount required under expected return assumptions. When risk-adjusted discount rates are used, every state has a shortfall of actual versus required contributions, and the shortfall is extreme in several states – including California, Illinois, and Nevada.[27]

Some cities also face significant shortfalls of actual versus required contributions. In Chicago, for example, the city's pension funds contributed less than $200 million per year from 2006 to 2015, even though the ARC (and then the ADEC) exceeded $300 million in 2006 and then rose to more than $800 million by 2013 (Figure 5).[28] As of the end of 2015, Chicago's municipal retirement fund was only 37 percent funded. In contrast, plans such as those for the Houston firefighters or New York State teachers had funding ratios above 90 percent in 2015.[29]

IV. Options

The implications of the projections are unpleasant but straightforward. Governments that

[27] Rauh (2016).

[28] Campbell (2016).

[29] Munnell and Aubry (2016a).

face significant shortfalls will have to cut employee benefits, raise employee contributions, or finance higher employer contributions with tax increases or spending cuts. The eventual changes may be modified (or hidden) by pension reform, but the basic direction of the required changes is clear.

Cutting benefits or raising employee contributions puts the burden on some combination of retirees, previous government workers who have not yet claimed benefits, and current government workers, depending on how the changes are structured. To some extent, workers who have other employment options will react to these changes by exiting their jobs.[30] As a result, the quality of the public work force may decline in response to benefit cuts.

Prospective pension benefit cuts will *not* impose net burdens on *future* (i.e., yet-to-be-hired) government workers because they operate in a competitive labor market and will receive market compensation (some combination of wages, health, pension, and other benefits) for their services. Thus, even if future pensions are cut, some other form of compensation may have to adjust to attract new workers to state and local governments.[31]

In contrast, raising employer contributions, which would be financed with tax increases or spending cuts, puts even more of the burden on the general public. Precisely who bears the burden of those changes depends crucially on which taxes or spending programs change.

Future government pension benefits consist of three components. The first is sometimes called the accumulated benefit obligation (ABO), and it equals the benefits that current and previous workers have already earned, given their salary and service to date. It represents the legal liabilities of the pension plan, were it to shut down immediately and allow no more accrual

[30] For a related case study, see Clark, Hanson, and Mitchell (2016).

[31] Although see Fitzpatrick (2015), who finds that teachers place little value on public pension promises relative to pension costs.

of benefits. The difference between the ABO and accumulated assets, properly discounted, is the legacy cost of the plan.

The second component is the additional benefits that current workers will earn, with some combination of added service and increased salary over time, or added amounts that retirees will earn through future cost-of-living or other adjustments.

The third component is the benefits that will be earned by workers that have not been hired. These three components can, and should be, treated separately in discussing benefit cuts.

A. Changing Pension Terms for Current Employees

We believe that legacy costs – the unfunded costs of fulfilling promises already made – should be addressed with general tax increases or spending cuts; that is, that the legacy costs are appropriately the burden of the state and its citizens, not of current government employees. State and local government employees compete in competitive labor markets. When they were hired, state and local government workers received a package of wages, pension benefits, and other items. They chose to accept this option based on the available market alternatives. For example, they may have accepted a public sector job with higher pension benefits but lower wages than they could have received in the private sector.[32] Of course, wage agreements over the years may have adjusted that initial compensation package as well. The general point, though, is that it is not current workers' fault that the state or local government has not funded the pension obligations it promised the workers. For these reasons, it is inappropriate and unfair to reduce already-earned benefits.

It is also illegal in most states, many of which have constitutional provisions that forbid

[32] Biggs and Richwine (2014); Munnell et al. (2011).

such changes.[33] The recent changes alluded to in the opening paragraph of the text do not involve cuts to accumulated benefits. Courts tend to protect the already-earned benefits strongly, though some exceptions have occurred. In Detroit and Stockton, CA, courts ruled that pension benefits could be cut in a bankruptcy.[34] (States, of course, cannot declare bankruptcy.) Except under these dire circumstances, already-earned benefits should be viewed as sacrosanct and should be funded through higher general revenues or spending cuts.

The second component of pension benefits, *future* accumulations of pension benefits for *current* workers, represents an intermediate case between the already-earned benefits of current workers and the benefits to be received by new workers. Like the already-earned benefits of current workers, the future accumulations to those workers go to people who previously accepted a given wage/pension package, so reneging on those benefits does not seem fair or appropriate. This is especially important because pension benefits accrue in a strongly back-loaded manner in defined benefit plans. Legal rulings have often upheld these ideas. Recent judgments in the Illinois Supreme Court confirm or create some of the strongest protections in any state, and they protect not only already-earned benefits, but also benefits that public workers have not yet earned. [35] Likewise, a proposed reform for the city of Chicago that would have cut future benefits for current workers was rejected by the courts.[36]

While already-accrued benefits are reduced only in rare cases, it is more common for prospective benefits for current workers to be cut – for example, through COLA reductions or

[33] Martin (2015).

[34] Davey and Walsh (2015).

[35] Davey and Walsh (2015).

[36] Dardick (2016). The court left open the possibility that such changes could be bargained collectively, so long as there was a retiree representative involved in the negotiations.

freezes, or through reductions in benefits accrual formulas – or for employee contribution requirements to be raised.[37] And even though these practices are more common, they are still associated with differences across states. For example, COLA reduction packages have been upheld in several states including, but not limited to, Colorado, Minnesota, and New Mexico, but they were disallowed in Arizona, Illinois, and Montana. Common reforms that aimed to increase employee contributions have also been associated with inconsistent rulings across states.[38]

B. Changing Pension Terms for New Hires

The third component of future benefits goes to future workers. The pension plans offered to new workers could be an opportunity to provide a different labor market package. There should be a line in the sand ensuring that pensions plans offered to new workers will not be underfunded. To achieve that goal, governments will need to either (1) commit more resources to fund pension promises for new workers, (2) reduce the generosity of their defined benefit plans or require higher employee contributions for new workers, in which case they will need to pay higher wages if they want to maintain the quality of the work force, and/or (3) reform their pension system.

Reform could mean the provision of a defined contribution (DC) plan – like a 401(k) or 403(b) plan – for new workers. This would shift direct investment risk from the employer to the employee and does not guarantee a specific pension amount upon retirement. While conversion to a DC plan does not alleviate the pension underfunding issue for benefits already going to current retirees and employees, the state and local governments would avoid added unfunded liability problems for future cohorts, though they may well incur other costs – as noted above – like higher wages. In addition, with DC plans, it is harder for governments to pay above market

[37] Martel and Petrini (2015); Munnell et al (2013); Snell (2009, 2010, 2012, 2013).

[38] Laura and John Arnold Foundation (2016).

compensation, because the plan has to be fully funded by definition, so that the total compensation costs are not as hidden from the electorate as under DB plans, where delayed funding can occur.

Like lower benefits, higher employee contributions would impose the additional costs on employees rather than the government as a whole. Some or all of the required increases in taxes and employer contributions noted above could be applied to employees.

C. Pension Reform

Rather than just cutting benefits or raising employee contributions, *reforming* the pension system may be a more promising way to proceed.[39] For example, in the 1980s, when faced with escalating pension costs, the federal government retained the existing Civil Service Retirement System (CSRS) for existing employees and created a new Federal Employee Retirement System (FERS) for new employees. FERS combined a less generous DB plan than CSRS, mandatory enrollment in Social Security, and a new DC plan with extensive employer matching.

Novy-Marx and Rauh show both the potential for, and the limitations of, two similar reforms on future pension costs.[40] In their "soft freeze" scenario, all current public workers continue to accrue benefits under their existing plans, but all new workers are enrolled in defined contribution plans with employer contributions of 10 percent of payroll. In addition, all state and local government workers not currently covered by Social Security would be enrolled in that program. This reduces the needed immediate and permanent increase in taxes (or cut in spending) to pay for retirement benefits from $1,385 per household per year to $1,210 (assuming that employers bear the full economic cost of both employer and employee contributions).

In their "hard freeze" scenario, no further benefit accruals are allowed in current public

[39] Gale, Holmes, and John (2016).

[40] Novy-Marx and Rauh (2014).

defined benefit plans. All current public workers are moved into a DC plan at 10 percent of payroll. Provisions regarding new employees and Social Security are the same as in the soft freeze. This reduces the needed policy changes to $810 per household per year.

D. Tax Increases or Spending Cuts

Another alternative, not mutually exclusive relative to the options above, would be to raise overall taxes or reduce other forms of government spending to finance an increase in employer (government) contributions to the pension plans.

But the question is where it would come from. Figure 6 shows the allocation of state and local direct general expenditures in 2012.[41] Public welfare spending such as Medicaid and cash assistance programs represented almost 19 percent of spending. Highway spending comprised just over 6 percent. Elementary and secondary education spending was almost 22 percent of spending, while higher education was about 10 percent. Other health and hospital-related spending was 9 percent of the total. Spending on police represented about 4 percent. The remaining 30 percent of spending came from other programs.

Of course, the composition of spending between levels of government varies by category. For example, local governments are responsible for a significant share of elementary and secondary education spending, while higher education spending is mostly a state issue. By contrast, a larger share of highway spending occurs at the state rather than the local level.

Changes in one category of spending can crowd out spending on other categories. For example, increases in state Medicaid spending significantly crowded out state higher education spending over the past several decades.[42]

[41]State and Local Finance Initiative (2016a).

[42] Kane, Orszag, and Gunter (2003); Kane, Orszag, and Apostolov (2005).

Using the calculations in Rauh and Census Bureau data, we estimate that it would require on average a 5.7 percent immediate and permanent across-the-board reduction in all direct general expenditures to ensure that unfunded public pension liabilities do not rise.[43] This calculation provides a simple overview of the country as a whole and does not highlight the heterogeneity of the issue.

Figure 7 shows the major categories of total state and local general revenues in 2012.[44] Individual income taxes raised 12 percent of revenues. Sales taxes raised roughly 18 percent. (Not all states have both taxes.) Property taxes raised about 17 percent. Intergovernmental transfers (largely from the Federal government) made up 23 percent of revenues. Other taxes represented 6 percent. Other revenues such as fees and charges comprised the remaining 24 percent. Similar to the expenditure categories, the revenue categories vary by level of government. Property taxes are more common at the local level, whereas the other major taxes are more prominent for state coffers. Additionally, it would not be feasible for state and local governments to rely on intergovernmental grants because that would not result in an autonomous solution, and thus, it would just shift pressures to other constituencies. As a result, if state and local governments choose to fund their pension systems by increasing taxes, it is more appropriate to focus on own-source revenue.[45] We calculate that a 5.3 percent immediate and permanent increase in own-source revenues would be required to fund the $151.7 billion annual

[43] Because this calculation maintains the nominal value of unfunded liabilities in programs that are growing over time, it is de facto adding some pre-funding to the calculation. To obtain our estimate, we divide the $151.7 billion estimate from Rauh (2016) by total direct general expenditures in 2013 from the State & Local Government Finance Data Query System (2016), adjusted for inflation to 2014 dollars.

[44] State and Local Finance Initiative (2016b).

[45] It is important to note, however, that it may be politically difficult to increase taxes in the states that face larger shortfalls because some of these states also have higher than average tax rates (Cembalest 2016).

gap that Rauh identifies as needed to keep liabilities from rising.[46] Similar to the calculation for expenditures above, this calculation provides a simple overview of the country as a whole, and does not highlight the aforementioned heterogeneity.

V. Conclusion

State and local governments face significant pension shortfalls that will require painful choices – cutting benefits or other forms of spending, and/or raising employee contributions or overall taxes. Because none of these options are very attractive, there will be an effort to find seemingly painless solutions. One such idea would be to raise the expected return on the investments made by pension plans. But there is no way to do this without also increasing the risk embodied in the investments. If state and local government pensions were underinvested in risky assets currently, they could improve their risk-return trade-off by optimizing their portfolios, but that does not appear to be the case. So this option would, at best, be a wash for pension plan finances. A second non-starter would be to seek a federal bailout. The federal government is, in many cases, the lender of last resort. And there are some arguments in favor of this option.[47] But it would only solve the state and municipal funding problems by moving the problem to the citizens of the nation as a whole. Moreover, if the federal government started bailing out a select few states or cities, it would find a long list of them showing up at its door very quickly, unless it imposed stringent conditions on the governments it rescued.

It is not clear that the goal should be full funding for state and local governments (under

[46] United States Census Bureau (2015c); State & Local Government Finance Data Query System (2016); Rauh (2016). Our estimate is smaller than the one Rauh obtains because we are calculating the tax increase as a share of own-source revenue for all state and local governments, while Rauh focuses on the own-source revenue of the governments whose pension plans he includes in the analysis.

[47] For example, suppose that Detroit has a liability for existing retirees who no longer live in Detroit. The people who benefited from services from Detroit in the past have now moved elsewhere (part of the reason why places like Detroit have a hard time paying benefits). So it would not be outlandish to have the federal government share some of the costs.

appropriate discount rate assumptions). However, as discussed above, even just to maintain the current level of unfunded liabilities in future years, rather than letting that level rise, would require significant costs to be imposed on government workers, taxpayers, or beneficiaries of other spending programs.

In addition to the pension issues discussed above, many states and cities also face unfunded liabilities for retiree health care benefits.[48] These obligations tend to be funded at even lower levels than pension benefits,[49] and they will only exacerbate the difficulty of the choices facing state and local governments.

We believe there is a good case for treating the legacy costs of poorly-funded state and local pension plans as societal issues that require overall changes to taxes and spending programs. In contrast, the new liabilities created going forward should be dealt with – either directly or via pension reform. Either option will require some combination of net benefit cuts and/or contribution increases. Even though many jurisdictions are in good shape with respect to their public pension plans, several state and local governments are in a hole. They should stop digging.

[48] Lutz and Sheiner (2014); Pozen and Rauh (2016); Standard Poor's (2014); Munnell and Aubry (2016b).

[49] Schieber (2011); Pozen and Rauh (2016).

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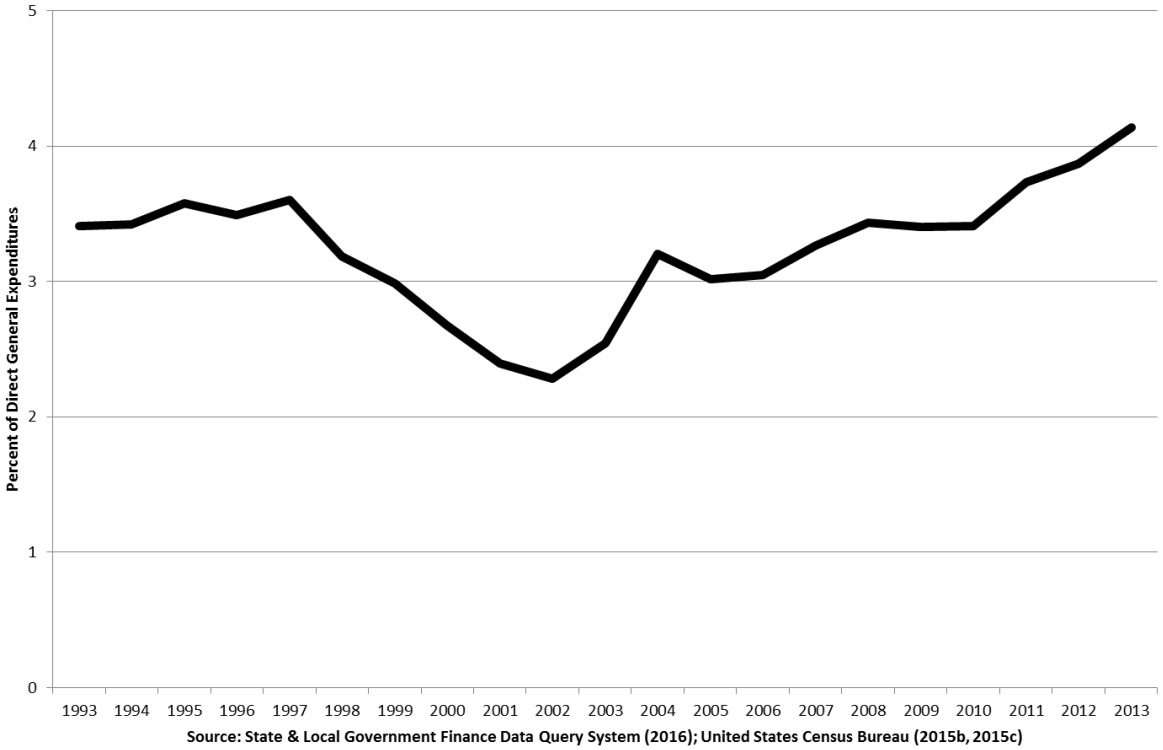
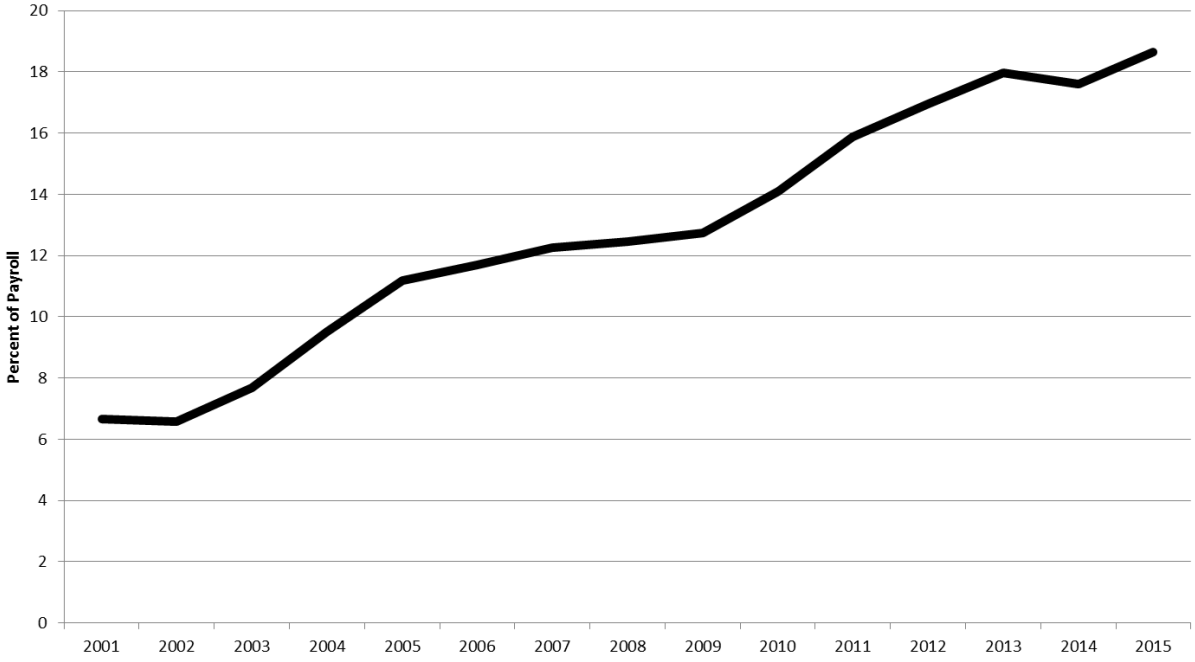
Figure 1.
State and Local Government Pension Contributions, 1993-2013



Source: State & Local Government Finance Data Query System (2016); United States Census Bureau (2015b, 2015c)

Figure 2.
State and Local Government Required Pension Contributions, FY 2001-2015



Notes: The 2001-13 measure is the ARC ; the 2014-15 measure is the ADEC. The 2015 value involves projections for about one third of plans.

Source: Munnell and Aubry (2016a)

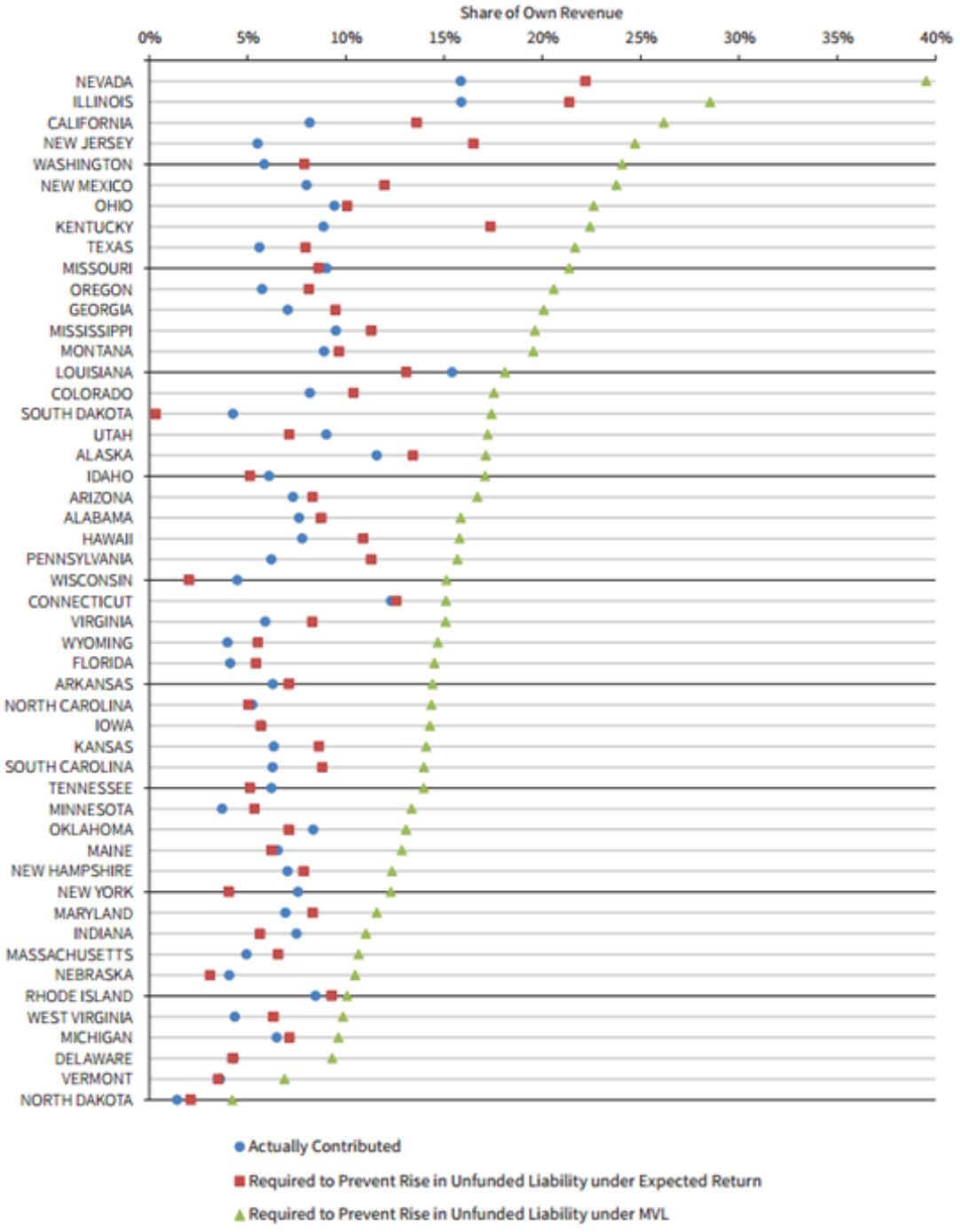
Figure 3.
Percentage of Required Contribution Paid, 2001-2015

Notes: The 2001-2013 measure is the ARC; the 2014-15 measure is the ADEC. The 2015 value is Munnell and Aubry's estimate.

Source: Munnell and Aubry (2016a)

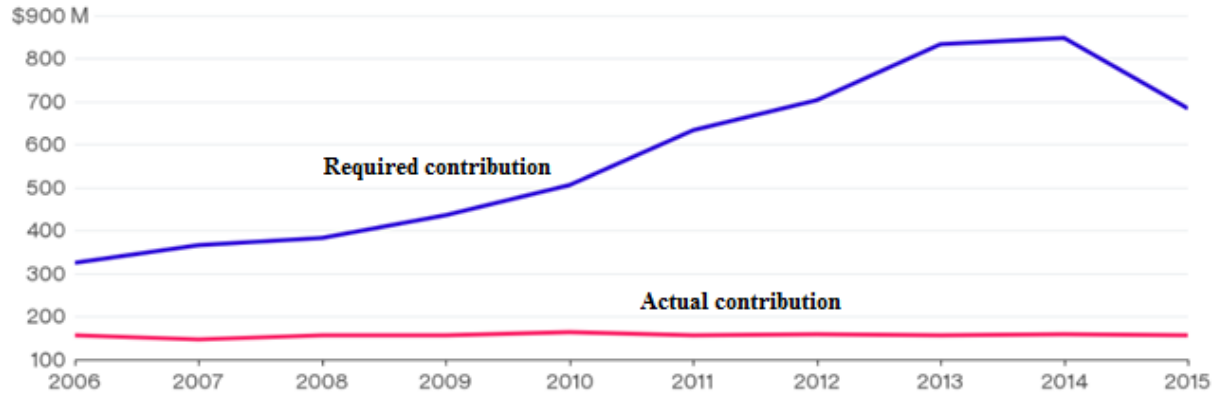
Figure 4.

Actual State Contributions vs. Contributions Required to Prevent Rise in Unfunded Liabilities



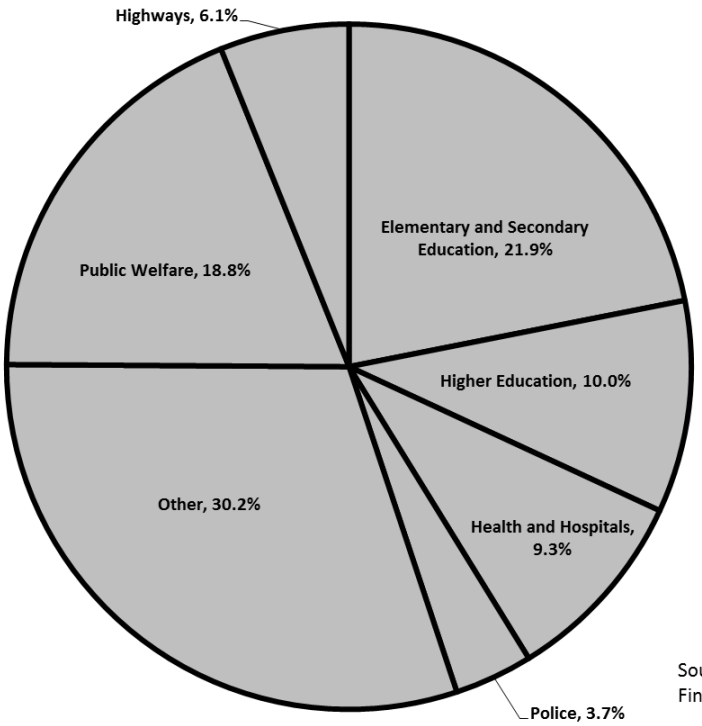
Source: Rauh (2016)

Figure 5.
Contributions to Chicago's Municipal Retirement Fund



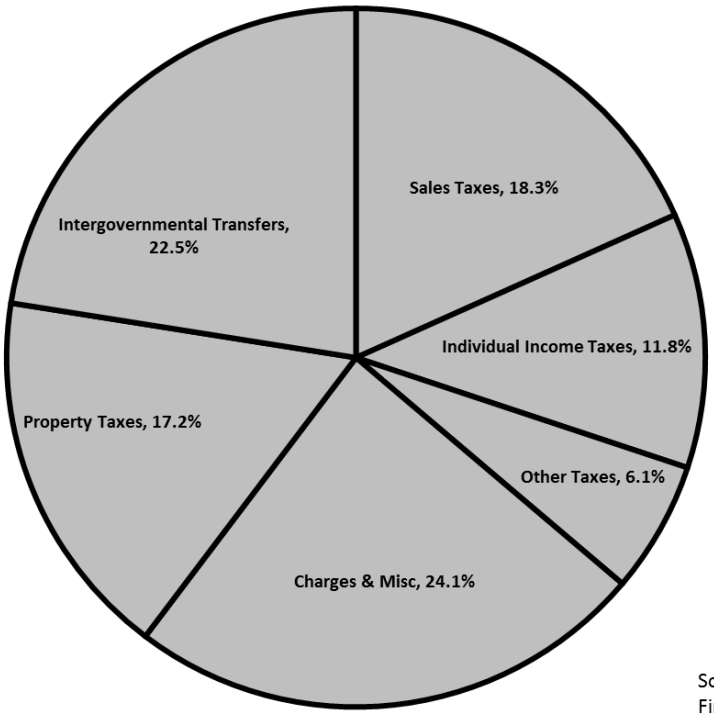
Source: Campbell (2016)

Figure 6.
State and Local Direct General Expenditures, 2012



Source: State and Local Finance Initiative (2016a)

Figure 7.
State and Local General Revenues, 2012



Source: State and Local Finance Initiative (2016b)